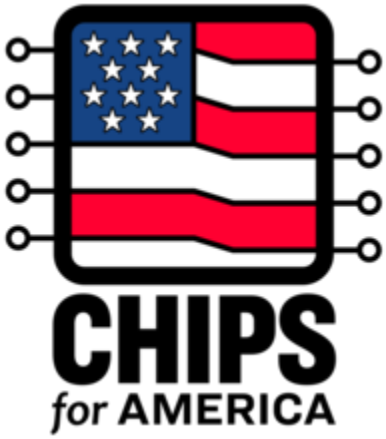
Draft Environmental Assessment for Micron ID1, Boise, Idaho



NIST-CPO/EA-004

July 10, 2024

U.S. Department of Commerce
National Institute of Standards and Technology
CHIPS Program Office
Herbert C. Hoover Building
1401 Constitution Avenue NW
Washington, D.C. 20230

Draft Environmental Assessment for Micron ID1, Boise, Idaho

Designation	**Draft Environmental Assessment NIST-CPO/EA-004**
Title of Proposed Action	**Draft Environmental Assessment for Micron ID1**
Project Location	**City of Boise, Ada County, Idaho**
Lead Agency	**U.S. Department of Commerce**
Affected Region	**Ada County, Idaho**
Action Proponent	**CHIPS Program Office, National Institute of Standards and Technology, U.S. Department of Commerce**
Further Information	**CHIPS Program Office [CHIPSNEPA@chips.gov]**
Date	**July 10, 2024**

ABSTRACT

The CHIPS Program Office (CPO) within the National Institute of Standards and Technology (NIST), an agency of the U.S. Department of Commerce (DOC), has prepared this environmental assessment (EA) pursuant to the National Environmental Policy Act (NEPA), 42 U.S.C. § 4321 *et seq.*, and the Council on Environmental Quality (CEQ) NEPA implementing regulations, 40 C.F.R. Parts 1500-1508.

CPO is considering a Proposed Action to provide federal financial assistance under the CHIPS Incentives Program (Program) to Micron Idaho Semiconductor Manufacturing (Triton) LLC (Micron), a wholly owned subsidiary of Micron Technology, Inc. (MTI), for construction of a proposed semiconductor manufacturing facility (ID1) at Micron's existing headquarters and research and development campus in Boise, Idaho (Micron Boise).

The purpose of CPO's Proposed Action is to respond to Micron's application for federal financial assistance for the Proposed Project under the Program. The need for CPO's Proposed Action is to fulfill NIST's statutory responsibilities under the CHIPS Act, 15 U.S.C. § 4651 *et seq.*, which directs the Secretary of Commerce to establish a program to provide federal financial assistance to covered entities to incentivize investment in semiconductor facilities and equipment in the United States.

This EA evaluates the potential environmental effects of two alternatives, the Proposed Action and the No Action Alternative, on the following resource areas: air quality; climate change and resiliency; water resources; cultural resources; biological resources; land use; noise; transportation; human health and safety; hazardous materials; environmental justice; socioeconomics; utilities and sustainability; waste; and geological resources.

CPO's analysis of the direct, indirect, and cumulative environmental effects of the alternatives will inform its decision whether to prepare an environmental impact statement (EIS) or a finding of no significant impact (FONSI) for the Proposed Project. CPO is issuing the Draft EA for a thirty (30) day public comment period, from July 10, 2024, through August 8, 2024. CPO will consider substantive comments on the Draft EA timely submitted during the public comment period.

EXECUTIVE SUMMARY

ES.1 PROPOSED ACTION

The CHIPS Program Office (CPO) within the National Institute of Standards and Technology (NIST) is considering a Proposed Action to provide federal financial assistance under the CHIPS Incentives Program (Program) to Micron Idaho Semiconductor Manufacturing (Triton) LLC, herein referred to as "Micron," a wholly owned subsidiary of Micron Technology, Inc. (MTI), for construction of its Proposed Project, also referred to as "ID1."

Micron currently owns and operates headquarters offices and research and development facilities in Boise, Idaho (herein referred to collectively as "Micron Boise" or the "Facility"). The Proposed Project would involve construction of ID1 and its supporting facilities at Micron Boise.

Specifically, ID1 would consist of a leading-edge semiconductor manufacturing fabrication facility (fab) and supporting facilities. The new four-story, high-volume fab would produce advanced dynamic random-access memory, the central feature of ID1. It would have a footprint of about 1.2 million square feet, including approximately 600,000 square feet of cleanroom space. It is anticipated to be the largest single cleanroom ever built in the United States. Fab supporting facilities would include an administration building, probe building, central utility plant, electrical substation, production support building, water and wastewater treatment facility, Opal wastewater treatment and renewal facility, projects office building, owner's warehouse, gas plant, water tanks, industrial wastewater retention basin, stormwater retention basin, surface parking, and parking garage.

ES.2 PURPOSE AND NEED

The purpose of CPO's Proposed Action is to respond to Micron's application for federal financial assistance for the Proposed Project under the Program. The need for CPO's Proposed Action is to fulfill NIST's statutory responsibilities under the CHIPS Act, including the requirements of 15 U.S.C. § 4652 to incentivize investment in facilities and equipment in the United States for the fabrication, assembly, testing, production, or research and development of semiconductors, materials used to manufacture semiconductors, or semiconductor manufacturing equipment.

ES.3 ALTERNATIVES CONSIDERED

This Environmental Assessment (EA) includes an analysis of potential environmental effects of two alternatives: the Proposed Action and the No Action Alternative.

Under the Proposed Action, CPO would provide federal financial assistance to Micron for ID1. Beginning in 2024, Micron would begin constructing the following components:[1]

- A leading-edge fab, referred to as the Idaho High-Volume Manufacturing (IDHVM) Building. The new four-story, high-volume manufacturing fab would produce advanced dynamic random-access memory, the central feature of ID1. It would have a footprint of about 1.2

[1] Project facilities described and shown in the EA are based on currently best available design information. Refinements may occur during more detailed design but are not anticipated to result in substantial changes to the project or the environmental effects analyzed in the EA. Quantities provided herein are estimates.

million square feet, including approximately 600,000 square feet of cleanroom space. It is anticipated to be the largest single cleanroom ever built in the United States.

- Fab supporting facilities would include an administration building, probe building, central utility plant, electrical substation, production support building, water and wastewater treatment facility, Opal wastewater treatment and renewal facility, projects office building, owner's warehouse, gas plant, water tanks, industrial wastewater retention basin, stormwater retention basin, surface parking, and parking garage.

Under the No Action Alternative, the CHIPS Incentives Program would not provide federal financial assistance for ID1 and no further work on the expansion would occur beyond the privately funded site preparation activities. Although Micron could potentially complete the project with non-federal funding over a span of several years depending on market conditions, to provide a meaningful comparison of environmental effects, the No Action Alternative assumes that absent federal financial assistance, no additional construction would occur after the date of the Preliminary Memorandum of Terms (April 25, 2024). Micron has secured the local and state permits and approvals needed for ground disturbance, clearing, and grubbing conducted up to the date of the Preliminary Memorandum of Terms. The No Action Alternative will be used to analyze the consequences of not undertaking the Proposed Action and will serve to establish a comparative baseline for analysis.

ES.4 SUMMARY OF ENVIRONMENTAL RESOURCES EVALUATED IN THE EA

NEPA and its implementing regulations require CPO to analyze the direct, indirect, and cumulative environmental effects of a proposed action and its alternatives on the natural and human environments, including ecological, aesthetic, historic, cultural, economic, social, and health effects, and to determine whether the effects would be significant by analyzing the potentially affected environment and the degree of the effects. This EA analyzes the effects of the Proposed Action and the No Action Alternative on the following resource areas: air quality; climate change and resiliency; water resources; cultural resources; biological resources; land use; noise; transportation; human health and safety; hazardous materials; environmental justice; socioeconomics; utilities and sustainability; waste; and geological resources.

ES.5 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

The EA analyzes the environmental consequences of the Proposed Action and the No Action Alternative on the resource areas identified above. Table ES-1 summarizes the potential effects on each resource area and whether best management practices (BMPs)[2] factor into the effects analysis for the alternatives, where applicable.

[2] BMPs are policies, practices, and measures that Micron will adopt to avoid, minimize, or mitigate potential environmental effects of various ID1 activities, functions, or processes.

TABLE ES-1 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Resource Area	No Action Alternative	Proposed Action
Air Quality	Minor – No significant effects through use of required emissions controls and BMPs.	Minor – No significant effects through use of required emissions controls and BMPs.
Climate Change and Resiliency	Minor – No significant effects through use of control equipment, BMPs, and climate commitments.	Minor – No significant effects through use of control equipment, BMPs, and climate commitments.
Water Resources	Minor – No significant effects.	Minor – No significant effects through use of BMPs and sustainability commitments.
Cultural Resources	No adverse effects.	Negligible, non-adverse construction effects. No adverse long-term effects.
Biological Resources	Negligible adverse effects.	Negligible to minor adverse temporary construction effects and long-term effects.
Land Use	No potential effects.	No potential effects.
Noise	Minor – No significant effects.	Minor – No significant effects through use of BMPs for construction.
Transportation	No potential effects.	Minor temporary construction effects and long-term effects.
Human Health and Safety	No significant adverse effects.	No significant adverse effects.
Hazardous Materials	Minor – No significant effects through use of required controls and BMPs.	Moderate – No significant effects through use of required controls and BMPs.
Environmental Justice	No potential effects.	No potential effects.
Socioeconomics	Moderate long-term beneficial effects from continuation of existing operations due to employment and income generation.	Minor temporary beneficial effects from construction-related employment and minor to moderate long-term beneficial effects due to employment, income generation, and economic activity.
Utilities and Sustainability	Minor – No significant effects.	Moderate – No significant effects through use of BMPs and sustainability commitments.

Resource Area	No Action Alternative	Proposed Action
Waste	Minor – No significant effects through use of required controls, BMPs, and sustainability commitments.	Moderate – No significant effects through use of required controls, BMPs, and sustainability commitments.
Geological Resources	No adverse effects.	Negligible construction effects and no long-term operational effects.

ES.6 PUBLIC INVOLVEMENT

CPO is issuing the Draft EA for a thirty (30) day public comment period, from July 10, 2024, through August 8, 2024. CPO will consider substantive comments on the Draft EA timely submitted during the public comment period.

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ACRONYMS AND ABBREVIATIONS

Acronym	Definition
ACGIH	American Conference of Governmental Industrial Hygienists
ACHD	Ada County Highway District
af	acre-foot
APE	area of potential effects
AVE	area of visual effect
BMP	best management practice
CAA	Clean Air Act
CEQ	Council on Environmental Quality
C.F.R.	Code of Federal Regulations
cfs	cubic feet per second
CGWA	Critical Groundwater Area
CHIPS	Creating Helpful Incentives to Produce Semiconductors
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CPO	CHIPS Program Office
$CuSO_4$	cupric sulfate (copper (II) sulfate)
CWA	Clean Water Act
dB	Decibel
dB(A)	A-weighted decibel
DCMI	Domestic, Commercial, Municipal, and Industrial
DOC	U.S. Department of Commerce
DRAM	dynamic random-access memory
DRE	destruction and removal efficiency
EA	Environmental Assessment

Acronym	Definition
EHS	Environment, Health, and Safety
EJ	Environmental Justice
ELG	effluent limitation guideline
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ERT	emergency response team
ESA	Endangered Species Act
°F	degrees Fahrenheit
fab	fabrication facility
FEC	Facility Emission Cap
FEMA	Federal Emergency Management Agency
FFRMS	Federal Flood Risk Management Standard
F-GHG	fluorinated greenhouse gas
GHG	greenhouse gas
GHGRP	Greenhouse Gas Reporting Program
gpm	gallons per minute
gpd	gallons per day
GSP	gross state product
GWMA	Groundwater Management Area
GWP	global warming potential
HBWC	health-based water concentration
HAP	hazardous air pollutant
HTF	heat transfer fluid
HVAC	heating, ventilating, and air conditioning
HVM	high-volume manufacturing

Acronym	Definition
Idaho Power	Idaho Power Company
IDAPA	Idaho Administrative Procedure Act
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IDHVM	Idaho High-Volume Manufacturing (Building)
IDP	Indirect Discharge Permit
IDWR	Idaho Department of Water Resources
IPCC	Intergovernmental Panel on Climate Change
IPDES	Idaho Pollutant Discharge Elimination System
IPUC	Idaho Public Utilities Commission
ISO	International Organization for Standardization
ITD	Idaho Transportation Department
K	erosion factor
LA50	A-weighted sound level exceeded for 50 percent of the measurement period
LEED	Leadership in Energy and Environmental Design
LEHD	Longitudinal Employer-Household Dynamics
LEPC	Local Emergency Planning Committee
Leq	equivalent sound level
LOS	level of service
LU	landscape unit
LV	large volume
MBTA	Migratory Bird Treaty Act
MCL	maximum contaminant level
MGD	million gallons per day
Micron Boise	Micron’s existing campus in Boise, Idaho, including headquarters offices and research and development facilities

Acronym	Definition
MMT	million metric tonnes
mph	miles per hour
MSA	Metropolitan Statistical Area
MT	metric tonnes
MTI	Micron Technology, Inc.
MW	Megawatt
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAICS	North American Industry Classification System
NEPA	National Environmental Policy Act
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NF_3	nitrogen trifluoride
NHPA	National Historic Preservation Act
NHT	National Historic Trail
NIOSH	National Institute for Occupational Safety and Health
NIST	National Institute of Standards and Technology
NOFO	Notice of Funding Opportunity
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NSPS	New Source Performance Standards
NSR	New Source Review
OSHA	Occupational Safety and Health Administration
OSM	off-site manufacturing
PFAS	per- and polyfluoroalkyl substances
PFHxS	perfluorohexane sulfonic acid

Acronym	Definition
PFNA	perfluorononanoic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
PM	particulate matter
PMT	Preliminary Memorandum of Terms
POTW	publicly owned treatment works
POU	point-of-use
PPE	personal protective equipment
PSD	Prevention of Significant Deterioration
R&D	research and development
RCRA	Resource Conservation and Recovery Act
REC	renewable energy certificate
RRR	reuse, recycle, and recovery
SDWA	Safe Drinking Water Act
SEMI	Semiconductor Equipment and Materials International
SGCN	Species of Greatest Conservation Need
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SIU	Significant Industrial User
SO_2	sulfur dioxide
SPCC	Spill Prevention, Control, and Countermeasure (Plan)
SSA	sole source aquifer
SWPPP	Stormwater Pollution Prevention Plan
TD	technology development
tpy	tons per year
TRI	Toxics Release Inventory

Acronym	Definition
TSCA	Toxic Substances Control Act
UPW	ultrapure water
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound
WBV	water bath vaporizer
WOTUS	Waters of the United States
WPA	Works Progress Administration
WRF	Water Renewal Facility
WWT	water and wastewater treatment
ZLD	zero liquid discharge

1. INTRODUCTION

1.1 BACKGROUND

The CHIPS Incentives Program (Program) was authorized by Title XCIX—Creating Helpful Incentives to Produce Semiconductors for America of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021, Pub. L. 116-283, as amended by the CHIPS and Science Act of 2022, Division A of Pub. L. 117-167 (together, the CHIPS Act or Act). The Program aims to boost semiconductor research, development, and production in America. It provides billions of dollars for semiconductor investment across the country, including high-tech production of semiconductors essential to the national security, manufacturing, critical infrastructure, and technology leadership of the United States. More specifically, the Act provides $50 billion to the U.S. Department of Commerce (DOC) to help revitalize the U.S. semiconductor industry, including $39 billion dedicated to semiconductor manufacturing initiatives. The Act will bolster American leadership in semiconductors, promote innovation in resilient supply chains, and advance technologies of the future. CHIPS Act financial incentives will be provided for semiconductor research, development, manufacturing, and workforce development in the United States. The Program is administered by the CHIPS Program Office (CPO) within the National Institute of Standards and Technology (NIST), an agency of DOC.

The CHIPS Incentives Program—Commercial Fabrication Facilities Notice of Funding Opportunity (NOFO) was published in February 2023 and amended in June 2023. The NOFO solicits applications for the construction, expansion, or modernization of commercial facilities for the front- and back-end fabrication of leading-edge, current-generation, and mature-node semiconductors; commercial facilities for wafer manufacturing; and commercial facilities for materials used to manufacture semiconductors and semiconductor manufacturing equipment, provided that the capital investment equals or exceeds $300 million. The potential amount available under the NOFO is up to $38.22 billion for direct funding and up to $75 billion in direct loan or guaranteed principals.

A potential applicant must be a "covered entity" as defined by the NOFO to be eligible to receive CHIPS incentives. An applicant is required to complete a multi-step application process as outlined in the NOFO. One step of this application process is the completion of an Environmental Questionnaire that includes 26 questions on the project scope, local environment, potential for environmental effects, and permits required for construction of improvements and operation of the project. CPO conducts a merit review of any application that meets the eligibility requirements outlined in the NOFO, including an evaluation of the applicant's responses to the Environmental Questionnaire. If an applicant proceeds through merit review, CPO provides the applicant with a Preliminary Memorandum of Terms (PMT) for review and negotiation prior to or upon entering the due diligence phase for the application process.

The National Environmental Policy Act (NEPA), 42 U.S.C. § 4321 *et seq.*, requires federal agencies to consider the potential consequences of major federal actions on both the natural and human environments as part of their planning and decision-making processes. CPO is responsible for completion of the NEPA process before federal financial assistance can be disbursed under the Program.

1.2 PROPOSED PROJECT

Micron currently owns and operates headquarters offices and research and development facilities in Boise, Idaho (herein referred to as "Micron Boise" or the "Facility"). Micron plans to invest in leading-edge high-volume manufacturing (HVM) through the construction and operation of a new high-volume semiconductor fabrication facility (fab) at Micron Boise, referred to as "ID1" (the Proposed Project). ID1 would be the first new memory manufacturing fab built in the United States in 20 years, ensuring domestic supply of leading-edge memory required for market segments such as automotive and data centers, fueled by accelerating adoption of artificial intelligence and 5G technology.

Maps showing the location of Micron Boise and the proposed site for the ID1 expansion are shown in Figure 1-1 and Figure 1-2. Beginning in 2024, Micron would begin constructing the following components of ID1:[3]

- A leading-edge fab, referred to as the Idaho High-Volume Manufacturing (IDHVM) Building. The new four-story HVM fab would produce advanced dynamic random-access memory (DRAM), the central feature of ID1. It would have a footprint of about 1.2 million square feet, including approximately 600,000 square feet of cleanroom space. It is anticipated to be the largest single cleanroom ever built in the United States.

- Supporting facilities for the fab would include an administration building, probe building, central utility plant, electrical substation, production support building, water and wastewater treatment (WWT) facility, Opal wastewater treatment and renewal facility, projects office building, owner's warehouse, gas plant, water tanks, industrial wastewater retention basin, stormwater retention basin, parking garage, and surface parking lots.

A map of the ID1 components is shown in Figure 1-3.

Under the Proposed Action, CPO would provide federal financial assistance to Micron for the construction and installation of ID1.

[3] Project facilities described and shown in the EA are based on currently best available design information. Refinements may occur during more detailed design but are not anticipated to result in substantial changes to the project or the environmental effects analyzed in the EA. Quantities provided herein are estimates.

FIGURE 1-1 LOCATION OF EXISTING MICRON BOISE AND PROPOSED ID1

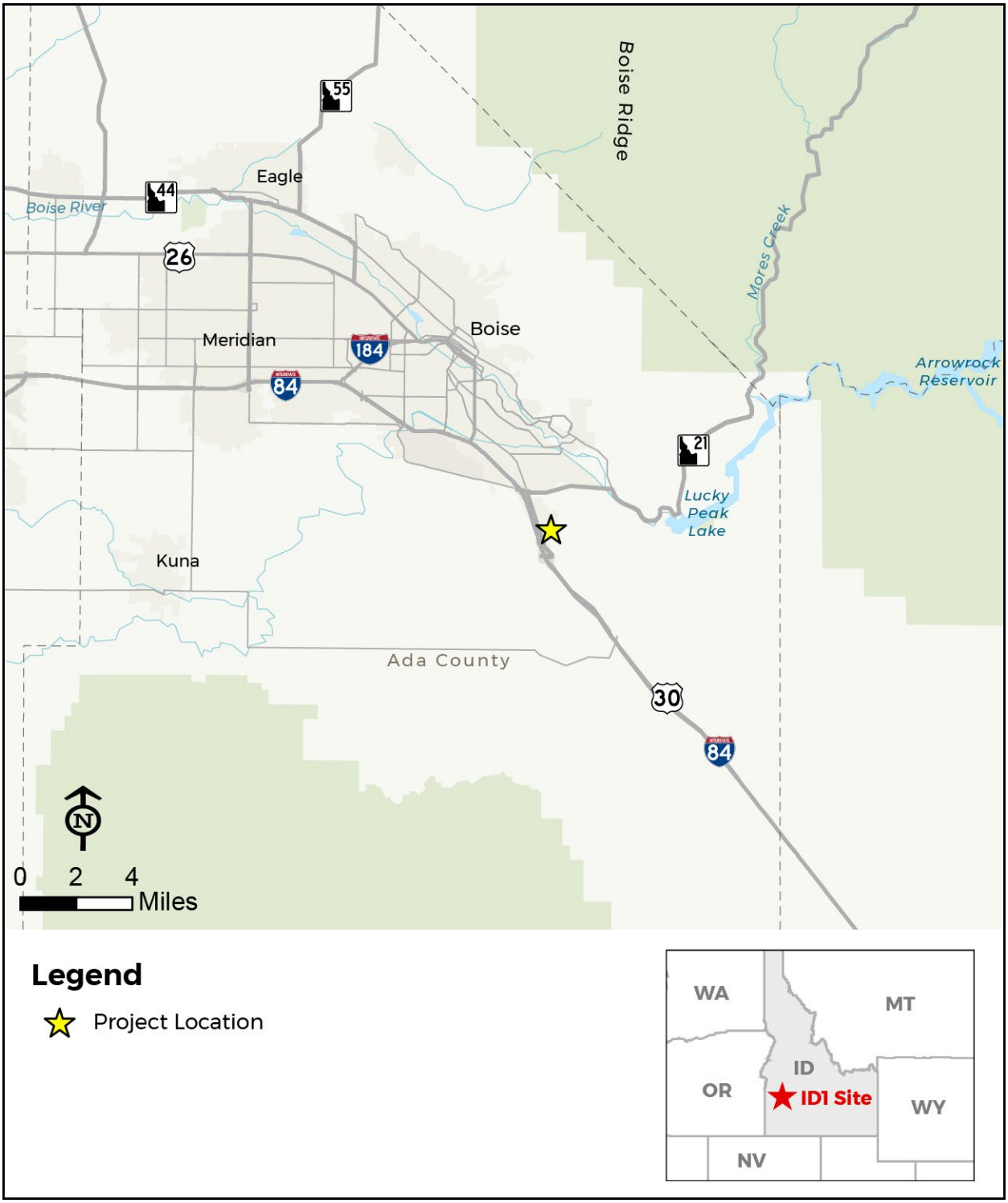


FIGURE 1-2 ID1 SITE MAP

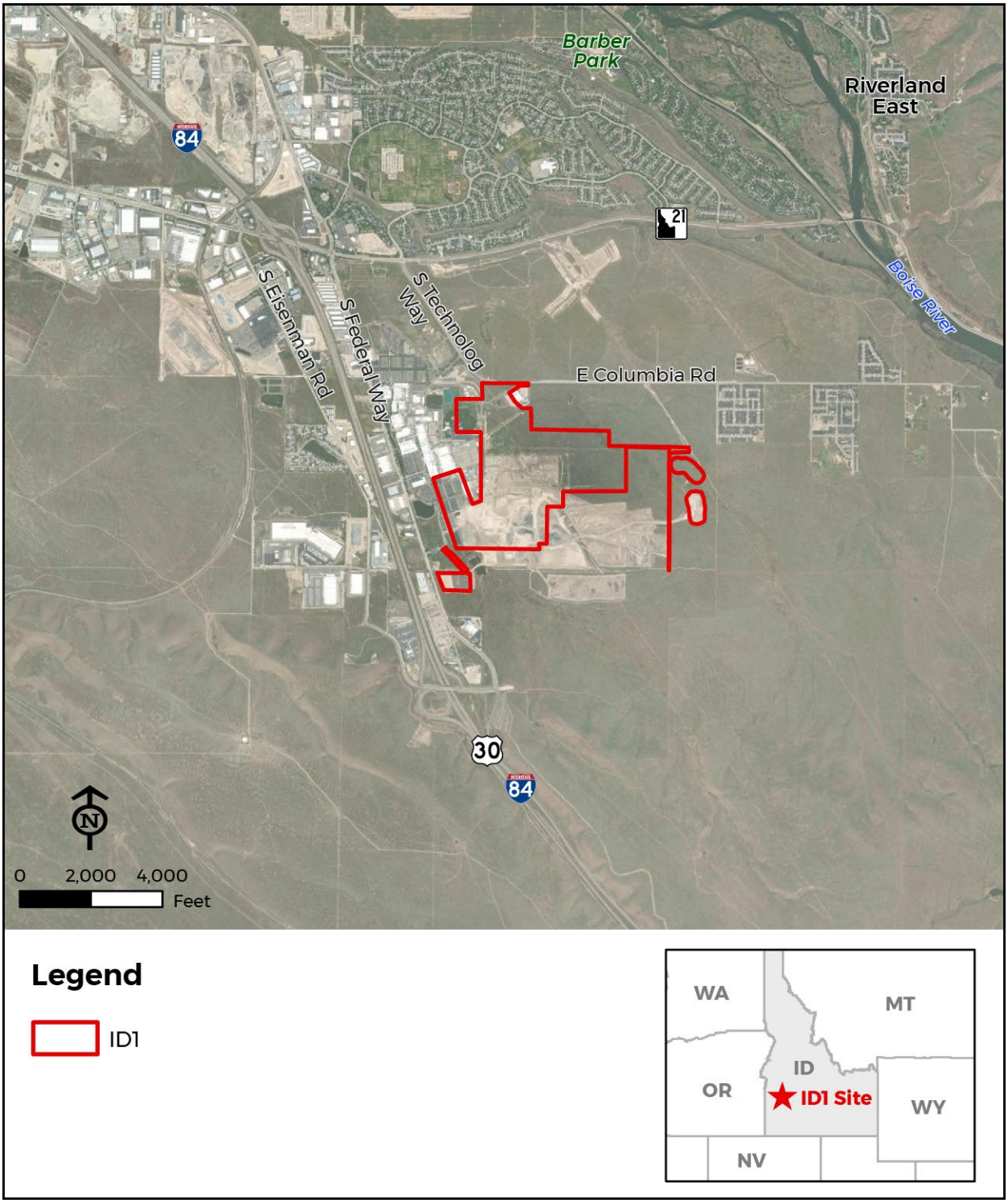
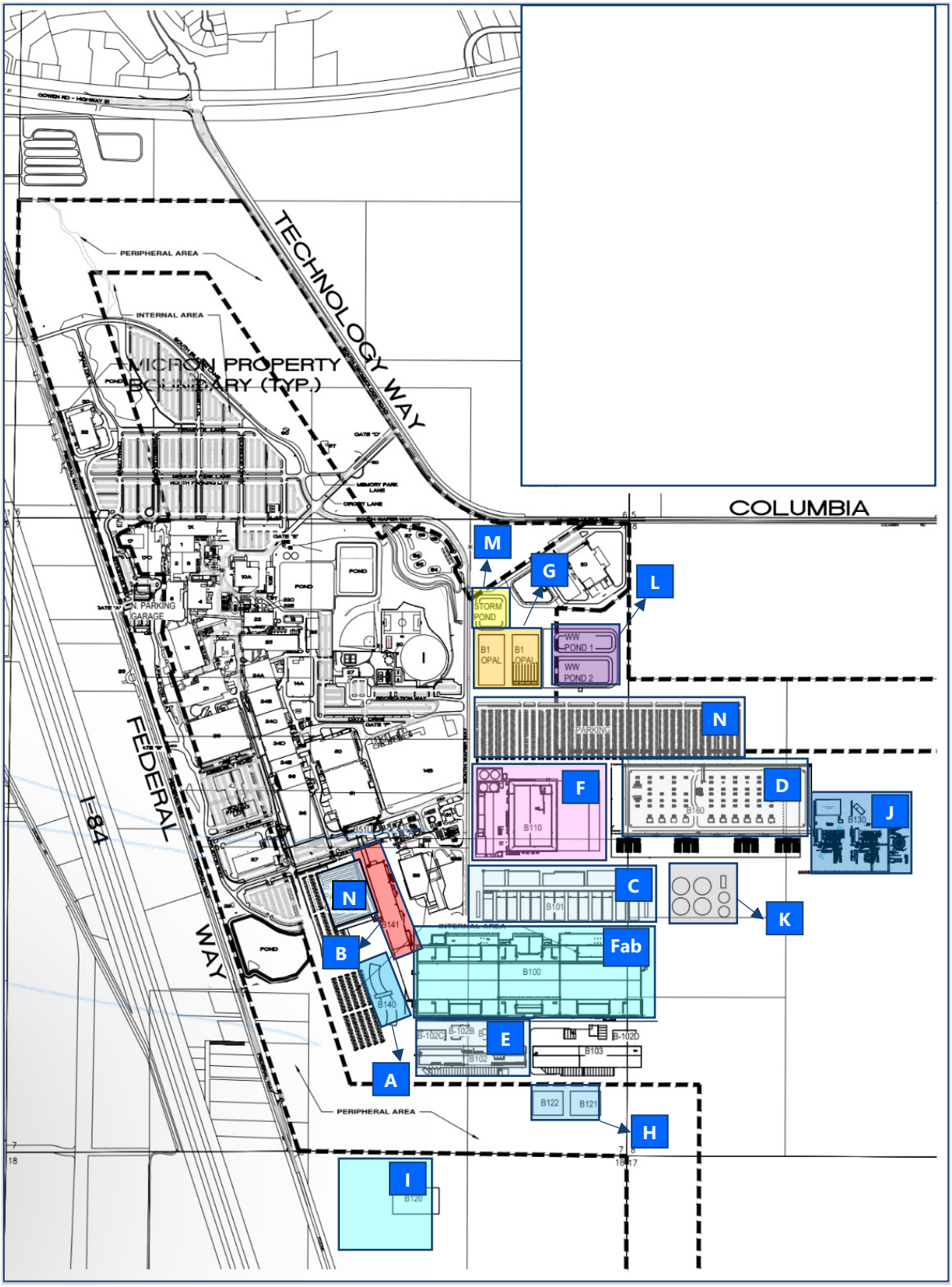


FIGURE 1-3 MAP OF ID1 COMPONENTS



The Proposed Project layout and components shown in Figure 1-3 are based on currently best available design information. Refinements may occur during more detailed design but are not anticipated to result in substantial changes to the project or the environmental effects analyzed in the EA.

Table 1-1 identifies the components of ID1 as depicted in Figure 1-3. Additional details on the ID1 components are provided in Section 2.2.2 (Proposed Action).

TABLE 1-1 ID1 COMPONENTS

Identifier	ID1 Component
Fab	Idaho High-Volume Manufacturing Building (fab)
A	Administration building
B	Probe building
C	Central utilities plant (CUP)
D	Electrical substation yard
E	Production support building
F	Water and wastewater treatment (WWT) facility
G	Opal wastewater treatment and renewal facility
H	Projects office building
I	Owner's warehouse
J	Gas plant
K	Water tanks
L	Industrial wastewater retention basin
M	Stormwater retention basin
N	Surface parking and parking garage

1.3 PURPOSE AND NEED

The purpose of CPO's Proposed Action is to respond to Micron's application for federal financial assistance for the Proposed Project under the Program. The need for CPO's Proposed Action is to fulfill the agency's statutory responsibilities under the CHIPS Act, including the requirements of 15 U.S.C. § 4652 to incentivize investment in facilities and equipment in the United States for the fabrication, assembly, testing, production, or research and development of semiconductors, materials used to manufacture semiconductors, or semiconductor manufacturing equipment.

1.4 SCOPE OF ENVIRONMENTAL ANALYSIS

CPO has prepared this Environmental Assessment (EA) on behalf of NIST pursuant to NEPA, 42 USC § 4321 *et seq.*, and its implementing regulations, 40 C.F.R. Parts 1500-1508. The EA analyzes the direct, indirect, and cumulative environmental effects of the Proposed Action and the No Action Alternative to provide sufficient evidence and analysis for CPO to determine whether to prepare an environmental impact statement (EIS) or a finding of no significant impact (FONSI).

The EA analyzes the effects of the Proposed Action and the No Action Alternative on the natural and human environments, including ecological, aesthetic, historic, cultural, economic, social, and health effects, to determine whether the effects would be significant by analyzing the potentially affected environment and the degree of the effects. Specifically, the EA analyzes effects on the following resource areas: air quality; climate change and resiliency; water resources; cultural resources; biological resources; land use; noise; transportation; human health and safety; hazardous materials; environmental justice; socioeconomics; utilities and sustainability; waste; and geological resources.

Site preparation for ID1 construction is currently ongoing with non-federal financial support. Therefore, certain past, current, and planned activities at Micron Boise that would not be supported by federal financial assistance are outside the scope of the Proposed Project but may still bear on the analysis of the Proposed Action. This EA identifies and refers to Micron Boise's other activities and features (under the terms Micron Boise or Facility) to the extent necessary to analyze the direct, indirect, or cumulative effects of the Proposed Action. This EA describes the affected environment as the existing conditions as of April 25, 2024, and analyzes the No Action Alternative as no change to the existing conditions because without federal financial assistance, Micron would not build ID1.

1.5 AGENCY DECISION

CPO's evaluation of the environmental effects of the Proposed Action will inform its decision on whether to prepare a FONSI or an EIS, including any enforceable mitigation requirements or commitments that may need to be undertaken.

On April 25, 2024, DOC and Micron signed a non-binding PMT for DOC to provide up to roughly $6.14 billion in direct funding under the CHIPS Act to Micron to boost U.S. competitiveness in leading-edge memory semiconductor production through Micron's planned investments in semiconductor production in New York and Idaho. Under the PMT, part of the proposed CHIPS Act funding would support Micron's planned $25 billion investment in a DRAM fab in Idaho (the subject of this EA) which would be co-located with Micron Boise's research and development (R&D) facilities.

The NEPA process is a component of CPO's multi-faceted project review process prior to disbursing federal financial assistance pursuant to final awards under the CHIPS Act. A completed NEPA decision document is required for each project prior to any disbursement of financial assistance. The outcome of CPO's NEPA review does not dictate CPO's separate decision whether to disburse federal financial assistance under the CHIPS Incentives Program.

1.6 PUBLIC AND AGENCY INVOLVEMENT AND INTERGOVERNMENTAL COORDINATION

In addition to the applicant, CPO involved the public, state, tribal, and local governments, and other relevant agencies to the extent practicable in preparing this EA. CPO sent consultation letters to the state agencies and tribal organizations listed in Section 8 (Distribution List). CPO also sent an email to the project stakeholder email list notifying stakeholders of the availability of the Draft EA and published a legal notice in English and Spanish in the *Idaho Statesman* newspaper on July 10, 2024.

The Draft EA will be available for public review and comment for thirty (30) days from July 1, 2024, through August 8, 2024. CPO will consider substantive comments on the Draft EA timely submitted during the public comment period.

The Final EA will be made available on the CPO NEPA website at https://www.nist.gov/chips/national-environmental-policy-act-nepa.

2. ALTERNATIVES

2.1 MICRON BOISE BACKGROUND

Micron Boise is composed of Micron's corporate headquarters and technology development (TD) department. The Facility's operational workforce is approximately 5,500 employees. Nearly 2,500 employees are represented within functions such as legal, human resources, information technology, procurement, laboratories, finance, and sales, among others. The TD department is composed of approximately 3,000 additional employees and is currently Micron Boise's primary functional department and R&D hub, responsible for advancing and improving existing Micron technologies or creating entirely new ones through research, experimentation, and innovation, and for developing and transferring technology to HVM. The TD department has a dedicated 250,000 square feet of cleanroom space to enable pathfinding and the development of new technology nodes for both NAND flash memory and DRAM. TD employees focus on pathfinding and strategy, advanced memory, non-volatile memory engineering,[4] DRAM engineering, process development engineering, yield technology, and data science, mask, and materials characterization, among other areas. Under the Proposed Action, Micron Boise would apply CHIPS Act financial assistance to develop an HVM fab to improve efficiency across the Facility's R&D and manufacturing operations, reducing lags in technology transfer and cutting time-to-market for leading-edge memory products.

There are 10 primary functional areas of the Micron Boise TD hub, including photolithography (photo), wet etch, dry etch, chemical mechanical planarization, diffusion, physical vapor deposition, chemical vapor deposition, real time defect analysis, implant, and metrology. Additional on-site functional areas across the Micron Boise TD hub include facilities (water, operations, tools install, gas and chemical services, and trades), analytical and quality labs, fab support (pump, abatement, and chiller), and probe.

Micron Boise receives domestic water from the Veolia Boise Idaho Municipal Water Operations (Veolia) municipal water system and currently utilizes approximately 3.97 million gallons per day (MGD) for all on-site purposes. There are three main water sources to meet the Facility's water needs. Various groundwater rights are pumped with on-site wells to feed the Facility's raw water ring main, which is used to generate ultrapure water (UPW). Generally, UPW is reused until reuse in the manufacturing process is no longer possible. Once reused water can no longer meet UPW standards, it is collected, treated, and reused in the Facility's non-potable reuse system for use in systems such as cooling towers, fire suppression, and scrubbers. Micron also uses various Boise River and storage water rights for industrial and irrigation purposes and obtains potable water from the water utility for the City of Boise. Water that is used on site is discharged to the City of Boise Water Renewal Facilities through monitored sanitary outfalls or permitted, pre-treated industrial wastewater outfalls. Micron Boise currently discharges approximately 3.7 MGD to the City of Boise Water Renewal Facilities.

Micron Boise is powered using electricity and natural gas. Electricity is supplied to the Facility by Idaho Power Company (Idaho Power). Natural gas is supplied to the Facility by Intermountain Gas

[4] Non-volatile memory or non-volatile storage is a type of computer memory that can retain stored information even after power is removed.

Company. High-capacity natural gas supply lines and electrical connection infrastructure are in place to support Micron Boise.

Additional water and energy demand and wastewater discharge that would be anticipated in connection with operation of ID1 is discussed in Sections 2.2.2 (Proposed Action), 3.4 (Water Resources), and 3.14 (Utilities and Sustainability).

Micron Boise maintains a safety, health, and environmental program that includes an emergency response and crisis management system. The Facility's emergency response team (ERT) partners with Ada County's Local Emergency Planning Committee (LEPC) regarding specific chemicals, hazards, and associated emergency response planning. Micron ERT employees partner with community emergency services, including medical responders, the fire department, hazmat response personnel, and the county LEPC, to conduct drills and emergency response related activities.

Together with this program, Micron Boise maintains a detailed hazardous waste contingency plan, which is designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water. Copies of the contingency plan and revisions are submitted to local police departments, fire departments, hospitals, and state agencies and LEPCs that may be called upon to provide emergency services. Similarly, the Facility's ERT evaluates the applicability of Occupational Safety and Health Administration (OSHA) process safety management and U.S. Environmental Protection Agency (EPA) risk management plan regulatory standards and requirements and complies with applicable EPA reporting requirements under the Emergency Planning and Community Right-to-Know-Act (EPCRA).

2.2 ALTERNATIVES CARRIED FORWARD FOR ANALYSIS

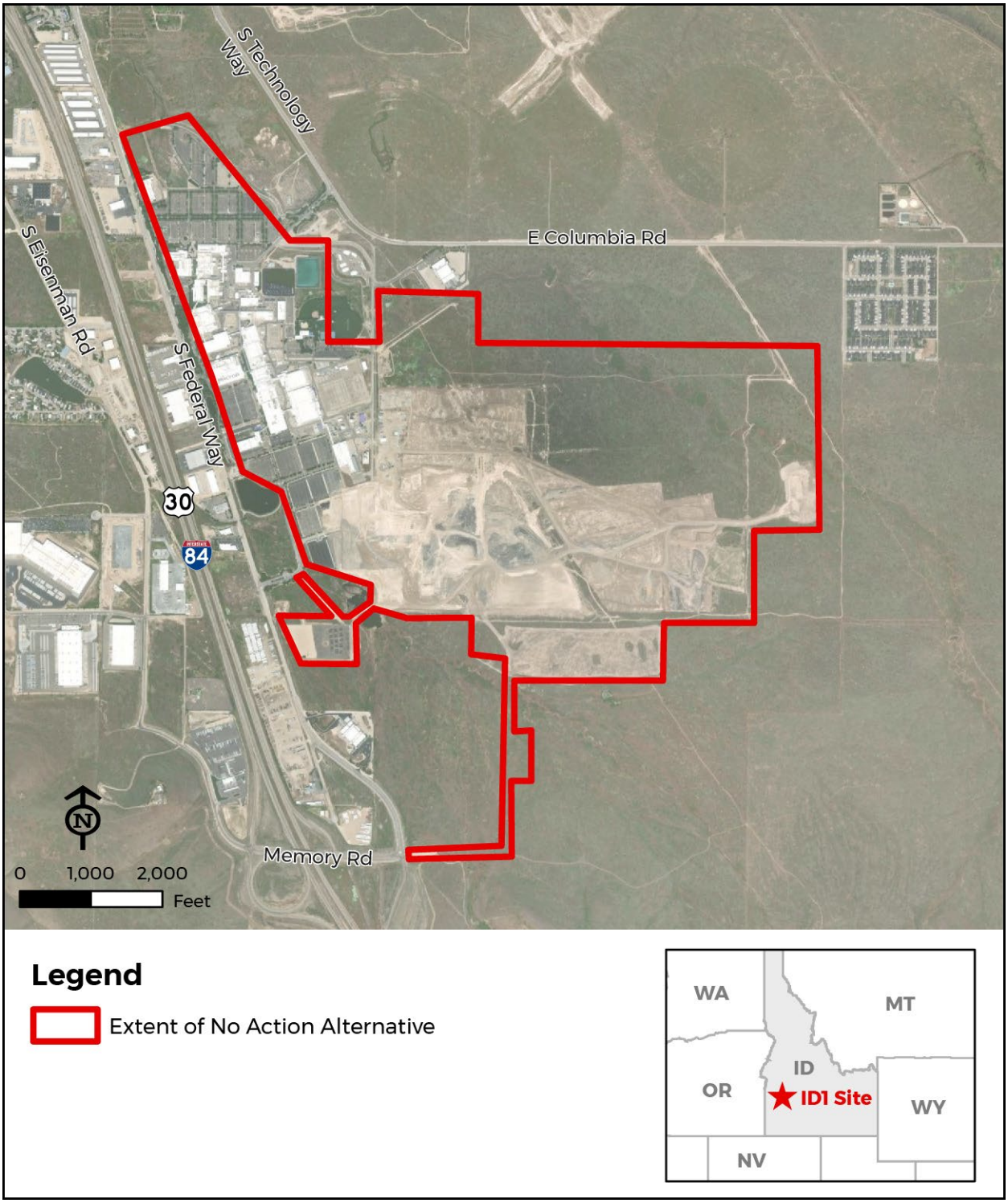
Based on the purpose and need statement in Section 1.3, CPO identified the following two alternatives to be analyzed in the EA: the No Action Alternative and the Proposed Action.

2.2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, the CHIPS Incentives Program would not provide federal financial assistance for ID1 and no further work on the expansion would occur beyond the privately funded site preparation activities. Although Micron could potentially complete the project with non-federal funding over a span of several years depending on market conditions, to provide a meaningful comparison of environmental effects, the No Action Alternative assumes that absent federal financial assistance, no additional construction would occur after the date of the PMT (April 25, 2024).

The No Action Alternative will be used to analyze the consequences of not undertaking the Proposed Action and will serve to establish a comparative baseline for analysis. Figure 2-1 shows the boundary of the site preparation activities, including ground disturbance, clearing, and grubbing conducted up to the date of PMT. Micron has secured the local and state permits and approvals needed for this work.

FIGURE 2-1 EXTENT OF NO ACTION ALTERNATIVE



2.2.2 PROPOSED ACTION

Under the Proposed Action, CPO would provide federal financial assistance to Micron for the construction and installation of semiconductor manufacturing equipment, tools, and supporting infrastructure needed to support ID1. Beginning in 2024, Micron would begin constructing the following components of ID1 (Figure 1-3):

- A leading-edge fab: The new four-story Idaho HVM fab (the IDHVM Building) would produce advanced DRAM memory, the central feature of ID1. It would have a footprint of about 1.2 million square feet, including approximately 600,000 square feet of cleanroom space. It is anticipated to be the largest single cleanroom ever built in the United States.
- Supporting facilities:

  A. Administration building: An approximately 440,000-square-foot building would provide office space and other accessory amenities such as a cafeteria, wellness center, and fitness center for the approximately 1,750 new employees Micron anticipates adding in connection with ID1.

  B. Probe building: An approximately 670,000-square-foot building would support the fab. Approximately 85,000 square feet on the upper floor would be cleanroom space where functionality testing on silicon wafers would be completed before the wafers are shipped off-site to be assembled into a package and then tested for full functionality.

  C. Central Utilities Plant: An approximately 400,000-square-foot land area consisting of multiple individual utility plant modules would house the heating, cooling, compressed air, electrical equipment, and emergency generators that would serve the surrounding buildings.

  D. Electrical substation yard: An Idaho Power electrical substation yard would supply ID1 with electrical needs for full operation.

  E. Production support building: An approximately 440,000-square-foot building would store and dispense specialized chemicals and gases for manufacturing inputs that enable wafer production.

  F. WWT facility: An approximately 340,000-square-foot facility would ensure incoming water meets Micron's high-purity specifications for manufacturing, provide treatment for on-site reuse, and ensure the outgoing wastewater meets quality requirements for treatment at a water treatment and renewal facility (see Opal wastewater treatment facility below). Water sources include on-site groundwater and the Veolia municipal water system. Micron Boise's operations may also use recycled water received from the water renewal facility.

  G. Opal wastewater treatment and renewal facility: The Opal facility would provide further wastewater treatment for ID1 activities and return water for reuse to meet ID1's additional water demand. The Opal facility would be owned by Micron and operated by a third party.

H. Projects office building: An approximately 55,000-square-foot building would provide workstation and collaboration space for Facility employees.

I. Owner's warehouse: An approximately 240,000-square-foot building would support the Facility's increased manufacturing capability.

J. Gas plant: Two 185-foot-tall columns and cold box units would separate oxygen, nitrogen, and other gases from ambient air. Those gases would be used in the HVM fab and existing Facility R&D operations.

K. Water tanks: Would provide water collection prior to treatment in the WWT facility to ensure the manufacturing tools have the volume and flows required for HVM.

L. Industrial wastewater retention basin: Would provide an alternative collection area if incoming treated water does not meet specifications or if outgoing water chemistry or volume exceeds Micron's standards for delivery to the Opal facility.

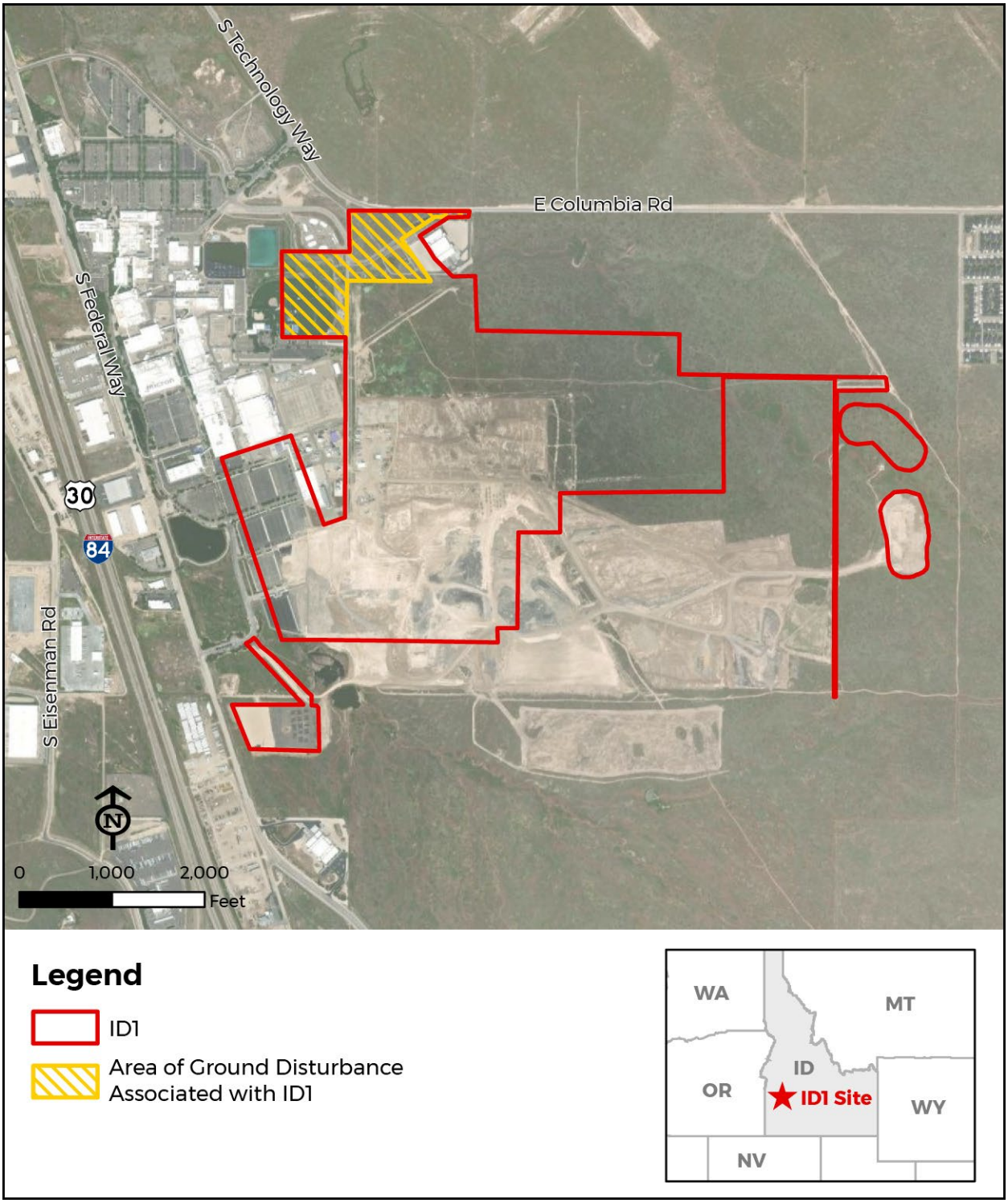
M. Stormwater retention basin: Would collect surface water runoff for on-site infiltration, evaporation, and irrigation.

N. Surface parking and parking garage: Approximately 6,000 additional parking spaces would be added at Micron Boise, including: 1) a large surface parking lot north of the electrical substation yard with approximately 3,000 additional parking spaces, which would accommodate construction, vendors, and Micron employees; and 2) an approximately 3,000-space parking garage, which would be located adjacent to the Administration and Probe buildings to accommodate additional and existing Micron TD employees.

Micron Boise comprises approximately 700 acres of developed or prepared industrial land, which Micron previously cleared and grubbed using private funding. The Proposed Action would include an approximately 28-acre area of additional ground disturbance, grubbing, and site preparation activities (Figure 2-2). This area is moderately disturbed by previous development and contains no suitable habitat for protected species. A cultural resources inventory of this area found no cultural resources (ARH 2023; ARH 2024).

It is anticipated that concrete fab shell completion, pour completion, and tools installation for ID1 would be completed in the Spring of 2025, Summer of 2025, and Spring of 2026, respectively. It is anticipated that the first wafer from ID1 would be produced in the Summer of 2026.

FIGURE 2-2 AREA OF NEW GROUND DISTURBANCE UNDER PROPOSED ACTION



MTI would pursue several sustainability measures at ID1 and would focus on greenhouse gas (GHG) emissions, energy, water, and waste. For emissions, MTI has committed to net zero GHG emissions from operations (Scope 1) and purchased energy use (Scope 2) by 2050. To support this goal, MTI has committed to a 42 percent absolute reduction of Scope 1 emissions by 2030 from the 2020 baseline year. MTI also has announced a public goal to achieve 100 percent renewable energy for electricity consumption in the U.S. by the end of calendar year 2025. To meet this goal, MTI may use a combination of methods including physical and virtual power purchase agreements, renewable energy certificates (RECs), green tariffs, and on-site solar. MTI is also focused on improving water conservation and has committed to achieving 75 percent water conservation through on-site water recycling and reuse activities as well as community water restoration projects. Finally, MTI is committed to 95 percent reuse, recycling, and recovery of waste, including emphasis on waste minimization and zero hazardous waste to landfill by the end of calendar year 2030. MTI has also committed to pursue designs consistent with Leadership in Energy and Environmental Design (LEED) Silver and/or Gold certifications for the buildings constructed as part of ID1. Additional information is available in Micron's 2024 Sustainability Report.

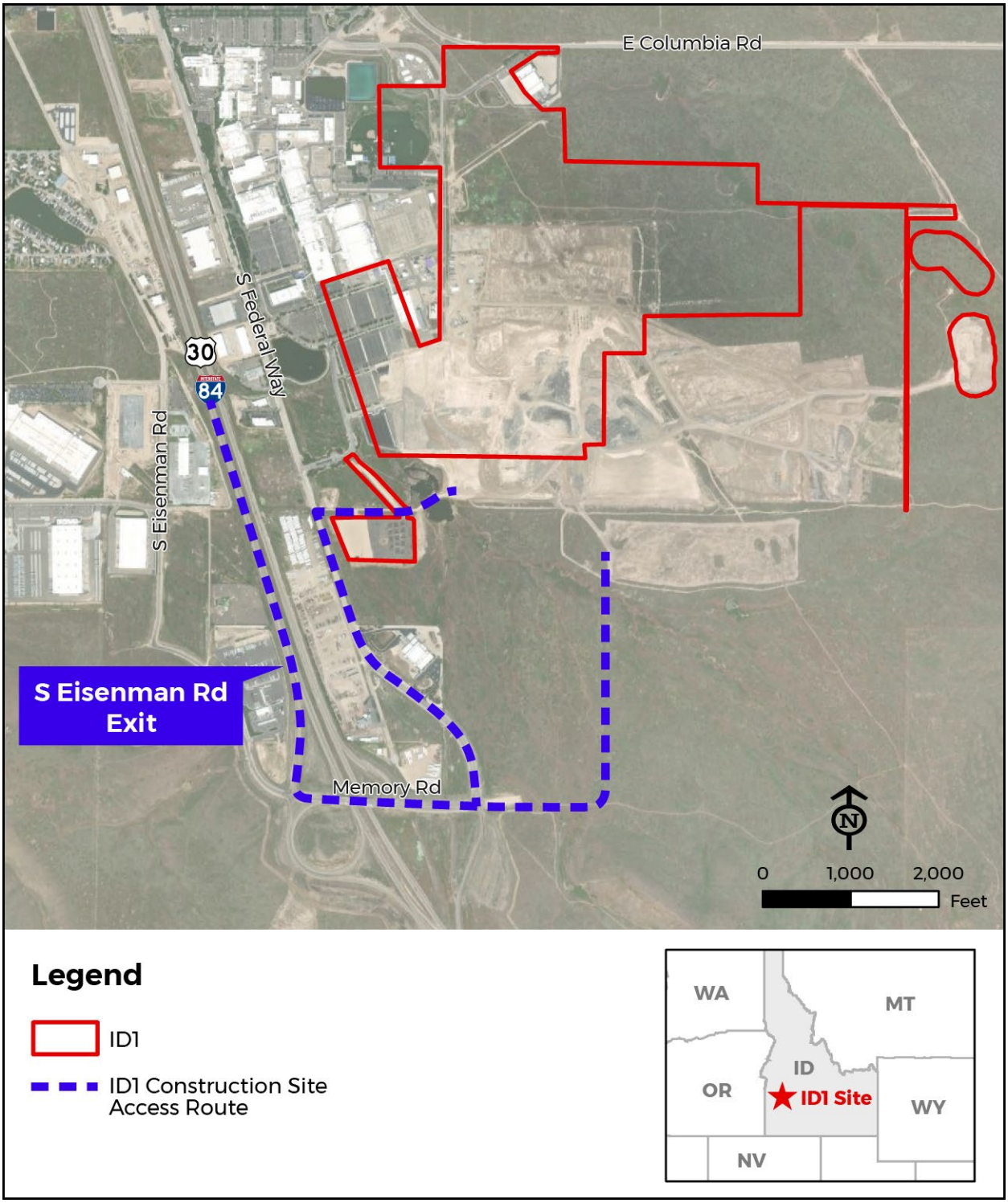
Construction of ID1 would require approximately 4,700 construction workers on site daily at the peak of the construction schedule. Off-site manufacturing (OSM), in multiple other states, would be utilized to provide efficiency in building and maintaining quality. OSM involves the pre-fabrication of certain construction materials that can be put in place on site. Use of OSM labor is estimated to reduce the demand for on-site personnel by almost 1,000 workers. Information regarding the local market suggests approximately 2,000 local workers might be available for ID1, which would help reduce the number of construction crews traveling to Boise from other geographical locations.

During ID1 construction, site access traffic would flow primarily off the Interstate 84 (I-84) Eisenman Road exit to the construction access road located south of Micron Boise and along South Federal Way (Figure 2-3). Construction employee and equipment traffic would occur throughout the active construction period and would temporarily affect traffic through increased activity along the I-84 Eisenman Road exit and travel along the southernmost portion of South Federal Way and potentially other surface access routes. Total construction worker activity and travel would vary throughout the period of active construction. The implementation and maintenance of traffic plans would ensure safety during various phases of construction.

ID1 operations would commence when power and clean dry air is available. The tools would be tested to verify proper functionality and then production of memory chips would begin. Production is anticipated to begin in 2025. ID1 operations would include raw material receiving, memory chip manufacturing, packaging, and final product storage and shipping.

Maintenance activities would include scheduled maintenance to replace consumable parts, refreshing of gas and chemical supplies, and other activities to keep the tooling functioning properly. Unscheduled maintenance also would be performed to repair tooling and systems as needed. Continuous improvement programs would be implemented to optimize maintenance. All ID1 buildings would have loading docks for deliveries associated with their functions.

FIGURE 2-3 CONSTRUCTION TRAFFIC ACCESS MAP



To operate ID1 at full capacity, Micron Boise would require 2,000 additional employees by 2030, when ID1 would be expected to be in full operation, bringing the Facility's total operational workforce to approximately 7,500 employees. At full operation, ID1 would be anticipated to increase the number of employee vehicles traveling to the Facility by 2,000 per day and the number of delivery trucks by 2,000 per month. There would be five employee shifts and worker traffic would be split throughout the day and not occur at one time. One shift would work Monday through Friday from 8 a.m. to 5 p.m. Four shifts would work overlapping 11.5-hour shifts to support the continual 24-hour/seven days per week operation. No overlapping traffic is anticipated between shifts because incoming workers would be at the Facility before the shift hour begins and outgoing workers would leave the facility after the shift hour ends. ID1 also would indirectly create about 15,000 community jobs with suppliers, contractors, and other support roles by the end of the decade.

Micron has confirmed that its solid and hazardous waste vendors would have the capacity and ability to manage the projected waste types and volumes at full ID1 operation. Waste minimization would occur through raw material usage and process optimization with the target to achieve a 95 percent reuse, recycle, or recovery rate by the end of calendar year 2030 (Micron 2023). Process byproducts or wastes would be reused, recycled, or recovered in accordance with regulatory requirements and BMPs.

Chemicals used in the manufacturing process would be delivered to Micron Boise by truck utilizing a variety of packaging methods, including tanks, drums, and pallets. Chemicals delivered to Micron Boise would be managed through an internal chemicals approval and management system. Micron Boise maintains an Accidental Spill Prevention and Control Plan, Toxic Organics Management Plan, and Spill Prevention, Control, and Countermeasure (SPCC) Plan to ensure procedures are in place to address any incidents. Should an emergency event occur, an on-site ERT would be deployed to assess, manage, and respond to the situation. Micron Boise is currently a large quantity generator of hazardous waste. ID1 would retain the same generator category because it would meet the relevant regulatory thresholds.

Many different chemicals would be used in ID1's manufacturing processes. Micron estimates that approximately 3 million pounds of acids (e.g., hydrofluoric acid, nitric acid, sulphuric acid), approximately 2 million pounds of caustics (e.g., ammonium hydroxide), approximately 200,000 pounds of various bulk and specialty gasses (e.g., nitrous oxide, nitrogen trifluoride, helium), and approximately 1 million pounds of various solvents (e.g., isopropanol, cyclohexanone, n-butyl acetate) would be delivered monthly to the site (on average). For a more detailed list of chemicals and amounts that would be used, see Section 3.11.

Per- and polyfluoroalkyl substances (PFAS) are a group of manufactured fluorinated organic chemicals. PFAS are widely used due to their unique characteristics, such as water-, heat-, oil-, and chemical-resistant qualities. There are thousands of different types of PFAS used in a wide range of industries. There is growing international attention on PFAS due to their potential health effects and persistence in the environment. PFAS are used in the manufacture of semiconductors, including: (1) fab infrastructure, tools, and parts; (2) fabrication process chemistries and indirect fabrication support needs; and (3) substances used to create packaging materials for products that incorporate semiconductors. Fabrication process chemistries that contain PFAS and may come into contact with the wafer during the fabrication process include photolithography, plasma etch, and wet chemicals. Chemicals that support the fabrication process, but that are unlikely to come into contact with the wafer or be contained in wastewater discharges, include heat transfer fluids

(HTFs), lubricants, greases, pump fluids, refrigerants, or fire-fighting foam and gases. PFAS also may be present in chemical delivery systems and shipping packaging delivered to the facility. There are no known alternatives for many of these uses. ID1 would incorporate Micron's existing approach to managing PFAS use. Sections 3.4, 3.10, 3.11, and 3.15 of this EA discuss potential effects of PFAS use in connection with ID1.

ID1 also would incorporate Micron Boise's existing waste management strategy, which focuses on maximizing reuse, recycle, or recovery strategies in accordance with regulatory requirements and practices. Waste streams such as lab waste, cylinders, expired materials, aerosols, glues, resins, and certain acids would be incinerated at approved permitted disposal facilities. Other waste streams such as bulk solvent, drummed solvent, and contaminated debris would be reused or recovered via fuels blending or energy recovery at approved permitted cement kilns that allow waste-derived fuel to run the kiln. Additionally, certain drummed acids and metal-bearing acid waste streams would be sent to an approved permitted facility for acid and metals reuse or recovery. Mercury waste and other universal waste streams would be shipped to permitted recyclers. The waste facilities to which Micron sends hazardous waste would be reviewed and approved based on a systematic due diligence process standardized by MTI's Global Environmental Health and Safety team.

In addition to Micron Boise's current water demand and discharges and energy use described in Section 2.1, operation of ID1 is anticipated to result in the additional quantities summarized in Table 2-1 below. These resource demands and discharges are discussed further in Sections 3.4 and 3.14.

TABLE 2-1 ID1 ANTICIPATED ADDITIONAL RESOURCE DEMAND AND DISCHARGE FOR PROPOSED ACTION

Resource	Average Demand	Average Discharge
Water (All Sources)	5.5 million gallons per day (MGD)	2.9 MGD
Water (Municipal)	3.0 MGD	Included in Water (All Sources) cell above
Electrical	10.2 million kilowatt hours per day (M kwh/day)	N/A
Natural Gas	3.02 million standard cubic feet per day (M scf/day)	N/A

2.3 BEST MANAGEMENT PRACTICES INCLUDED IN PROPOSED ACTION

Table 2-2 identifies best management practices (BMPs) for construction and operation activities at Micron Boise as well as for ID1. BMPs are policies, practices, and measures that Micron will adopt to avoid, minimize, or mitigate potential environmental effects of various ID1 activities, functions, or processes.

BMPs may take the form of (1) measures or practices specific to ID1, or (2) ongoing, regularly occurring Micron Boise practices. BMPs are discussed under specific resource areas, as relevant, in Section 3. Micron's implementation of BMPs will be subject to CPO monitoring.

TABLE 2-2 BEST MANAGEMENT PRACTICES

Resource Area	Activity	BMP	Benefits
Air Quality	Construction	BMPs to prevent and minimize particulate matter or dust from becoming airborne. Examples of these practices include, but are not limited to, the following, where practical: • Use of water to control dust during demolition of existing buildings or structures, construction operations, the grading of roads, or the clearing of lands; • Application of other substrates besides water for dust control as needed; • Installation and use of hoods, fans, and fabric filters or similar systems to enclose and vent dusty materials. Adequate containment methods are employed during sandblasting or other operations; and covering of open-bodied trucks transporting materials likely to generate airborne dusts.	Controls the potential for fugitive dust emissions and controls off-site transport of fugitive dust.
Air Quality	Construction; R&D Operations; HVM Operations	Chemicals are properly contained, including using closures, closed systems, or lids to prevent volatilization and use of automation.	Controls the potential for emissions of volatile chemicals, minimizing the potential for worker or public exposure.
Air Quality	R&D Operations; HVM Operations	Operate and maintain air pollution control devices according to vendor recommendations and permit conditions. This includes creating a preventive maintenance program per vendor specifications.	Ensures compliance with regulatory permitting requirements and reduces ambient air quality emissions, minimizing the potential for worker or public exposure.
Air Quality	Construction	Low sulphur diesel fuel used in equipment and emergency generators.	Minimizes the ambient emissions of sulfur compounds.

Resource Area	Activity	BMP	Benefits
Climate Change and Resiliency	R&D Operations; HVM Operations	Reduce GHG emissions associated with gases and heat transfer fluids by researching and implementing low global warming potential alternatives, where feasible.	Minimizes the GHG emissions generated by the Facility.
Climate Change and Resiliency	R&D Operations; HVM Operations	Micron will optimize process equipment and install abatement to reduce GHG emissions to support a global commitment of an absolute 42% reduction of Scope 1 GHG emissions in 2030 from baseline year of 2020.	Minimizes the GHG emissions generated by the Facility.
Climate Change and Resiliency	Construction; R&D Operations; HVM Operations	Reduce and offset GHG and air pollutant emissions associated with electricity consumption by installing on-site renewable energy projects, designing energy efficient or smart-controlled systems, purchasing renewable energy or carbon-free electricity through power purchase agreements, and purchasing renewable energy certificates (RECs),[5] or through green tariffs. Through this combination of methods, Micron will provide 100% renewable energy for all electricity purchased for the site in support of a public commitment to have 100% renewable energy for U.S. electricity consumption in calendar year 2025. MTI has an aspirational goal of 100% renewable energy for all global operations where available to support net zero commitment by 2050.	Minimizes the indirect GHG and air quality pollutant emissions associated with energy production for the Facility's use.
Climate Change and Resiliency	R&D Operations; HVM Operations	Reduce energy consumption and GHG and air pollutant emissions associated with electricity consumption through increased energy-efficiency measures: • Pursue Leadership in Energy and Environmental Design (LEED) Gold or Silver Certifications for	Optimizes avoidance of GHG emissions resulting from required on-site energy utilization.

[5] The issuance of a REC corresponds to one megawatt-hour (MWh) of electricity generated and delivered to the electricity grid from a renewable energy resource. RECs are legal instruments through which renewable energy generation and use claims are substantiated in the U.S. renewable electricity market.

Resource Area	Activity	BMP	Benefits
		buildings where possible. • Benchmark Facility energy use performance. • Micron will install solar panels on several buildings to support both renewable energy commitments as well as LEED Gold strategy. • Micron is installing electric vehicle charging stations across the ID1 construction project to support sustainability initiatives and LEED Gold certification.	
Climate Change and Resiliency	R&D Operations	Reduce energy consumption and GHG and air pollutant emissions associated with electricity consumption through increased energy efficiency measures, where feasible: • Optimize tool processes to reduce power consumption. • Replace less-efficient heating, ventilation, and air conditioning equipment with more efficient equipment. • Replace lighting with light-emitting diode fixtures. • Benchmark Facility energy use performance.	Optimizes avoidance of GHG emissions resulting from required on-site energy utilization.
Climate Change and Resiliency	R&D Operations; HVM Operations	Focused sustainability planning and aspirational goals: • Use of 100% renewable electricity through a combination of methods that may include physical and virtual power purchase agreements, REC purchase agreements, green tariffs, and on-site solar by the end of 2025. • Increase and maximize Micron Boise water recycling, reuse, and restoration. • Reduce and mitigate GHG emissions.	Optimizes GHG emissions, water use, wastewater, and solid waste generation.

Resource Area	Activity	BMP	Benefits
		• Increase the reuse, recovery, and recycling of materials that might otherwise be disposed as waste.	
Water Resources	R&D Operations; HVM Operations	Identify water recycling activities for both existing operations and future construction of ID1 to support global commitment to achieve 75% water conservation in calendar year 2030. This includes both on-site recycling and reuse activities as well as community water restoration projects.	Minimizes the usage of water for operational activities.
Water Resources	Construction	Engage in area groundwater resource protection measures: • Monitor aquifer levels (Micron monitoring wells). • Conduct groundwater sampling and monitoring.	Minimizes the effects on groundwater draw down and potential for groundwater contamination.
Water Resources	R&D Operations; HVM Operations	Engage in area groundwater resource protection measures: • Monitor aquifer levels (Micron monitoring wells). • Groundwater sampling and monitoring. • Southeast Boise Groundwater Management Area Member. • Aquifer recharge (direct and managed).	Minimizes the effects on groundwater draw down and potential for groundwater contamination.
Water Resources	R&D Operations; HVM Operations	Manage, control, and monitor wastewater flows by engaging in the following: • Incorporate Facility segregation processes to facilitate enhanced water treatment, testing, and recycling. • Use of Supervisory Control and Data Acquisition alarming and control system. • Off-spec wastewater treatment tanks. • Redundant pH flow meters at compliance points.	Minimizes the potential for off-site effects on water resources.

Resource Area	Activity	BMP	Benefits
		• Auto shut-off valve to control discharge of off-spec wastewater. • Maintain preventative maintenance program for compliance equipment. • Utilize internal chemical review and flagging process for total toxic organics. • Accidental Spill Prevention Plan. • Toxic Organics Management Plan. • Incorporate measures to implement anticipated near-term updates to regulatory requirements.	
Water Resources; Geological Resources	Construction; R&D Operations; HVM Operations	Implement and maintain BMPs identified in applicable Spill Prevention Control and Countermeasure (SPCC) plan and Stormwater Pollution Prevention Plan (SWPPP).	Minimizes the potential for off-site effects on surface and groundwater resources. Also minimizes potential soil erosion and reduces the amount of stormwater flowing into disturbed areas.
Cultural Resources	Construction	If unanticipated discoveries of unknown cultural resources occur during construction of ID1, the resources would be protected until guidance is provided on how to proceed.	Minimizes potential for effects on cultural resources.
Biological Resources	Construction	Restore temporarily disturbed areas consistent with applicable federal, state, and local regulations and applicable permits.	Minimizes effects on vegetation.
Biological Resources	Operations	Design light fixtures to be directional, and to minimize light spill.	Minimizes potential light effects on wildlife adjacent to ID1 site.
Biological Resources	Operations	Install animal guarding and deterrent measures consistent with Institute of Electrical and Electronics Engineers (IEEE) Guide for Animal Deterrents for Electric Power Substations (IEEE Standard 1264).	Minimizes effects on birds and wildlife.

Resource Area	Activity	BMP	Benefits
Noise	Construction	Limit outdoor construction activities to daytime hours (7 a.m. to 10 p.m.), to the extent practical.	Minimizes off-site noise effects resulting from construction activities.
Human Health and Safety	Construction	Manage ID1 construction worker risk through implementation of pre-task planning, job hazard analysis, and a permit-to-work system.	Optimizes worker health and safety during construction.
Human Health and Safety	Construction	Apply risk activity assessments and audits for construction workers.	Optimizes worker health and safety during construction.
Human Health and Safety	Construction	Require construction contractors to submit fatigue management plans in the event overtime work is required.	Optimizes worker health and safety during construction.
Human Health and Safety	Construction	Conduct drug/alcohol testing prior to issuance of badging for construction site access.	Optimizes worker health and safety during construction.
Human Health and Safety	Construction; R&D Operations; HVM Operations	Maintain a crisis management plan with established mustering locations, and coordinate plan with local emergency service agencies.	Optimizes worker health and safety during construction and operations.
Human Health and Safety	R&D Operations; HVM Operations	Apply protective occupational exposure limits, based on published industry standards, for each chemical use.	Optimizes worker health and safety during operations.
Human Health and Safety	R&D Operations; HVM Operations	Require a Semiconductor Equipment and Materials International (SEMI) S2 compliance report from any potential manufacturer before purchasing equipment from the manufacturer. The S2 guideline ensures that semiconductor manufacturing equipment is compliant with current best safety practice in the industry.	Optimizes worker health and safety during operations.
Waste Management	Construction; R&D Operations; HVM Operations	Ensure that debris is separated and disposed of in a manner that maximizes recycling while complying with applicable regulations.	Minimizes waste generation.

Resource Area	Activity	BMP	Benefits
Waste Management	Construction; R&D Operations; HVM Operations	Identify opportunities in existing operational practices as well as new ID1 design and build to support global commitment of achieving 95% reuse, recycling, and recovery of wastes and zero hazardous waste to landfill by calendar year 2030.	Enhances recycling and minimizes solid waste generation. Minimizes hazardous waste to landfill.
Waste	Construction; R&D Operations; HVM Operations	Eliminate or reduce certain solid waste streams by maximizing reuse, recovery, and recycle management methods when feasible. Use waste stream segregation to facilitate recycling or reuse.	Minimizes waste generation.
Hazardous Materials	Construction	Establish and maintain SWPPP and SPCC plan to minimize and manage oil and fuel spills from construction equipment.	Minimizes the potential for off-site effects on surface and groundwater resources.
Hazardous Materials	R&D Operations; HVM Operations	Maximize use of closed systems and automation for chemical delivery. Install and maintain leak sensors and toxic gas monitoring for hazardous chemical and gas delivery systems per International Fire Code.	Controls toxic or hazardous emissions, minimizing the potential for worker or public exposure, and controls safety hazards.
Hazardous Materials	Construction; R&D Operations; HVM Operations	Hazardous chemical storage is double-contained to prevent and minimize release to the environment. Spill kits and equipment are stationed across the site to facilitate spill response. Spill kits are audited to ensure they are in good working condition.	Minimizes the potential for effects on surface and groundwater resources.
Hazardous Materials	Construction; R&D Operations; HVM Operations	Update the release response procedure and contingency plan to reflect changes in hazardous material storage on the site.	Controls the potential for exposure to hazardous materials, minimizing the potential for worker or public exposure, and controls safety hazards.
Hazardous Materials	Construction; R&D Operations; HVM Operations	An on-site emergency response team will be deployed to assess, manage, and respond to spills and emergency situations.	Minimizes the potential for effects to surface and groundwater resources, as well as the potential for worker or public exposure, and controls safety hazards.

Resource Area	Activity	BMP	Benefits
Hazardous Materials	Construction; R&D Operations; HVM Operations	Utilize internal chemical management system tracking and hazard communication process.	Controls toxic or hazardous materials, minimizing the potential for worker or public exposure and controls safety hazards.
Socioeconomics	R&D Operations; HVM Operations	Partner and coordinate with local and state agencies to identify long-term permanent opportunities around housing supply/demand dynamics.	Address economic barriers to meeting Boise's housing needs.

3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This Section presents a description of the environmental resources and baseline conditions that could be affected by implementing the alternatives and provides an analysis of the potential direct and indirect effects of each alternative. Resource areas analyzed include air quality; climate change and resiliency; water resources; cultural resources; biological resources; land use; noise; transportation; human health and safety; hazardous materials; environmental justice; socioeconomics; utilities and sustainability; waste; and geological resources.

All potentially relevant environmental resource areas were initially considered for analysis in this EA. Pursuant to NEPA and its regulations, the discussion of the affected environment (i.e., existing conditions) focuses only on those resource areas potentially subject to effects from the alternatives. Additionally, the level of detail used in describing a resource is commensurate with the anticipated level of environmental effects.

3.1 ANALYSIS METHODOLOGY

The resource-specific environmental consequences analyses consider direct and indirect effects (cumulative effects are discussed in Section 4), describe both adverse and beneficial effects, identify temporary (construction) effects separate from long-term (operational) effects, and describe the potential magnitude of long-term (operational) effects, as defined below:

- Negligible – Effects with minimal impact on a resource; any change that might occur would be barely perceptible and would not be easily measurable.
- Minor – Effects that would produce a detectable change to a resource but that would be unlikely to substantially alter its appearance or condition.
- Moderate – Effects that would produce a noticeable change to a resource and that may substantially alter its appearance or condition, but the integrity of the resource would remain intact.
- Major – Effects that would produce a highly noticeable and easily defined substantial impact or change to a resource that would measurably alter its appearance or condition, and potentially threaten the integrity of the resource.

The resource-specific environmental consequences analyses also describe the potential extent of effects as defined below:

- Local – Effects on resources in a proposed project's immediate vicinity or surrounding area.
- Regional – Effects extending beyond a proposed project's local level to resources in areas broadly defined by natural criteria, such as watersheds and ecosystems, or human activity, such as urban or rural population areas, or at a scale that could have interstate consequences.

- National – Effects extending beyond a proposed project's regional level to resources on a nationwide scale or at a scale that could have cross-regional ecosystem, multi-state, or nationwide consequences.

3.2 AIR QUALITY

The discussion of air quality effects associated with ID1 includes an assessment of sources of criteria pollutants, hazardous air pollutants, as well as permitting and other air quality performance standards. GHG emissions are discussed in Section 3.3, Climate Change and Resiliency.

3.2.1 REGULATORY SETTING

The legal framework for air quality includes both federal and state laws and regulations promulgated by EPA and delegated to and implemented by the Idaho Department of Environmental Quality (IDEQ). On the federal level, the Clean Air Act (CAA) imposes relevant requirements for control of the nation's air quality.

3.2.1.1 CRITERIA POLLUTANTS AND NATIONAL AMBIENT AIR QUALITY STANDARDS

The CAA established ambient air quality concentration standards designed to protect public health and welfare, known as the National Ambient Air Quality Standards (NAAQS), for six criteria pollutants. NAAQS specifies the concentrations of the criteria pollutants (with an adequate margin of safety) to which the public can be exposed without adverse health effects. The NAAQS are designed to protect those segments of the public most susceptible to respiratory distress, including people with asthma, chronic obstructive pulmonary disease, or other lung diseases, as well as very young people, elderly people, and people engaged in strenuous work or exercise. EPA initially identified six criteria pollutants that are pervasive in urban environments and for which federal and state health-based ambient air quality standards have been established, including particulate matter (PM), nitrogen oxides (NOx), sulfur dioxide (SO2), carbon monoxide (CO), ground level ozone, and lead. Since initial promulgation of the NAAQS, EPA has refined the NAAQS to include two categories of particulate matter: PM10 (particulate matter less than or equal to 10 microns in diameter) and PM2.5 (particulate matter less than or equal to 2.5 microns in diameter). Ozone, NO2, and some particulate matter, including PM2.5, can form through atmospheric chemical reactions of other pollutants (called precursors, which include NOx and volatile organic compounds (VOCs)), which are influenced by weather, ultraviolet light, and other atmospheric processes. Accordingly, some sources are subject to regulation of NOx and VOC emissions.

Pursuant to the CAA, EPA has developed air quality designations for distinct geographical regions that have atmospheric concentrations of pollutants above or below the NAAQS. EPA designates whole or partial counties as attainment, nonattainment, maintenance, or unclassifiable areas for each criteria pollutant. Attainment areas are areas in which the pollutant is within the NAAQS. A nonattainment area is an area in which the pollutant exceeds the NAAQS. The maintenance designation is used when monitored pollutants have been reduced from the nonattainment to the attainment levels and a maintenance plan is approved. Areas in which EPA is not able to determine an attainment status are designated as unclassifiable.

Table 3-1 identifies the laws, plans, and policies relevant to air quality for ID1.

TABLE 3-1 AIR QUALITY LAWS, REGULATIONS, AND POLICIES

Regulation, Statute, Guideline	Description
Federal: Clean Air Act (42 U.S.C. § 7401 *et seq.*)	Applicable to construction and operation phase emissions of air pollutants (criteria and hazardous air pollutants (HAPs)). Would require an IDEQ Permit to Construct.
Federal: National Ambient Air Quality Standards (NAAQS) (40 C.F.R. Part 50)	Applicable to construction and operation phase emissions. Permitting and enforcement is delegated to IDEQ. NAAQS compliance may be demonstrated with ambient dispersion modeling if potential emission rates are above criteria pollutant exemption levels codified in Idaho Administrative Procedure Act (IDAPA) 58.01.01.221.01.
Federal: Nonattainment New Source Review and Prevention of Significant Deterioration (40 C.F.R. §§ 51.165, 51.166, 52.21)	Applicable to federal Nonattainment New Source Review (NSR) or Prevention of Significant Deterioration (PSD) permitting depending on facility type, potential emissions, and emission source characterization.
Federal: Title V Operating Permit Requirements (40 C.F.R. Part 70)	Title V Operating Permit applicable if potential emissions are above applicable thresholds.
Federal: New Source Performance Standards (NSPS) (40 C.F.R. Part 60)	NSPS Subpart IIII would be applicable to operation phase stationary engine-generator sets and includes emission limits and work-practice standards. NSPS Subpart Dc would be applicable to operation phase small industrial-commercial-institutional steam generating units and includes emission limits and compliance and monitoring standards.
Federal: National Emissions Standards for Hazardous Air Pollutants (NESHAP) (40 C.F.R. Parts 61 and 63)	The facility is not subject to any NESHAP in 40 C.F.R. 61 but is subject to NESHAP subparts in 40 C.F.R. Part 63. NESHAP Subpart ZZZZ covers operational phase reciprocating internal combustion engines. NESHAP CCCCC covers the loading of gasoline storage tanks.
Federal: Risk Management Program (40 C.F.R. Part 68)	Risk Management Program requirements would become applicable where a process has regulated chemicals in excess of threshold quantities.
Federal: General Conformity Rule (40 C.F.R. Part 93, Subpart B)	Requires federal agencies to ensure that, in nonattainment areas, or in maintenance areas for 20 years after redesignation to attainment, emissions caused by federal actions (including providing federal financial assistance) conform to the applicable federal, state, or tribal air quality implementation plan.
State: IDAPA 58.01.01 Rules for the Control of Air Pollution in Idaho	Applicable to construction and operation phase emissions of air pollutants (criteria and toxic air pollutants [TAPs]). IDAPA 58.01.01 includes state ambient air quality standards, which are identical to the NAAQS with the addition of TAPs standards.

Regulation, Statute, Guideline	Description
State: IDAPA 58.01.01.300-399 Tier I Permits and IDAPA 58.01.01.400-410 Tier II Permits	Applicable to operation phase emissions of air pollutants (criteria and HAPs). Estimates of emissions suggest the operations will require the application of IDAPA 58.01.01.300-399 Tier I Permits.
Local: Not applicable	Ada County does not regulate air quality.

3.2.1.2 PERMITTING

The CAA regulates the permitting of ambient emissions from stationary sources through two primary components. Preconstruction authorizations review the potential impacts of proposed emissions sources prior to construction. Operating permits provide a unified permit to allow for more streamlined compliance review. These are known as New Source Review (NSR) permits and operating permits, respectively.

NSR dictates that a source may have to meet one or more preconstruction permitting programs by acquiring an NSR permit prior to commencement of construction of a stationary source. Prevention of Significant Deterioration (PSD) permits are required for new major sources or a major modification to a major source in attainment (areas that meet the NAAQS). The major source and major modification threshold for PSD permits is 250 tpy of a regulated pollutant for sources that are not named source categories (including semiconductor manufacturing). Nonattainment NSR permits are for new major sources or major modifications to a major source in nonattainment areas (areas that do not meet one or more of the NAAQS). Minor source permits are required for sources that are not new major sources or making a major modification. Minor source permits within the state of Idaho are implemented through the IDEQ Permit to Construct or Facility Emissions Cap (FEC) programs. EPA establishes the basic requirements for an NSR program in its federal regulations. States may develop additional NSR requirements and procedures tailored to their air quality needs where the program is at least as stringent as EPA's requirements. EPA must approve these programs in the State Implementation Plan (SIP). IDEQ has received authorization through an approved SIP to implement NSR permitting within the state of Idaho for both major and minor source permitting.

Operating permits are legally enforceable documents designed to improve compliance by clarifying what facilities (sources) must do to control air pollution and include all pollution control requirements from federal or state regulations that apply to a source. Operating permits are required by Title V of the CAA and are required for all sources that emit ambient emissions of 100 tons per year (tpy) or more of a criteria pollutant or of 10 tpy or more of any single hazardous air pollutant (HAP) or of 25 tpy or more of any combination of HAPs. The federal regulations in 40 C.F.R. Part 70 provide for state and local permitting authorities to have primary responsibility for operating permit application review and issuance. IDEQ's regulations implementing the Part 70 operating permit program include operating permits for major sources (Tier I) and a voluntary program for minor sources (Tier II). Operating permits are required for a source within 12 months of commencement of operation.

3.2.2 AFFECTED ENVIRONMENT

The analysis area for air quality is located within Ada County, an area designated attainment/maintenance or unclassifiable for all criteria pollutants. These designations mean that the area is currently meeting air quality standards, and EPA and IDEQ expect the area to continue to meet air quality standards. Northern Ada County was designated nonattainment for CO and PM_{10} upon enactment of the 1990 CAA amendments, but was redesignated to attainment/unclassifiable for CO on December 27, 2002, and for PM_{10} on November 26, 2003. Further, the state of Idaho is in attainment or unclassifiable for all NAAQS. NAAQS apply to Micron Boise. The General Conformity Rule under the CAA (40 C.F.R. Part 93, Subpart B) does not apply to Micron Boise due to the project area's attainment status, as described above.

Micron Boise first received pre-construction air quality permit approval on February 12, 1981. Micron Boise has maintained a valid air quality permit since that time, with the last modification approved on March 23, 2021. During that period, Micron Boise has been designated as a minor source with permitted emissions below the PSD and Title V major source thresholds (i.e., below the potential to emit 10 tpy or more of any single HAP, 25 tpy or more of any combination of HAPs, or 100 tpy or more of any regulated air pollutant) (IDAPA 58.01.01.006.49. *et seq.,* IDAPA 58.01.01.008.08. *et seq.*), for all regulated pollutants. Micron Boise is operating under a minor source operating permit known as a Tier II operating permit issued by IDEQ. This Tier II permit establishes an FEC allowing Micron Boise emissions of specified pollutants below the permitted thresholds. A Tier II permit allows Micron Boise to make construction and operational changes that maintain emissions below the FEC and that are within permit conditions. Micron Boise's 2022 actual emissions and current FEC limits are shown in Table 3-2.

TABLE 3-2 ACTUAL REPORTED FACILITY EMISSIONS (TONS) AND FEC LIMITS[6]

	PM_{10}	$PM_{2.5}$	SO_2	CO	NO_x	VOC	Lead	HAPs (Single/ Combined)
2022 Reporting Year (July 2021 – June 2022) Actual Reported Emissions	19.6	15.0	1.3	18.3	25.6	48.1	0.0002	1.6/5
Tier II Permit Facility Emission Cap Limits	62	49	17	75	92	96	0.04	≤10/≤25

Source: Actual emissions provided by MTI for the 2022 reporting year and facility emission cap limits obtained from Table 4.2 of Micron Boise's current operational air permit, T2-2019.0053, issued May 10, 2022 (MTI 2022a).

[6] GHG emissions are discussed in separate GHG section which addresses climate change, disaster resiliency, and sustainability.

3.2.3 ENVIRONMENTAL CONSEQUENCES

3.2.3.1 PROPOSED ACTION

TEMPORARY CONSTRUCTION EFFECTS

Construction effects for ID1 include air emissions that would be generated from mobile sources and fugitive dust as well as from on-site construction processes. These emission types are not directly regulated under the CAA as part of stationary source NSR permitting. Further, these emissions would occur in a variable, non-continuous manner, as construction activities would change and be relocated throughout the construction footprint during the term of construction. Similarly, emissions from workers' vehicles and construction equipment would be temporary and transient in nature, and BMPs would be implemented to reduce potential effects, as described in Section 2.3. All construction operations would be required to comply with the requirements of Idaho Administrative Procedure Act (IDAPA) 58.01.01.650-651, Rules for Control of Fugitive Dust.

Emissions that would occur during construction are anticipated to be contained within the Micron property and are not anticipated to substantially overlap with emissions that would result from the operation of ID1 once constructed. Further, BMPs associated with watering (or other control of fugitive dust), use of containment and enclosure of materials, use of low sulfur fuel, and proper operation of air quality emissions control devices on construction equipment would control ID1's construction emissions. As a result, effects on air quality due to construction of ID1 are anticipated to be minor, local, and short term.

LONG-TERM EFFECTS INCLUDING OPERATIONS

Operation of the Proposed Action would result in additional sources of ambient air pollutant emissions. This would result in additional emissions of both criteria pollutants and HAPs when compared to the existing emissions resulting from Micron Boise. Preliminary emissions increases associated with ID1 are presented in Table 3-3. These emissions estimates were developed in support of the submission of Micron's NSR permit modification and represent the best available current estimates of ID1 emissions. Detailed emissions calculations are included in Appendix A, which contain the emissions from individual sources as well as the control efficiencies for each control device included in the Proposed Action. These initial emissions estimates include the installation of acid scrubbers, VOC oxidizers, ammonia scrubbers, cooling towers, water bath vaporizers (WBVs), and emergency generators, but are preliminary conservative estimates, as the design has not yet been finalized. These estimates do not yet include emissions from the Opal facility or ongoing refinements to associated individual emissions sources (e.g., emergency generators, scrubbers, various process units), as source design is still in development. However, emission increases from these sources would be substantially lower relative to the emissions increases presented in Table 3-3 and are not anticipated to result in regulatory applicability changes to the site, as discussed below. The Opal facility is anticipated to include additional scrubbers, a cooling tower, and emergency generators.

TABLE 3-3 ID1 PROJECTED ANNUAL EMISSION INCREASES (TONS)[7]

Emission Source Group	PM_{10}	$PM_{2.5}$	SO_2	CO	NO_x	VOC	HAPs (Single/Combined)
Acid Scrubbers	47.95	47.95	7.36	47.62	100.7	2.93	10.75/13.18
Volatile Organic Compound Oxidizers	2.56	2.56	0.26	28.32	33.71	103.2	0.40/0.43
Ammonia Scrubbers	59.53	59.53	0	0	0	0	0/0
Cooling Towers	14.25	0.14	0	0	0	0	0/0
Emergency Generators	0.92	0.92	0.21	5.03	23.93	1.45	0.03/0.08
Gas Yard Water Bath Vaporizer	0.64	0.64	0.14	3.10	3.06	0.46	0.15/0.916
Wastewater Treatment	0	0	0	0	0	0.55	0/0
Total	**125.85**	**111.74**	**7.97**	**84.07**	**161.4**	**108.59**	**11.33/14.61**

To accommodate the emissions increases associated with the Proposed Action, a modification to Micron Boise's existing Tier II operating permit would be required. This would include a review of pre-construction authorization and the requirements for an operating permit.

PRE-CONSTRUCTION AUTHORIZATION

For pre-construction NSR approval, the Proposed Action emissions increases have been compared to the PSD major source thresholds to determine if the modification would be characterized as a PSD major modification. Semiconductor manufacturing and research and development facilities are not a named source category for PSD applicability. Therefore, the major source threshold for the Facility-wide emissions increases is 250 tpy for each pollutant. Based on this threshold, the Facility modification would not require PSD pre-construction review. As ID1 design progresses toward finalization, Micron will continue to employ emission control devices to remain below the PSD major source threshold. If, despite these efforts, the PSD threshold is exceeded, Micron would pursue a PSD permit and ensure full regulatory compliance.

Additionally, the Facility includes fossil fuel boilers with heat inputs of more than 250 million Btu/hour individually or in the aggregate. These boilers are considered a named source category for PSD applicability with a major source threshold for emissions increases from these sources of 100 tpy for each pollutant, so they must be evaluated under the PSD nested source category. This means that even if the entire facility's emissions are below the general 250 tpy threshold, the boilers must be separately assessed against the lower 100 tpy threshold. This nested approach ensures that significant emissions from specific high-emitting units are not obscured by lower emissions from other parts of the facility. The boiler sources that exceed the 250 million Btu/hour

[7] GHG emissions are discussed in Section 3.3 (Climate Change and Resiliency). Increases in lead emissions are insignificant and do not result in an increase from the current FEC limit for lead.

aggregate threshold are part of the existing Micron Boise Facility. Although not considered traditional boilers, for the Proposed Action, the emissions increases associated with the water bath vaporizers were conservatively assessed as emissions attributable to the nested source category. Even when including these emissions sources, the total projected emissions would remain below the PSD major source threshold for each regulated NSR pollutant.

Therefore, the pre-construction authorization for the Proposed Action would be obtained through a minor modification to Micron Boise's existing Tier II FEC operating permit. This process would establish a new FEC permit limit. Additional authorization could be required based on review of the final emissions generating capacity of ID1.

Micron has submitted a Permit to Construct application to modify the Tier II FEC, which is under review by IDEQ and includes the source types listed in Table 3-3.[8] The application includes a dispersion modeling analysis of the potential for off-site impacts resulting from both Micron Boise and the modified emissions sources. The analysis concluded that the post-project Facility's criteria pollutant emissions would all be below the applicable NAAQS thresholds, and that the Facility would therefore remain in compliance with the NAAQS. The analysis further modeled the potential for offsite effects of HAPs to facilitate tracking of actual HAPs emissions as a condition of the Tier II FEC.

OPERATING PERMIT REQUIREMENTS

ID1 would increase the Facility's total emissions to exceed the Tier I operating permit major source thresholds (see Table 3-3). The Facility therefore would be required to apply for a Tier I operating permit within 12 months of the commencement of ID1 operations.

The emergency generators associated with ID1 would be subject to New Source Performance Standards (NSPS) IIII, NSPS JJJJ, and NESHAP ZZZZ operating standards. Additionally, ID1 is anticipated to be subject to Risk Management Program requirements for certain chemicals.

Manufacturing would be the principal source of VOC and HAP emissions from ID1. Some of the production processes are abated with pollution control devices, including acid scrubbers and VOC oxidizers, which remove 70 to 99 percent of the VOC emissions from the process exhaust depending on the pollutant and type of control device. This lower range (70%) is provided to account for a small portion of emissions that cannot be readily routed to process exhaust and are emitted as fugitives. The higher range (99%) is based on the pollution control equipment manufacturer's guaranteed specification for production emissions that are captured and controlled by VOC oxidizers. The gas yard WBVs and emergency generators also make a small contribution to VOC emissions from fuel burning activity, as shown in Table 3-3.

The primary source of PM emissions from manufacturing, including research and development activities, is gas to particle conversion. This may occur after oxidation of gases in control devices or as materials evaporated from heated liquids condense. The majority of the manufacturing PM emissions would be exhausted through acid, VOC, and ammonia control devices. PM would also

[8] Upon design finalization for the Opal facility, Micron will submit Opal emission source data to IDEQ to include in the permitting action. Additionally, the Tier II FEC permit modification submitted to IDEQ only accounts for the first two phases of the development of ID1, while Table 3-3 includes the emissions estimates for the entire ID1.

potentially be emitted from cooling towers, gas yard WBVs, and emergency generators. PM is the only pollutant emitted from the cooling towers and results from dissolved solids in the water carried with drift loss.

Acid scrubbers and VOC oxidizers and fuel burning equipment such as gas yard WBVs and the emergency generators would be sources of NOx emissions. NOx can also be generated from manufacturing processes and exhaust from these process tools would be emitted through acid scrubbers. For example, nitrogen trifluoride would be converted to NOx during the cleaning of oxygenated chambers and nitrous oxide would be converted to NOx downstream of vapor deposition tools.

SO_2 is used on a limited basis in wafer processing and finishing. Exhaust from these process tools would be routed to acid scrubbers where SO_2 would be emitted. Fuel burning equipment such as the gas yard WBVs and emergency generators would also contribute to SO_2 emissions.

The manufacturing process and associated air quality emissions would be consistent with the types of processes already present at Micron Boise, which are addressed in the current FEC in Table 3-2. Facility-wide emissions increases shown in Table 3-3 would not exceed PSD major source thresholds, nor be anticipated to cause a NAAQS violation. Although ID1 would produce an increase in air pollutant emissions, the NAAQS would continue to be met. According to dispersion modeling completed by Micron as part of the NSR pre-construction permitting evaluation, NAAQS compliance was demonstrated for the combined operations of Micron Boise and ID1. Although the Proposed Action would produce an increase in air pollutant emissions, all emissions would continue to comply with the NAAQS beyond the Facility fenceline. Therefore, the air quality effects of the Proposed Action are anticipated to be minor.

3.2.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, no additional modification to Micron Boise would occur and the Facility would continue to operate under its existing Tier II FEC permit, which includes emissions limitations and controls that have been confirmed through atmospheric dispersion modeling to ensure the Facility cannot cause or contribute to a violation of the NAAQS. Further, the existing Tier II FEC permit includes all compliance requirements stipulated by state or federal air quality regulations. Therefore, under the No Action Alternative, Micron Boise operations would have only minor effects on air quality constrained to the Facility's immediate vicinity.

3.2.4 BMPS

Beyond compliance with current Tier II FEC and future Tier I permit conditions, during construction of the Proposed Project, Micron would use BMPs to control emissions of fugitive dust and ambient emissions as described in Table 2-2. This may include the use of watering, other substrates, and vents to control dust, and the use of low sulfur diesel fuel in equipment and emergency generators. Micron would also employ BMPs described in Table 2-2 during operation of the Proposed Project. This would include proper containment of chemicals to minimize the emissions of volatile chemicals and the operation of air pollution control devices according to equipment manufacturer specifications and permit conditions.

3.3 CLIMATE CHANGE AND RESILIENCY

CPO evaluates projects proposed by applicants for climate impacts and sustainability. Under CPO's Notice of Funding Opportunity, each applicant is required to submit a Climate and Environmental Responsibility Plan addressing energy, climate resilience, water conservation, sustainability transparency, and community and environmental justice effects. In particular, the plan must describe how its project will maximize sourcing and use of renewable energy and water recycling. CPO reviews the plan to determine whether a proposed project would pose burdens to local community resources and whether the project's rate of utility consumption would be sustainable over the long term. Although the requirement to submit the plan is separate from and in addition to the CPO NEPA process, an applicant's plan may help inform CPO's NEPA review. Relevant aspects of Micron's Proposed Project are evaluated in this section for climate change effects and climate resiliency. Section 3.14 focuses on sustainability in the utility context.

Climate refers to the predictable, average weather, temperature, and precipitation patterns that characterize a region, whereas climate change refers to long-term shifts in the climate of a given region or the Earth as a whole. These shifts can be natural, anthropogenic (i.e., caused by human activities), or both. Climate resiliency and adaptation refer to changes in processes, practices, and structures to moderate potential damages to or benefit from opportunities associated with climate change. Since the Nineteenth Century, increased burning of fossil fuels to provide the energy demanded by a rapid increase in the human population and its economic activities (e.g., production and consumption) has been the major driver of observed climate change (IPCC 2023).

GHGs are gaseous emissions that trap heat in the atmosphere. These emissions occur from natural processes and human activities. Scientific evidence indicates a trend of increasing global temperature over the past century due to an increase in GHG emissions from human activities. The climate change associated with global warming is predicted to produce negative economic and social consequences across the globe.

GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride (SF_6), and other fluorinated greenhouse gases (F-GHGs), including nitrogen trifluoride (NF_3) and hydrofluorinated ethers. Each GHG is assigned a global warming potential. Global warming potential is the ability of a gas or aerosol to trap heat in the atmosphere. The global warming potential rating system is standardized to CO_2, which has a value of one. The CO_2 equivalent (CO_2e) rate is calculated by multiplying the emissions of each GHG by its global warming potential and adding the results together to produce a single, combined CO_2e emissions rate representing all GHGs. F-GHGs used widely by semiconductor manufacturers are among the most potent and long-lasting GHGs emitted by human activities.

Facility-related GHG emissions are grouped into three categories:

- Scope 1 GHG emissions are those direct emissions that occur from sources that are controlled or owned by an organization (e.g., emissions associated with fuel combustion units and process use of F-GHGs).
- Scope 2 GHG emissions are indirect emissions associated with the use of electricity, steam, heat, or cooling.

- Scope 3 GHG emissions are indirect upstream and downstream emissions not directly controlled by an organization but are associated with its operations (e.g., emissions from supply chain, employee business travel, and employee commuting).

Climate resilience is a facility's or operation's ability to recover from or mitigate vulnerability to climate-related shocks such as floods or droughts.

3.3.1 REGULATORY SETTING

On February 19, 2021, Executive Order (EO) 13990, Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, reinstated EO 13653, Preparing the United States for the Impacts of Climate Change, as well as CEQ's 2016 Final Guidance for Federal Departments and Agencies on Consideration of GHG Emissions and the Effects of Climate Change in NEPA Reviews. The CEQ guidance directs federal agencies to quantify the direct and indirect GHG emissions of a proposed action and weigh climate change effects in considering alternatives and in evaluating mitigation measures. In January 2023, CEQ published a notice of interim guidance on consideration of GHG emissions and climate change in NEPA documents that directs federal agencies to quantify reasonably foreseeable GHG emissions whenever possible and place those emissions in appropriate context when analyzing a proposed action's climate effects (CEQ 2023b).

In 2021, Congress passed the American Innovation and Manufacturing Act, 42 U.S.C. § 7675, which directs EPA to reduce production and consumption of hydrofluorocarbons in the United States by 85 percent over the next 15 years, a measure expected to avoid up to 0.5°C of global warming by 2100 (EPA 2023a). In October 2021, EPA issued a final rule to implement these requirements, codified at 40 C.F.R. Part 84, which includes provisions for issuance of application-specific allowances for the etching of semiconductor materials or wafers and the cleaning of chemical vapor deposition chambers within the semiconductor manufacturing sector. EPA issued hydrofluorocarbon production and consumption allowances in accordance with the final rule for the 2024 calendar year. From 2024-2028, these allowances (except for application-specific allowances) will be capped at 40 percent below their baseline historic levels (USEPA 2023a). It is anticipated that EPA will issue a proposed rule on the review and renewal of eligibility for application-specific allowances in 2024.

EPA's final rule for Mandatory Reporting of Greenhouse Gases, codified at 40 C.F.R. Part 98, established EPA's GHG Reporting Program (GHGRP), which requires reporting of GHG data and other relevant information from large GHG emission sources in the United States. Subpart I (40 C.F.R. §§ 98.90-98.98) pertains to reporting requirements for the Electronics Manufacturing sector, which includes facilities under North American Industry Classification System (NAICS) Code 334413, Semiconductor and Related Device Manufacturing. Facilities emitting more than 25,000 metric tons (MT) CO_2e annually are required to report direct emissions of F-GHGs, nitrous oxides (N_2O), and fluorinated HTFs, as well as combustion emissions from carbon dioxide (CO_2), methane (CH_4), and N_2O for each stationary combustion unit. Pursuant to 40 C.F.R. Part 98, Subpart I, Table I-16, an electronics manufacturing facility must demonstrate that F-GHG and N_2O abatement systems that it factors into emissions data that it submits to the GHGRP satisfy EPA's default emission Destruction and Removal Efficiency (DRE) factors for such equipment. EPA makes facility reported information publicly available through the GHGRP and associated databases.

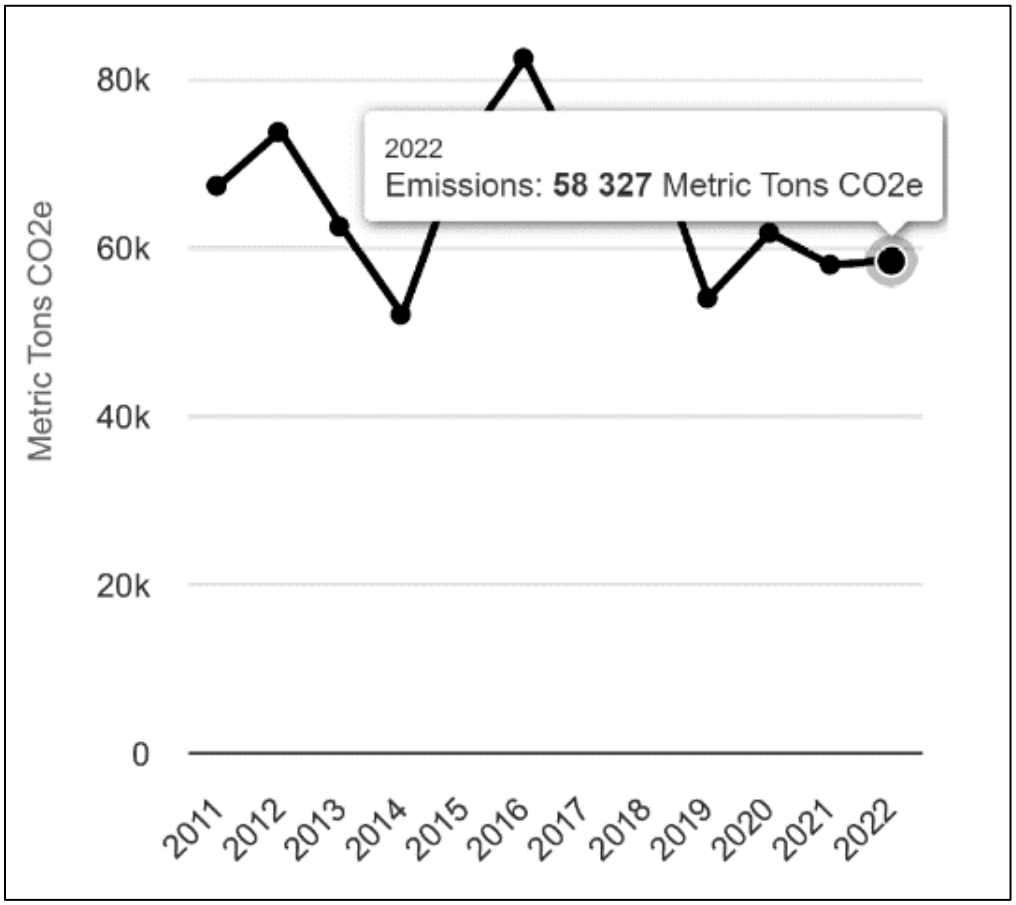
The IDEQ does not impose GHG emissions permit limits for minor sources (IDAPA 58.01.01 *et seq.*). Under current EPA PSD regulations, only stationary sources that already constitute PSD major sources of criteria pollutants and emit greater than 75,000 tpy CO_2e are also subject to GHG emissions limits based on the application of Best Available Control Technology (BACT) (40 C.F.R. § 52.21 *et seq.*).

3.3.2 AFFECTED ENVIRONMENT

GHG emissions from semiconductor manufacturing include direct (Scope 1) and indirect emissions (Scope 2 and Scope 3). Direct emissions include on-site emissions from energy use and from use of fluorinated gases in the manufacturing process. Indirect emissions include off-site emissions associated with electrical generation (Scope 2) and emissions generated by upstream material production and downstream product distribution and use (Scope 3).

Micron has reported direct GHG emissions for Micron Boise operations through EPA's GHGRP annually since 2011. Peak reported emissions levels of 82,000 MT of CO_2e occurred in 2016 and have steadily declined since as a result of Micron's overarching sustainability and GHG reduction goals as detailed in Micron's annual sustainability reports (Micron 2016). Figure 3-1 depicts the direct GHG emissions reported for Micron Boise from 2011 through 2022.

FIGURE 3-1 MICRON BOISE 2011-2022 EPA REPORTED DIRECT GHG EMISSIONS



In 2022, Micron Boise reported direct GHG emissions of 58,327 MT CO_2e. The facility's average annual reported GHG emissions from 2014-2022 were 64,442 MT CO_2e. Emissions from fluorinated process gases use associated with research and development activities are exempt from reporting at Micron Boise's existing facility (40 C.F.R. § 98.2) and are therefore not included in Table 3-4 nor Figure 3-1. The 2014-2022 average reported direct GHG emissions generated at Micron Boise is shown in Table 3-4 detailed by GHG pollutant as well as summarized by the process type (Electronics Manufacture and Stationary Combustion).

TABLE 3-4 GHGRP: MICRON BOISE ANNUAL AVERAGE REPORTED GHG EMISSIONS, 2014–2022

Emissions Category	Average 2014 – 2022 GHG Emissions (MT CO_2e)	% Total
Total reported direct emissions	64,443	100%
CO_2 emissions (non-biogenic)	48,236	75%
Methane (CH_4) emissions	23	0%
Nitrous oxide (N_2O) emissions	102	0%
Total Average Fluorinated Gases	16,082	25%
Hydrofluorocarbon emissions	661	1%
Perfluorocarbon emissions	1,614	3%
Sulfur hexafluoride emissions	4,170	6%
Nitrogen trifluoride emissions	569	1%
Other fully fluorinated GHG emissions	8,950	14%
Hydrofluoroether emissions	118	0%
Source Category: Electronics Manufacture	16,157	25%
Source Category: Stationary Combustion	48,285	75%

Source: EPA 2022

Table 3-5 provides an overview of direct GHG emissions throughout the state of Idaho and shows totals by pollutant for all reporting emissions-generating sectors (EPA 2023a). The values are presented in million MT (MMT) CO_2e for the last three years of available data.

TABLE 3-5 STATE OF IDAHO EMISSIONS – ALL SECTORS BY POLLUTANTS

Idaho Emissions by Gas, MMT CO_2e	2019	2020	2021
Carbon dioxide	19.8	19.8	20.8
Methane	10.7	11.4	11.8
Nitrous oxide	6.1	6.3	6.3
Land use and forestry carbon stock change	0.9	0.4	0.9
Fluorinated gases	0.5	0.7	0.7
Net total	37.9	38.5	40.5

Source: EPA 2023a

Micron Boise generates direct GHG emissions resulting from the fabrication process. Process gases (NF_3, CF_4, C_2F_6, N_2O, etc.) with the potential to generate GHG emissions are utilized at various steps in the fabrication process. These processes include etching, wafer cleaning, and chamber cleaning, but are grouped together as fabrication. Fabrication GHG emissions are mitigated using point-of-use (POU) abatement systems. These systems capture fluorinated and process GHGs and control the emissions through a process of thermal oxidation and wet scrubbing. This process results in conversion of emissions to lower global warming potential (GWP) GHGs associated with natural gas combustion rather than direct emissions of high-GWP process GHGs. Micron Boise currently estimates that its POU abatement systems achieve DRE factors between 60 and 98 percent based on the individual chemical and the ability of the POU abatement system to control each species of process gas. These DREs are consistent with the DREs listed in the 2019 refinement to the 2006 Intergovernmental Panel on Climate Change (IPCC) Guidelines Table 6.17. The reported emissions generated by these processes (2014-2022 average) was 16,157 MT, which accounts for 25% of Micron Boise's reported direct GHG emissions. These emissions do not include GHG emissions resulting from research and development activities due to their exemption from reporting (40 C.F.R. § 98.2).

Micron Boise also generates direct GHG emissions resulting from on-site energy use of natural gas and diesel fuel combustion in boilers, furnaces, and emergency generators. Based on emissions reported (2014-2022 average), Micron Boise emitted approximately 48,285 MT of CO_2e from on-site fuel combustion, which accounts for 75% of its Scope 1 (direct) GHG emissions.

Micron Boise's operations also result in Scope 2 (indirect) GHG emissions associated with off-site electrical generation. Based on historical data, Micron Boise consumes approximately 600 gigawatt hours annually. Indirect emissions are estimated using published data associated with 2022 Idaho Power energy sources, which include natural gas, coal, hydroelectric, wind, solar, geothermal, biomass, and other minor inputs. Considering the carbon intensity of the energy sources within the Idaho Power grid, which result in 424 kg CO_2/MWh (Idaho Power 2022), indirect emissions which result from off-site electrical generation are estimated at 250,000 MT CO_2e.

Finally, Micron Boise's utilization of source materials and use of their products have the potential to generate Scope 3 GHG emissions. A significant majority of Micron's estimated Scope 3 GHG emissions are reflected in the upstream sourcing of materials used at Micron and the downstream use of the products created. Micron addresses upstream Scope 3 emissions by encouraging suppliers to focus on substantial reductions in their own Scope 1 and 2 footprints. Additionally, Micron requires suppliers to submit GHG emissions disclosures to CDP (formerly known as the Carbon Disclosure Project) or supply GHG data directly to Micron to increase transparency of such emissions and to guide Micron's strategy with respect to Scope 3 emissions.

3.3.3 ENVIRONMENTAL CONSEQUENCES

3.3.3.1 PROPOSED ACTION

TEMPORARY CONSTRUCTION EFFECTS

The construction effort for ID1 would have the capacity to generate direct GHG emissions. Emissions would occur as a result of fuel combustion within construction vehicles and temporary mobile electrical generation to supply power to equipment that does not have access to temporary construction line power. Emissions from workers' vehicles and construction equipment would be temporary and transient in nature. BMPs, such as optimizing the use of line power for construction equipment and minimization of vehicle travel, would be implemented to the greatest extent practical to reduce potential impacts. Therefore, ID1 construction activities would result in only negligible effects on climate change from Scope 1 GHG emissions. Emissions associated with construction of ID1 are not anticipated to significantly overlap with emissions associated with the operation of ID1.

Construction activities would use temporary electrical power throughout the development of ID1. The electrical demands associated with construction are anticipated to be significantly below the long-term demands of the facility and can be readily accommodated by existing power generation within the region. Therefore, ID1 construction activities would result in only negligible effects on climate change from Scope 2 GHG emissions.

Scope 3 GHG emissions associated with the construction of ID1 would result from the upstream and downstream effects of transportation and installation of construction materials. Micron actively sources materials with limited transportation requirements, requests that suppliers locate in proximity to the site and uses vendors that maintain efficiency-based planning for the construction effort. These measures serve to limit the potential for Scope 3 GHG emissions generation. As a result, Scope 3 GHG emissions are anticipated to result in negligible impacts from construction activities.

Given the limited duration of the construction activities for ID1, these activities are unlikely to be influenced by the effects of additional change to the climate or to require long-term resiliency planning. Short-term hazards-based planning has been completed for the construction effort to ensure preparedness for imminent threats from wildfire and high temperatures are accommodated by Micron Boise's worker health and safety programs. These considerations are discussed in the Section 3.10 (Human Health and Safety).

Considering the limited time duration of the construction activity, the incorporation of BMPs for minimization of vehicle usage, the optimization of use of transmission-based power sources, and the intentional sourcing of construction materials and personnel with proximity to the analysis area, the effects on Climate Change and Resiliency from the construction of ID1 would be anticipated to be minor.

LONG-TERM OPERATIONAL EFFECTS

Neither Micron Boise nor the proposed ID1 is subject to any regulatory limits on GHG emissions.[9] However, anticipated GHG emissions were calculated for the purposes of this analysis. These calculations represent estimated emissions based on currently available data and are likely to be refined as additional process details are developed.

Operation of ID1 would generate approximately 192,000 MT CO_2e per year of Scope 1 emissions. This includes approximately 136,000 MT CO_2e from the electronics manufacturing process and approximately 56,000 MT CO_2e from stationary fuel combustion. Additionally, operation of ID1 would require a maximum of 3,690 gigawatt hours annually, generating approximately 1,560,000 MT CO_2e annually in Scope 2 emissions from purchased electricity, if sourced from traditional electrical grid resources within Idaho's power grid.

These GHGs include process gases (NF_3, CF_4, C_2F_6, N_2O, etc.) used in various steps of the fabrication process, and if not captured and controlled, would be emitted directly into the atmosphere, contributing to the overall GHG emissions of the facility. ID1 would also use fluorinated substances such as HTFs to control equipment temperature during semiconductor manufacturing and for other supporting processes. These HTFs are managed within closed systems, and their exposure to the atmosphere is closely monitored. Due to these process controls, any fugitive emissions of HTFs would have minimal impact on ambient GHG levels.

GHG emissions estimates were calculated based on estimates of expected process gas consumption and HTF use associated with ID1. Direct GHG emissions were developed utilizing the methodologies detailed in the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (IPCC 2019 Refinement). The calculation methodology utilized the proposed capture and control efficiencies for POU abatement from the 2019 IPCC Refinement for process gas use. Calculated GHG emissions for HTFs were conservatively assumed to not account for controls, although those abatement systems would be in place for ID1.

Although not required by regulations, MTI has established corporate sustainability goals that have significantly influenced the design of the Proposed Project and will continue to shape its development as plans are finalized. These goals target reductions in both Scope 1 and Scope 2 emissions. MTI has publicly committed to achieve 100 percent renewable energy use (through virtual and physical power purchase agreements, RECs, green tariffs, and on-site solar) for U.S. electricity consumption by the end of calendar year 2025. MTI has also established a corporate commitment to net zero GHG emissions from operations (Scope 1) and purchased energy use (Scope 2) by 2050.

[9] As the IDHVM Building component of ID1 would be a commercial fab, Micron Boise would be required to report non-R&D-related emissions from ID1 fluorinated gases use to the GHGRP.

For Scope 1 emissions control, Micron would implement several key strategies for ID1. For example, point-of-use (POU) abatement devices will be utilized to capture and control GHG emissions from process gases, achieving an average DRE of 88 percent. Additionally, centralized catalytic GHG abatement systems would be installed, offering more efficient reduction of emissions than POU devices alone. Micron is also actively researching alternative HTF chemistries that would have lower GHG emission potential with the aim of further minimizing the environmental impacts of these necessary cooling fluids over time.

In addition to manufacturing emissions, direct stationary fuel combustion associated with ID1 would occur from the combustion of natural gas for WBVs; VOC thermal oxidizers; boilers; heating, ventilating, and air conditioning (HVAC); and POUs for process safety and/or GHG control and the combustion of diesel fuel during testing of emergency generators. Emissions associated with stationary fuel combustion for the operation of ID1 were calculated using the methods outlined in 40 C.F.R. Part 98 Subpart C.

In 2022, Micron announced its partnership with Idaho Power to facilitate a new 40-megawatt (MW) solar project to provide renewable energy for Micron Boise (separate from the Proposed Action). Additionally, a power purchase agreement with Terra-Gen has been secured for approximately 178 MW of wind electricity capacity (also independent of the Proposed Action) and associated RECs annually. Once Terra-Gen's project is operational, it would avoid more than 280,000 MT CO_2e emissions annually, comparable to the average electricity use of more than 50,000 homes in the United States. Assuming Micron Boise's successful transition to 100 percent renewable energy for purchased electricity by the end of 2025 through this combination of methods, the operation of ID1 would avoid or offset up to 1,560,000 MT of GHG emissions.

MTI's sustainability efforts extend beyond its direct operations by actively encouraging its suppliers to reduce their own Scope 1 and 2 footprints and by requiring them to submit CDP reports or provide direct GHG data. Furthermore, MTI is driving improvements in the power requirements, performance, and size of each successive generation of chips, aiming for a 15 percent power efficiency improvement over previous generations. These improvements in product efficiency would help offset potential GHG impacts from increased computational demands. *(*Micron 2022b).

As discussed previously, estimated total direct and indirect GHG emissions associated with the operation of ID1 would be approximately 192,000 MT CO_2e per year. Although the increase of GHG emissions from the facility is large, the emissions are minor in comparison to Idaho's statewide emissions. In 2021, Idaho reported a total of 40,500,000 MT CO_2e emissions statewide. Compared to statewide emissions, the operation of ID1 would account for about 0.48 percent of the state's GHG emissions. These estimates account for Micron's use of POU abatement for process emissions as well as Micron's commitment to use 100 percent renewable electricity by the end of 2025 for all purchased electricity.

The capture, control, and avoidance of GHG emissions associated with the operation of ID1 would serve to reduce the project's potential effects on GHG emissions and climate change. Within the analysis areas of Ada County and the State of Idaho, the effects of climate change have the potential to result in increase in peak and average temperature as well as lead to more severe wildfires and droughts. Micron has designed the operation of ID1 to incorporate certain resiliency features such as designing non-combustible buffers between areas with fire risk and on-site

components, optimizing site efficiency to reduce electrical demand, incorporating redundancy for facility cooling capacity, and enhancing water reuse and recycling to reduce water demands.

Based on the above, operation of ID1 is anticipated to result in minor effects on climate change and resiliency.

3.3.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, no CHIPS Act financial assistance would be made available to construct and operate ID1, though Micron Boise operations would be expected to continue. GHG emissions from direct and indirect sources associated with Micron Boise would continue. Micron Boise would continue to control on-site process GHG emissions through POU abatement with a DRE of between 60 and 98 percent. Additionally, Micron Boise would remain committed to the use of 100 percent renewable energy sources for the purchases of electricity by the end of calendar year 2025. This would reduce indirect emissions of GHG by up to 250,000 MT per year once implemented. As a result of Micron Boise's ongoing capture and control of process GHG emissions as well as commitment to reducing indirect emissions resulting from electrical generation, the effects on climate change from the No Action Alternative would be anticipated to be minor.

3.3.4 BMPS

Micron has committed to provide 100 percent renewable energy for all electricity purchased for Micron Boise through a combination of methods, in support of a commitment to achieve 100 percent renewable energy use for its U.S. electricity consumption by the end of calendar year 2025. Additionally, Micron would continue to reduce GHG emissions associated with process gases and HTFs by researching and implementing low GWP alternatives, where feasible. Finally, Micron would continue to optimize operation of GHG process abatement to implement an average DRE for process gases of approximately 88 percent.

3.4 WATER RESOURCES

This discussion of water resources includes surface water, streams, groundwater, and floodplains. There are no shorelines, wetlands, lakes, or rivers present within the analysis area.

3.4.1 REGULATORY SETTING

The legal framework for water resources includes federal and state laws, regulations, and standards promulgated by EPA and implemented by IDEQ. Additionally, the City of Boise establishes local rules for indirect discharges from industrial and commercial sources to its publicly owned treatment works.

3.4.1.1 GROUNDWATER

While many federal and state laws regulate water quality and groundwater, there is no comprehensive approach for groundwater quality protection in the state of Idaho. The Ground Water Quality Protection Act of 1989 created the Ground Water Quality Council and directed it to

develop a groundwater quality protection plan and a groundwater monitoring program for the state. Under Idaho Code § 39-120, IDEQ is designated as the primary agency to coordinate and administer groundwater quality protection programs for the state. The Ground Water Quality Rule establishes minimum requirements for the protection of groundwater quality through standards and an aquifer categorization process. It also serves as a basis for the administration of programs that address groundwater quality but does not in and of itself create a permit program.

At the federal level, groundwater is regulated by several laws that control, limit, and remediate the discharge of pollution into groundwater. These laws include the Clean Water Act (CWA), 33 U.S.C. § 1251 *et seq.*, the Safe Drinking Water Act (SDWA), 42 U.S.C. § 300f *et seq.*; the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9601 et seq.; and the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6901 *et seq.*

Groundwater is also regulated by a combination of appropriation systems and ownership rights. The Idaho Department of Water Resources (IDWR) manages water in the state of Idaho through water allocation and distribution processes. IDWR also has authority to designate areas for regulating groundwater withdrawals from aquifers subject to insufficient supplies, based on groundwater level trends.

3.4.1.2 SURFACE WATER

Section 404 of the CWA establishes a program to regulate the discharge of dredged or fill material into jurisdictional waters of the United States (WOTUS), including wetlands. Activities in WOTUS regulated under Section 404 include fill for development, water resource projects (such as dams and levees), and infrastructure development (such as highways and airports). Section 404 requires a permit before dredged or fill material may be discharged into WOTUS, unless the activity is exempt from Section 404 regulation (e.g., certain farming and forestry activities). WOTUS may include (1) the territorial seas and traditional navigable waters, (2) tributaries, (3) certain lakes ponds, and impoundments, and (4) adjacent wetlands. The U.S. Army Corps of Engineers (USACE) is authorized to review and issue permits under Section 404.

Wetlands are jointly defined by EPA and USACE as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas."

In *Sackett v. Environmental Protection Agency*, 598 U.S. 651 (2023) (a.k.a. *Sackett II*), the U.S. Supreme Court clarified the definition of adjacent wetland under the CWA to include only those wetlands that are adjacent to a body of water that already constitutes a WOTUS (a relatively permanent body of water connected to traditional interstate navigable waters) and have a continuous surface connection to that water body, making it difficult to determine where the "water" ends and the "wetland" begins. In Idaho, the scope of WOTUS is presently interpreted consistent with *Sackett* and pre-2015 EPA and USACE regulations.

The CWA further authorizes the National Pollutant Discharge Elimination System (NPDES) program. The NPDES program regulates the discharge of point (e.g., end of pipe) and nonpoint (e.g., stormwater) sources of water pollution. In 2018, EPA approved Idaho's application to administer and enforce the Idaho Pollutant Discharge Elimination System (IPDES) program.

IDEQ will administer the approved IPDES program regulating discharges of pollutants into WOTUS under its jurisdiction. EPA approved Idaho's implementation plan that transfers the administration of specific program components from EPA to the state over a four-year period in accordance with the Memorandum of Agreement between IDEQ and EPA Region 10, and subject to EPA oversight and enforcement. The IPDES program establishes limits on the amounts of specific pollutants that can be discharged into surface waters.

3.4.1.3 WATER SUPPLY

The SDWA authorizes EPA to establish minimum standards for tap water and state programs to protect underground sources of drinking water. Under the SDWA, EPA issues National Primary Drinking Water Regulations, which are legally enforceable primary standards and treatment techniques that apply to public water systems.

Pursuant to the SDWA, EPA recently announced its final maximum contaminant levels (MCLs) in drinking water for five different PFAS substances: perfluorooctanoic acid (PFOA), perfluorooctane sulfonate (PFOS), perfluorohexane sulfonic acid (PFHxS), perfluorononanoic acid (PFNA), and hexafluoroprophylene oxide dimer acid and its ammonium salt (HFPO-DA or GenX) (89 Fed. Reg. 32532 (Apr. 26, 2024)). EPA also established a Hazard Index MCL for mixtures containing two or more of PFHxS, PFNA, HFPO-DA, and perfluorobutane sulfonic acid (PFBS). EPA set final MCLs for PFOA and PFOS at 4 parts per trillion (ppt) each, and limits for PFHxS, PFNA, and HFPO-DA at 10 ppt each.

The Hazard Index MCL defines when the combined levels of two or more of PFHxS, PFNA, HFPO-DA, and PFBS requires action. A mixture with combined levels of two or more of these four PFAS greater than 1 (unitless) indicates an exceedance of health protective levels. For the Hazard Index MCL, EPA set health-based water concentration (HBWC) levels for PFHxS (10 ppt), PFNA (10 ppt), HFPO-DA (10 ppt), and PFBS (2,000 ppt). The individual PFAS ratios of PFAS concentrations to HBWCs are then summed across the mixture to yield the hazard index. The typical implementation of MCLs occurs through separate rulemakings, which may include state adoption of drinking water levels no less stringent than the federal MCLs and establishment of state water quality standards for surface waters. Rulemakings also may establish discharger-specific limitations (including effluent limitations in either NPDES or state pollutant discharge elimination system permits) to define acceptable discharges to surface waters. Publicly owned treatment works (POTWs) may develop local limits restricting the quantity of PFAS that industrial users can discharge to POTWs. It is anticipated that ID1's industrial wastewater discharge permit will include limits imposed by its local POTW, as appropriate.

3.4.1.4 STORMWATER AND WASTEWATER

As discussed above, the IPDES program also regulates nonpoint sources of water pollution (e.g., stormwater and wastewater). There are two types of IPDES permits: Individual and General. Individual permits are specifically tailored to an individual facility based on the type of activity, nature of the discharge, and receiving water quality. Construction site operators engaged in clearing, grading, and excavating activities that disturb 1 acre or more must obtain an IPDES Construction General Permit for stormwater discharges and develop a Stormwater Pollution Prevention Plan (SWPPP).

Individual industrial and commercial facility NPDES permits incorporate water pollution regulations developed by EPA known as effluent limitation guidelines (ELGs), which impose uniform national pretreatment standards for water effluent (e.g., wastewater flows) on specific industrial and commercial users. EPA promulgated the Electrical and Electronic Components ELGs (40 C.F.R. Part 469) in 1983. The regulation covers direct and indirect dischargers and includes semiconductor manufacturing facilities. Process and major wastewater sources regulated under these ELGs include: cutting and slicing; lapping and polishing; and cleaning, rinsing, and degreasing activities. The Electrical and Electronic Components ELGs are incorporated into IPDES permits for direct dischargers and permits or other control mechanisms for indirect dischargers.

EPA's 2023 Effluent Guidelines Program Plan 15 outlines EPA's plan to protect the nation's waterways by studying and developing technology-based pollution limits for wastewater discharges from industrial sources. Although EPA has not issued ELGs for PFAS, EPA is conducting a new study of POTW influents to characterize PFAS concentrations from industrial dischargers to POTWs, which EPA will use to inform development of future industrial pretreatment programs. A public comment period on EPA's proposed information collection request to support the POTW Influent PFAS Study closed on May 28, 2024.

3.4.1.5 FLOODPLAINS

Federal flood risk management is primarily regulated by the Federal Emergency Management Agency (FEMA) through EOs 13690, 11988, and 14030. These EOs establish the Federal Flood Risk Management Standard (FFRMS) and require federal agencies to evaluate their actions to avoid adverse impacts to floodplains and development in flood-risk areas. Flood potential is typically assessed using the 100-year floodplain definition, which is defined as the area that has a 1 percent chance of inundation by a flood event in a given year.

3.4.2 AFFECTED ENVIRONMENT

This section analyzes potential effects to water resources located within the proposed analysis area and a 0.5-mile buffer surrounding the proposed analysis area.

3.4.2.1 SURFACE WATER AND GROUNDWATER

Based on a surface water delineation completed by HDR (formerly SPF Water Engineering) on behalf of Micron in May 2022, two surface water features were identified in proximity to the analysis area. These surface water features are identified as the South and North Forks of Fivemile Creek. The North Fork extends along the north and east side of Micron Boise, with portions occurring within the analysis area, while the South Fork extends along the south and west side of Micron Boise and occurs outside the analysis area. In June 2022, HDR requested an Approved Jurisdictional Determination for the North Fork to determine whether those areas are regulated by the USACE under Section 404 of the CWA and/or Section 10 of the Rivers and Harbors Act. In December 2022, a USACE Approved Jurisdictional Determination confirmed that the North Fork of Fivemile Creek and its upstream branches represent an isolated segment within the analysis area and a 0.5-mile buffer and are not characterized as WOTUS (USACE 2022) (Appendix B). The

jurisdictional status of the South Fork of Fivemile Creek has not been determined, but it occurs outside of the analysis area to the south and west.[10]

Groundwater flow in the general area is north-northwest at a gradient of approximately 0.015 feet, and depth to groundwater is expected to range from 50 to 200 feet, depending upon proximity to nearby canals. Shallow aquifers in the Boise area are primarily recharged by irrigation water, seepage from canals, and precipitation (Rose 1994 cited in Brown and Caldwell 1997).

A sole source aquifer (SSA) is defined as an aquifer that supplies at least 50 percent of the drinking water for its service area where there are no reasonably available alternative drinking water sources should the aquifer become contaminated (EPA 2023b). Based on a search of the EPA's Map of SSA Locations, there are no SSAs located within or near the analysis area (EPA 2023b).

The IDWR monitors groundwater basins to identify and designate locations as Critical Groundwater Areas (CGWA). A CGWA is defined as all or part of a groundwater basin that does not have sufficient groundwater to provide a reasonably safe supply for irrigation or other uses at the current or projected rates of withdrawal (IDWR 2021). When a CGWA is designated, IDWR approves a CGWA groundwater management plan for the area that outlines the effects of groundwater withdrawals on the aquifer from which withdrawals are made and on any other hydraulically connected sources of water. The online IDWR CGWA map revealed no CGWAs within or near the analysis area, with the closest located 21 miles southeast in Cleft, Idaho (IDWR 2023). A Groundwater Management Area (GWMA) is all or part of a groundwater basin that may be approaching the conditions of a CGWA. Applications for new water appropriations may be approved only after it is determined that sufficient supply is available and other prior water rights would not be impaired. IDWR may require reporting of water use by water users within the area (IDWR 2024). The analysis area is located within the Southeast Boise GWMA, which consists of a specific cold water aquifer unit, commonly described as the Boise-Fan aquifer. Utilization planning information for the Boise-Fan aquifer suggests that the aquifer is capable of sustaining net diversions (i.e., total diversion minus groundwater recharge) below 2,500 to 3,000 acre-feet (af) annually by all users.

Micron Boise is currently permitted through the IPDES Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity permit (Micron NPDES ID. IDR053115) to discharge stormwater runoff to the South Fork of Fivemile Creek. The IPDES permit requires Micron to implement measures to control industrial stormwater discharge as necessary to meet applicable water quality standards. In September 2016, Micron installed a head gate on the existing south pond at Micron Boise to limit stormwater discharges due to planned events. Stormwater has been retained on site since the installation of the head gate. In April 2019, Micron installed a pumping/diversion system and reuses the stormwater for irrigation on site.

[10] The Approved Jurisdictional Determination request for the South Fork of Fivemile Creek is currently under USACE review.

3.4.2.2 WATER SUPPLY

Micron Boise currently receives water from multiple sources including private groundwater rights, a private Boise River water right, an irrigation district water right entitlement, a contract for Boise River storage water with the Bureau of Reclamation, and domestic water from the Veolia municipal water system. Micron Boise's current water rights are detailed in Appendix B. Under current water rights, Micron can divert 4,506.7 af of groundwater annually without recharge; however, only 1,750 af of annual Micron groundwater production is considered sustainable from the Boise-Fan aquifer without recharge. Therefore, Micron maintains an extensive groundwater recharge program utilizing existing injection wells, which allow for surface and irrigation water allotments to be used to offset groundwater use. When considering all water sources, Micron Boise currently uses approximately 4.0 MGD.

In August 2016, SPF Water Engineering, LLC prepared the Treasure Valley Domestic, Commercial, Municipal, and Industrial (DCMI) Water-Demand Projections (2015-2065) report for the Idaho Water Resource Board and IDWR. The purpose of the water demand forecast was to "(1) estimate current DCMI water use and (2) project the amount of additional water needed to supply DCMI water demand by the year 2065" (SPF 2016). The report evaluated several future water demand projections, each based on common assumptions regarding the irrigated area per household and different assumed levels of conservation or consumptive use. Based on then-current water use patterns, a DCMI water-demand increase of approximately 158,000 af by the year 2065, excluding demand met by currently developed surface water was determined to be the most probable scenario. This scenario would represent a 50-year growth in water demand consistent with the projected growth in population. It would result in an overall per capita use rate (152 gallons per day (gpd) per person in the year 2065) that is slightly less than the 2015 rate (158 gpd/person).

Specific conclusions from the report on sources of supply include the following:

- "Options for supplying the net DCMI demand could include (1) diversions from the Boise River (through increased surface-water storage, use of flood flows for aquifer storage and recovery strategy, or direct diversions from the Boise River below Star, Idaho), (2) additional development of Treasure Valley groundwater, (3) new diversions from the Snake River, or (4) reuse of treated municipal effluent.

- "Treasure Valley aquifers can likely supply a portion of the increased future demand. However, it is also likely that the additional use of surface water (from the Boise River or Snake River) would be needed to meet the future DCMI demand.

- "Additional water supplies may be developed from the Snake River or lower Boise River. Boise River hydrographs suggest availability of surface water as the Boise River gains from groundwater discharge and surface-water return flows. Permits for new diversions from the Snake River are likely available for DCMI uses during most times of the year.

- "Reuse of treated effluent can reduce the need to develop new supplies to meet future demand. Treated wastewater can be (and is currently) used for irrigation of parks and other public common areas. Future treatment methods may enable the use of treated effluent for residential irrigation. Discharge of treated effluent directly or indirectly to the Boise River increases Boise River flows that may be diverted (especially below Star, Idaho) for future DCMI (or other irrigation) needs." (SPF 2016).

3.4.2.3 WASTEWATER

Micron Boise is currently permitted to discharge 5.94 MGD to the City of Boise POTW. The existing Facility's average wastewater flows are approximately 3.7 MGD.

Micron Boise currently conducts pre-treatment on site prior to discharge. Wastewater from the industrial processes at Micron Boise is routed to the City of Boise sewer system, and subsequently to the City of Boise POTW, through three outfalls. Micron Boise is currently permitted under the City of Boise Industrial Waste Pretreatment Program Indirect Discharge Permit (IDP) IDP05-012, effective May 1, 2021, to April 30, 2025 (City of Boise 2021). This permit identifies Micron Boise as a Significant Industrial User (SIU) and authorizes Micron Boise to discharge non-domestic process wastewater to the City of Boise sewer system. Micron Boise is subject to federal Categorical Pretreatment Standards for Existing and New Sources of Electrical and Electronic Components. In addition, Micron's discharge at regulated outfalls is subject to local limits for pH, mercury, total phosphorus, and ammonia. As described in the IDP, compliance with these limits is protective of the City of Boise POTW and represents the best practicable control technology economically available. The site-specific local limits in the permit applicable to Micron are established based on current City of Boise POTW NPDES permit limitations (for the City of Boise POTW's discharge to the Boise River), protection of the City of Boise's collection and treatment systems, and protection of the Boise River's instream water quality. Micron Boise has been in compliance with the IDP permit limits since issuance of the permit and has never exceeded any of the discharge limitations in the permit. Thus, Micron Boise's wastewater discharges do not cause an upset of the POTW treatment process or degradation of Boise River water quality.

Regulated industrial wastewater that is generated throughout Micron Boise (except for Buildings 32, 39, 51, and 80) is treated and processed through Building 22. Industrial wastewater is generated from various semiconductor fabrication processes and facility support services. Treated industrial wastewater is routed from Building 22 to Building 18, which houses the industrial wastewater pump and discharge monitoring station, and is released to the sewer on a continuous basis. This release location is known as Outfall 3 (historically numbered).

The photomask fabrication process located in the existing Facility's Building 80 is similar to wafer fabrication. Wastewater from the photomask fabrication process is collected and conveyed via industrial wastewater lines to an end-of-process treatment system and outfall monitoring station within the lower level of the building. Although this wastewater management facility is designated as Outfall 4, a recent change was approved to reroute this discharge to Outfall 5. Outfall 4 has been retained for contingent use only.

The semiconductor fabrication processes and facility support services located in the Facility's existing Building 51 generate regulated industrial wastewater, which is collected and conveyed via industrial wastewater lines to an end-of-process treatment system and outfall monitoring station within the adjacent wastewater treatment building, Building 39. This wastewater management facility is designated as Outfall 5. Each of the three outfalls located on site is subject to and monitors compliance with the effluent limitations established by permitted federal pretreatment rules and local limits.

3.4.2.4 FLOODPLAINS

Based on a review of the FEMA Flood Insurance Rate Map data, the analysis area is not located within a floodplain or flood hazard area (FEMA 2024).

3.4.3 ENVIRONMENTAL CONSEQUENCES

3.4.3.1 PROPOSED ACTION

TEMPORARY CONSTRUCTION EFFECTS

Construction activities associated with ID1 would modify the ground surface, influencing stormwater runoff as well as require the use of water resources for use in the construction process. To control stormwater effects, Micron would obtain coverage under the IPDES Construction General Permit and develop and implement a SWPPP as required under the IDP Permit. The SWPPP requires the development of BMPs, which must be implemented throughout the term of construction. The purpose of the BMPs is to prevent or reduce stormwater contamination and prevent or reduce soil erosion, which in turn protects the underlying Boise-Fan aquifer and nearby waterbodies.

BMPs applicable to ID1 building construction and tool installation include those focused on minimizing and mitigating impacts associated with movement of construction vehicles and equipment delivery vehicles and good housekeeping activities consistent with guidance found in the Idaho Catalog of Storm Water Best Management Practices (IDEQ 2020). Micron would comply with BMPs, including, but not limited to, the following:

- Staging Areas – Staging areas would be clearly designated locations where construction equipment, vehicles, waste bins, office trailers and other construction related materials may be stored on site. Staging areas would be sized so that they provide appropriate space to accommodate storage and parking needs, as well as loading and unloading operations. Staging areas would be located, constructed, and maintained to prevent the discharge of sediment, solid waste, dust, trash, debris, or other pollutants from the site.

- Vehicle Sediment Control – Vehicle sediment control would be used to minimize track out of sediment from construction vehicles exiting the construction site onto off-site streets, other paved areas, and sidewalks, to prevent sediment from entering the drainage system. Temporary devices, such as a pad of coarse aggregate or a construction mat, would be installed at exits from the construction site to a public roadway to stabilize the road and remove sediment. Additional controls to remove sediment from tires, such as wheel washing, rumble strips, and rattle plates, can also be used where necessary.

- Stabilized Construction Roads and Staging Areas – Roads and staging areas would be stabilized whenever they are used by construction traffic or where concentrated traffic occurs, such as around materials storage areas. Construction roads would also include erosion prevention measures such as waterbars or road sloping. Waterbars reduce erosion by diverting stormwater runoff from the road surface and directing it to a safe discharge area while sloped roads are designed to divert surface water off the entire road surface and concentrate flows to discharge into a sediment basin or another sediment control device.

- Hazardous Material Management and Spill Prevention and Control – Good hazardous materials management would prevent or reduce pollutant discharge to stormwater from hazardous materials by reducing waste generation, properly using materials and disposing of waste, and training employees, contractors, and subcontractors. A spill prevention and control plan would be developed and would include procedures for preventing spills of hazardous waste, such as paints, cleaners, petroleum products, and solvents, and methods for handling and cleaning up any spills. These measures would ensure that hazardous wastes do not have the potential to contact groundwater or surface waters in the analysis area.

- Concrete Waste Management – Concrete waste management would prevent pollutant discharge to stormwater from concrete waste by conducting off-site washout, performing on-site washout in a designated area, and training employees and subcontractors on proper management techniques.

- Solid Waste Storage and Disposal – Solid waste management procedures and practices would be designed to prevent or reduce the discharge of litter and other pollutants to stormwater. Practices would include providing waste containers (e.g., dumpster or trash receptacle) of sufficient size and number to contain all waste expected to be generated. Personnel would gather and dispose of waste in designated waste containers on each workday, and immediate cleanup of waste containers if they overflow.

- Site Stabilization – Site stabilization and landscaping are expected to occur at the conclusion of building shell construction and prior to equipment and tools installation.

In addition to stormwater considerations, the construction of ID1 would require the use of water as a construction material (concrete mixing, soil amendment) as well as for the control of fugitive dust emissions (road and disturbed area watering). On-site water withdrawals associated with construction can be accommodated by Micron's existing domestic or industrial water supply. Additionally, these withdrawals are not anticipated to overlap with Micron industrial operational water needs for ID1. Further, should additional water supply be required, water can be purchased from the municipal water supply and transported to the site by construction contractors as required to meet short term demands.

Considering the control of stormwater effects as required by the IPDES Construction General Permit and associated BMPs, as well as the availability of water supply for construction activities from Micron Boise's existing municipal and industrial water supplies, the temporary construction effects on water resources are anticipated to be minor.

LONG-TERM EFFECTS INCLUDING OPERATIONS

Operation of ID1 is projected to increase Micron Boise's water supply demand by approximately 5.5 MGD from all water sources, for a total incoming water demand of 9.5 MGD (when including ongoing Micron Boise operations). On-site reuse/recycle would be maximized (design target of 75 percent) so that external water withdrawals are minimized. Additionally, Micron maintains an active Master Water Plan to ensure water resources can accommodate the planned operations.

AQUIFERS, GROUNDWATER, AND SURFACE WATER

Groundwater use would increase to support process water demand. Groundwater supplies for ID1 are constrained both administratively by water rights and physically by the Boise-Fan aquifer limitations and surface water availability. Micron has the ability to increase and maintain annual production volumes from the aquifer by mitigating depletions through aquifer recharge. If the Boise-Fan aquifer is adequately recharged using surface water supplies, total groundwater production can be increased significantly. Water storage in the aquifer can allow short-term usage to exceed sustainable aquifer capacity, provided that overdrafts of aquifer storage can be replaced by recharging when surface water supplies are available. To accommodate the additional demands for groundwater during operation of ID1, Micron would utilize existing surface water and irrigation water rights to increase aquifer recharge using existing or expanded ground water injection wells. Micron may also pursue additional groundwater rights from the Boise-Fan aquifer from IDWR based on the ability to increase recharge through existing or enhanced surface water injection.

Upon commencement of operation of ID1, if necessary, Micron would also apply for a modification to Micron Boise's existing IPDES stormwater permit. Micron would continue to include implementation of measures to control industrial stormwater discharge to meet applicable water quality standards and ensure the project does not contribute to degradation of nearby waterbodies.

MUNICIPAL WATER

In addition to groundwater supply, operation of ID1 would require increased municipal water use, for both domestic and industrial water use. Municipal water delivery would have the potential to increase water supply by up to 3.0 MGD and would be provided by the Veolia municipal water system. Veolia operates a total of 81 groundwater wells, 35 reservoirs, two treatment plants, and 1,241 miles of water mains. Approximately 70 percent of the Veolia water supply comes from underground wells located throughout the county, while the remaining 30 percent is sourced from surface water. Veolia's groundwater supply system extends beyond the Boise-Fan aquifer and allows for access to groundwater that is separate from Micron Boise's primary groundwater source.

Veolia accelerated the development of a new main water line (approximately 24-inch diameter) that will link Federal Way and Columbia Way. This water main was designed to enhance system reliability within the analysis area for all Veolia customers; however, the new main would also ensure enhanced delivery capability for municipal water supplied to ID1. Municipal water supplied to ID1 would serve domestic, fire suppression, and industrial water uses. The water used for domestic purposes would comply with the SDWA.

WATER TREATMENT RECYCLING AND REUSE

Operation of ID1 would include a WWT facility to treat incoming water to ensure it meets Micron's high-purity specifications for manufacturing. The WWT would also provide wastewater pre-treatment to ensure that the outgoing wastewater meets the quality requirements for treatment at the Opal water treatment and renewal facility. The pretreatment process for wastewater sent to Opal would be the same as Micron Boise's current wastewater pretreatment process; however, instead of discharge to the POTW, wastewater directed to Opal would undergo additional

treatment processes that would result in higher quality treated water suitable for reuse in mechanical systems associated with the operation of ID1. All wastewater associated with the operation of HVM would be processed at the Opal water treatment facility, with no anticipated increase in wastewater being directed to existing Micron Boise wastewater outfalls.

During operation of ID1, wastewater flow rates to the Opal water treatment facility would be expected to be less than 2,600 gallons per minute (gpm) (3.7 MGD); the facility, however, would be designed with a 20 percent capacity safety factor built into this number. The maximum and average discharge rates from the Opal water treatment facility are planned to be 2,600 gpm (3.7 MGD) and 2,000 gpm (2.9 MGD), respectively.

The Opal facility would provide end-of-pipe wastewater treatment for ID1 operations and would be a zero liquid discharge (ZLD) facility, meaning that no liquid waste streams would be generated by the facility. The Opal facility would help reduce the consumption of municipal, surface, and groundwater resources by treating on-site used wastewater and recycling it back to ID1 to accommodate additional water demands. Treated water from the Opal facility is intended for reuse at Micron Boise, including for new mechanical systems. Micron Boise also plans to use the recycled water for UPW and possibly in aquifer recharge applications, but additional data collection and analysis based on actual water quality data would be required prior to such uses.

Under a City of Boise contingency plan, treated wastewater from Opal may be discharged to the existing City of Boise POTW or to a future City of Boise industrial recycled water facility during start up or other upset condition. If deemed necessary, Micron would apply for a modification to its existing City of Boise Industrial Waste Pretreatment Program IDP to reflect any changes to discharge flow rates or discharge characteristics from the Opal facility. If treated wastewater from Opal is discharged to the existing City of Boise POTW or to a future City of Boise industrial recycled water facility, adherence to the IDP permit requirements, such as effluent chemical limitations, including for PFAS and discharge volume limitations, would be protective of groundwater and surface water impacted by the City of Boise POTW (or future City of Boise industrial recycled water facility).

As part of Micron's global environmental, health, and safety programs, MTI is working with the semiconductor industry to investigate PFAS applications throughout the manufacturing process, research the innovation and feasibility of substitutes, explore opportunities to reduce or eliminate PFAS use, and pursue pollution prevention and treatment options. MTI works with groups such as the World Semiconductor Council (WSC), the Semiconductor Industry Association's PFAS Consortium, SEMI, and the National Science Foundation/Semiconductor Research Corporation Engineering Research Center for Environmentally Benign Semiconductor Manufacturing. Additionally, MTI is investigating and testing possible wastewater treatment options as the development of technology in this area continues to evolve. ID1 will incorporate treatment technology based on this review and may also rely on fabrication process design that segregates certain waste streams that may contain PFAS for management at off-site permitted treatment and disposal facilities.

No additional changes to the existing POTW would be anticipated to be required as a result of the temporary increased discharge.

Although the Opal facility would be a ZLD facility, it would still generate sludge/solids, including biological solids, sludge from softening, and salts from crystallization, from the water treatment process. Typically, these solids are considered non-hazardous and disposed of off-site at permitted landfills within the project region. Treatment chemical waste can become corrosive, and small amounts of waste material may be generated for chemical storage and equipment maintenance. None of these wastes would be dispersed into the water supply or have any effect on water quality or supply.

The operation of ID1 would occur in a location without the presence of floodplains or WOTUS, but would require an increase in water consumption from groundwater, surface water, and municipal supplies. When considering the availability of the municipal water supply, Micron's ongoing process of enhancing groundwater recharge through surface and irrigation water injection, and the development of the Opal water treatment and renewal facility, the operation of ID1 is anticipated to have a moderate effect on water supply. Although the construction and operation of ID1 would have the potential to alter stormwater runoff, when considering the implementation of BMPs and associated regulatory requirements and compliance, ID1 would have a minor effect on surface water resources.

3.4.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, Micron Boise would not receive CHIPS financial assistance to expand Micron Boise to include HVM or construct ID1, and existing operations would be expected to continue. Micron Boise would continue to operate in accordance with its present water needs as provided by existing water rights and municipal supply and discharge stormwater and treated wastewater in accordance with its regulatory permits. As a result, the operation of Micron Boise under the No Action Alternative would be anticipated to have a minor effect on water resources.

3.4.4 BMPS

Micron has committed to identify water recycling activities for both existing operations and future construction of ID1 to support MTI's global commitment to achieve 75 percent water conservation by calendar year 2030, including operating the Opal water treatment and renewal facility to reuse an average of 2.9 MGD of wastewater. Further, Micron would optimize aquifer recharge through existing and expanded aquifer injection wells to ensure sustainability for groundwater resources. Finally, Micron would implement stormwater BMPs as required by IPDES permits throughout the construction and operation phases of ID1.

3.5 CULTURAL RESOURCES

3.5.1 REGULATORY SETTING

The following federal, state, and local laws, regulations, plans, policies, and guidance documents informed the assessment of cultural resources:

- Section 106 of the National Historic Preservation Act (NHPA) and implementing regulations.
- American Indian Religious Freedom Act.

- Ada County 2025 Comprehensive Plan, updated 2019.
- Blueprint Boise – Boise's Comprehensive Plan, updated 2021.

3.5.2 AFFECTED ENVIRONMENT

In accordance with the NHPA, CPO will consult with the State of Idaho, Indian Tribes, and other interested parties to identify historic properties and other cultural resources that may be impacted by ID1. The NHPA defines historic properties as any district, site, building, structure, or object listed in, or eligible for listing in, the National Register of Historic Places (NRHP). For the purposes of this analysis, historic properties can be divided into three categories:

- Archaeological resources (prehistoric and historic) include the place or places where the remnants of a past culture survive in a physical context that allows for the interpretation of these material remains.
- Architectural resources include standing buildings, structures, landscapes, and other built environment resources of historic or aesthetic significance.
- Traditional cultural properties include properties associated with cultural practices and beliefs of a living community that are (1) rooted in the community's history and (2) important to maintaining the continuing cultural identity of the community.

The area of potential effects (APE) for cultural resources is the geographic area or areas within which an undertaking (project, activity, program, or practice) may cause changes in the character, visual setting, or use of any historic properties present. The APE is influenced by the scale and nature of the undertaking and may be different for various kinds of effects caused by the undertaking. For the purposes of this EA and the NHPA review, the direct APE consists of the proposed ID1 fab building site area (Figure 1-2) and associated supporting facilities, and the indirect APE consists of the immediately adjacent areas to ID1.

Separate from the Proposed Action, Micron conducted early coordination with the Idaho State Historic Preservation Office (SHPO) for site preparation activities. As part of this coordination, a cultural resources inventory was completed (Appendix C, Part 1). The Fivemile Creek (01-22065) was previously recommended as eligible for listing on the NRHP under Criterion A (properties significant for their association or linkages to events) in 2007. Early coordination with the SHPO also flagged that further investigation may be warranted regarding potential visual effects on the NRHP-listed section of the Oregon National Historic Trail (NHT). Some portions of the Oregon NHT currently have views ranging from approximately 1.5 miles to approximately 3.5 miles to Micron Boise and the proposed ID1 location. These views are mapped and described in the Oregon NHT Visual Impact Assessment (Appendix C, Part 3).

According to the U.S. Department of Housing and Urban Development Office of Environment and Energy's Tribal Directory Assessment Tool, there are three tribes with interests in Ada County: the Confederate Tribes of the Warm Springs Reservation of Oregon; the Shoshone-Bannock Tribes of the Fort Hall Reservation; and the Shoshone-Paiute Tribes of the Duck Valley Reservation, Nevada. According to the National Atlas of the United States of America, there are no Indian or tribal reservation areas within or near Micron Boise and ID1.

3.5.2.1 GOVERNMENT-TO-GOVERNMENT CONSULTATION

CPO identified 16 Tribes who may have an interest in the Proposed Action. CPO plans to initiate consultation with the 16 Tribes. These efforts followed previous outreach by Micron to these Tribes, including by letters dated July 13, 2023. Results of the government-to-government consultation will be provided in the Final EA.

3.5.3 ENVIRONMENTAL CONSEQUENCES

3.5.3.1 PROPOSED ACTION

TEMPORARY CONSTRUCTION EFFECTS

As described in Section 2.2, with the exception of a small area (approximately 28 acres) immediately adjacent to the existing Mask Building, construction of ID1 elements would occur on an already prepared site. A follow-up cultural resources inventory for the approximately 28-acre area adjacent to the Mask Building was completed in May 2024 and no cultural resources were identified (Appendix C, Part 2).

Fivemile Creek would be avoided during ID1 construction activities. Additionally, Micron would implement and maintain the BMPs identified in applicable SPCC Plans and SWPPPs to avoid any localized effects on Fivemile Creek. Operation of ID1 would have no adverse effects on Fivemile Creek.

As described in the Oregon NHT Visual Impact Assessment (Appendix C, Part 3) ID1 would result in negligible, non-adverse effects on the NHT. Due to the distances between NHT viewpoints and ID1, as well as existing mature vegetation and manmade development between the NHT and ID1, it is anticipated that ID1 construction equipment and activity would not be easily discernable and would not be the predominant component of someone's view on the NHT (Appendix C, Part 3). Some construction cranes may be visible, but these would be temporary and far enough from NHT viewers as to not adversely distract from their NHT experience. Therefore, the Proposed Action would result in only localized and negligible, non-adverse construction effects on the NHT.

LONG-TERM EFFECTS INCLUDING OPERATIONS

Operation of ID1 would not affect Fivemile Creek. Micron would implement and maintain the BMPs identified in applicable SPCC Plans and SWPPPs to avoid effects on Fivemile Creek. Due to the distances between NHT viewpoints and ID1, as well as existing mature vegetation and manmade development between the NHT and ID1, it is anticipated that some taller elements of ID1 (e.g., gas plant columns) may be visible, but would not be easily discernable from the NHT. These elements would not be the predominant component of someone's view from the NHT. Moreover, to the extent practicable, ID1 buildings would be painted in hues and sheens to minimize glare reflection and visibility and blend in with Micron Boise. ID1 elements would be visually consistent with the site's existing industrial zoning. Therefore, ID1 would result in no adverse, long-term operational effects on the Trail.

3.5.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be no CHIPS financial assistance for ID1 and ID1 project elements would not be constructed. No potentially historic properties exist within or would be affected by ongoing Micron Boise operations. Micron broke ground on Micron Boise in 1978 and completed its original fabrication facility in 1981; Micron Boise has existed for 43 years and is not a predominant feature viewable from the Oregon NHT. Therefore, Micron Boise operations would continue to not adversely affect cultural resources, including the NHT, as described in Appendix C, Part 1. There would be no adverse effects on cultural resources from the No Action Alternative.

3.5.4 BMPS

No cultural resources would be adversely affected by ID1. However, as a BMP, if unanticipated discoveries of unknown cultural resources occur during construction of ID1, the resources would be protected until guidance is provided on how to proceed.

3.6 BIOLOGICAL RESOURCES

Biological resources include living, native, or naturalized plant and animal species and the habitats within which they occur. Plant associations are referred to generally as vegetation, and animal species are referred to generally as wildlife. Habitat can be defined as the resources and conditions present in an area that support a plant or animal.

Within this EA, terrestrial vegetation and terrestrial wildlife are considered. Threatened, endangered, and other special status species are discussed, as applicable.

3.6.1 REGULATORY SETTING

The following federal, state, and local laws, regulations, plans, policies, and guidance documents informed the assessment of biological resources:

- Endangered Species Act (ESA) (16 U.S.C. § 1531 *et seq.*).
- Migratory Bird Treaty Act (MBTA) (16 U.S.C. § 703 *et seq.*).
- Bald and Golden Eagle Protection Act (16 U.S.C. § 668 *et seq.*).
- EO 13186 (Migratory Bird Conservation).
- Idaho Invasive Species Law of 2008 (Title 22 Chapter 19 Idaho Code).

3.6.2 AFFECTED ENVIRONMENT

The area of analysis for biological resources includes Micron Boise and the proposed ID1 site area (Figure 1-2). These areas include paved and developed areas associated with buildings and infrastructure, as well as gravel roads and other areas maintained free of vegetation. Additionally, Micron previously cleared, grubbed, and graded the proposed ID1 site area using private funds.

The area of analysis is located within the City of Boise, in Ada County, Idaho, approximately 0.35 miles east of I-84 and 1 mile south of East Gowen Road at 8000 South Federal Way. This area is characterized by rolling topography that is transitional between the valley bottom habitats associated with the Boise River, and the forested peaks of the Boise Mountains to the northeast. The topography within the area of analysis is generally flat, with elevations ranging from approximately 3,000 feet to 3,300 feet above mean sea level. The climate in this location is semi-arid, with an average rainfall of 11.6 inches. Summers are hot, dry, and mostly clear, and the winters are cold, snowy, and partly cloudy. Annual temperature ranges from approximately 24 degrees Fahrenheit (°F) to 93°F, with an average annual temperature of approximately 52°F.

Native vegetation communities in the vicinity of the analysis area are characterized by a mosaic of relatively degraded native sagebrush-steppe habitats dominated by big sagebrush (*Artemisia tridentata*), yellow rabbitbrush (*Chrysothamnus viscidiflorus)*, and bitterbrush (*Purshia tridentata*), with an understory dominated by invasive cheatgrass (*Bromus tectorum*), medusahead (*Taeniatherum caput-medusa*), and other non-native forbs including clasping pepperweed (*Lepidium perfoliatum*), rush skeletonweed (*Chondrilla juncea*), prickly Russian thistle (*Salsola tragus)*, and Scotch thistle (*Onopordum acanthium*) (HDR Inc. 2022).

A wetland and stream delineation were conducted in 2022, and USACE issued a Jurisdictional Determination in December 2022 documenting that there are no jurisdictional wetlands or waters within the project site (USACE 2022). The National Wetland Inventory identifies two drainages associated with the North Fork of Fivemile Creek that flow through the area of analysis. The 2022 USACE Jurisdictional Determination identifies the North Fork of Fivemile Creek as an isolated non-jurisdictional water (USACE 2022). The National Wetland Inventory also identifies a small area of scrub-shrub wetland habitat just outside the southern boundary of the area of analysis. This feature is a non-jurisdictional, artificially excavated pond. A narrow band of native willows borders the pond but vegetation around the pond is heavily grazed by livestock, and an herbaceous layer around the ponds consists primarily of cheatgrass (*Bromus tectorum*).

The disturbed nature of the habitat within the analysis area limits its suitability to provide wildlife habitat function. In general, the site provides suitable habitat for species that are adapted to disturbed conditions and relatively high levels of human activity. Species that may use habitats in the general vicinity (but outside) of the area of analysis include sagebrush obligate species such as various bird species (e.g., sage thrasher (*Oreoscoptes montanus*) and sagebrush sparrow (*Artemisiospiza nevadensis*)), reptiles and amphibians (e.g., western diamond back (*Crotalus atrox*), western whiptail (*Cnemidophorus tigris*), and Woodhouse's toad (*Anaxyrus woodhousii*)), and small- and medium- sized mammals (Piute ground squirrel (*Urocitellus mollis*) and North American badger (*Taxidea taxus*)). The latter two species are no longer present or are in very small numbers. Instead, habitat generalists that can exist in largely exotic grasslands are commonly found in the area of analysis, such as horned larks (*Eremophila alpestris*) and western meadowlarks (*Sturnella neglecta*) (IDFG 2023). Although little is known about insect populations in the analysis area, the loss of native, flowering forbs likely has reduced native insect pollinators.

Large mammals, such as mule deer (*Odocoileus hemionus*), elk (*Cervus canadensis*), and pronghorn (*Antilocapra americana*) are present in the general vicinity (but outside) of the area of analysis, although in reduced numbers due to agricultural development and urbanization. The Idaho Department of Fish and Game (IDFG) has designated certain areas outside the area of analysis as critical winter range habitat for these big game species, but none is located within

Micron Boise or the proposed ID1 site area. The nearest designated big game winter range habitat is located approximately 6 miles northeast of the area of analysis (Kauffman et al. 2020, 2022). Micron Boise and the previously cleared, grubbed, and graded ID1 site area are not suitable for wintering big game species.

SPECIAL STATUS SPECIES

ESA-LISTED SPECIES AND DESIGNATED CRITICAL HABITAT

Information regarding the potential presence of species designated as either threatened, endangered, or candidate species under the ESA, and the potential presence of designated critical habitat for any ESA-listed species, was obtained from the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation database (USFWS 2023b) (Appendix D). This information indicated the potential presence of two ESA-listed threatened species in the vicinity of the analysis area for further review: slickspot peppergrass (*Lepidium papilliferum*) and yellow-billed cuckoo (*Coccyzus americanus*). Additionally, the monarch butterfly (*Danaus plexippus*) is a candidate species that the Information for Planning and Consultation database indicated potentially could occur in the analysis area. No critical habitat has been designated in the analysis area for any ESA-listed species.

Micron facilitated several virtual meetings with staff from USFWS's Idaho Fish and Wildlife Office in Boise between March and May 2022 regarding potential presence of the ESA-listed plant species (slickspot peppergrass) in the analysis area. USFWS reviewed three years of survey data for the analysis area and concluded the analysis area can be considered "unoccupied" by slickspot peppergrass (USFWS 2023a) (Appendix D). The analysis area included the 28-acre area of new disturbance associated with ID1 (Figure 2-2).

Yellow-billed cuckoos inhabit deciduous riparian woodlands lining rivers or streams (Halterman 2015 et al.; USFWS 2021). In Idaho, breeding activity was noted in riparian habitat along the Snake River, about 20 miles southwest of the analysis area (Halterman et al.2015). The closest (marginally) suitable riparian habitat for yellow-billed cuckoos is along the Boise River, approximately 1 mile northeast of the analysis area. However, the species has not been reported along the Boise River or in the analysis area (USFWS 2022; IDFG 2023). Critical habitat for the yellow-billed cuckoo has been designated along the Snake River and Henry's Fork in southeastern Idaho. No portion of the analysis area has been designated as critical habitat for yellow-billed cuckoos (USFWS 2021). The analysis area does not provide the mature riparian habitat that is required by yellow-billed cuckoos (Hughes 2020), and this species is not expected to occur within the analysis area.

STATE OF SPECIES OF GREATEST CONSERVATION NEED

In addition to the federally listed species identified above, IDFG has identified certain species as Species of Greatest Conservation Need (SGCN) and manages these species consistent with the state's Wildlife Action Plan (IDFG 2023). The SGCN list is tiered as follows, to indicate the level of conservation needed for each species:

- Tier 1: Species that are highest priority for the state Wildlife Action Plan and that have the most critical conservation need.

- Tier 2: Species that are secondary in priority and represent species with high conservation needs, longer-term vulnerabilities, or patterns suggesting management intervention is needed, but not necessarily facing imminent extinction or having the highest management profile.
- Tier 3: Species that do not meet the above criteria, yet still have conservation needs. In general, these species are relatively more common, but commonness is not the sole criterion and often these species have either declining trends range-wide or information is lacking.

Table 3-6 identifies the IDFG SGCN species' likelihood of presence in the vicinity of the analysis area. However, the analysis area does not provide suitable habitat for any of these species.

TABLE 3-6 IDFG SPECIES OF GREATEST CONSERVATION NEED LIKELIHOOD OF PRESENCE IN ANALYSIS AREA

Category	Scientific Name	Common Name	SGCN Classification	Likelihood of Presence in Analysis Area
Invertebrate	*Bombus morrisoni*	Morrison's Bumble Bee	Tier 1	Moderate
Invertebrate	*Bombus occidentalis*	Western Bumble Bee	Tier 1	Moderate
Invertebrate	*Bombus suckleyi*	Suckley's Cuckoo Bumble Bee	Tier 1	Moderate
Invertebrate	*Polyphylla devestiva*	Lined June Beetle	Tier 2	Moderate
Amphibian	*Anaxyrus boreas*	Western Toad	Tier 2	Moderate
Amphibian	*Anaxyrus woodhousii*	Woodhouse's Toad	Tier 2	Moderate
Amphibian	*Lithobates pipiens*	Northern Leopard Frog	Tier 2	Moderate
Bird	*Asio flammeus*	Short-eared Owl	Tier 3	Moderate
Bird	*Artemisiospiza nevadensis*	Sagebrush Sparrow	Tier 2	Moderate
Bird	*Athene cunicularia*	Burrowing Owl	Tier 2	Moderate
Bird	*Numenius americanus*	Long-billed Curlew	Tier 2	Moderate
Bird	*Oreoscoptes montanus*	Sage Thrasher	Tier 2	Moderate
Bird	*Plegadis chihi*	White-faced Ibis	Tier 2	Moderate
Bird	*Aquila chrysaetos*	Golden Eagle	Tier 2	Moderate
Bird	*Buteo regalis*	Ferruginous Hawk	Tier 2	Likely
Mammal	*Lasionycteris noctivagans*	Silver-haired Bat	Tier 2	Moderate

Category	Scientific Name	Common Name	SGCN Classification	Likelihood of Presence in Analysis Area
Mammal	*Lasiurus cinereus*	Hoary Bat	Tier 2	Moderate
Mammal	*Myotis ciliolabrum*	Western Small-footed Myotis	Tier 3	Moderate
Mammal	*Myotis lucifugus*	Little Brown Myotis	Tier 3	Moderate

Source: IDFG 2023

3.6.2.2 MIGRATORY BIRDS AND BALD AND GOLDEN EAGLES

There are no documented bald or golden eagle nests or suitable nesting structures (e.g., cliffs or trees) on or adjacent to the analysis area, including the 28-acre area associated with ID1 (Figure 2-2). There are also no documented communal bald eagle winter-roosting sites on or in the vicinity of the analysis area (eBird 2021). Since Micron Boise consists of a mature, developed industrial facility with multiple buildings and impervious surfaces, and the ID1 area was previously cleared, grubbed, and graded, there is no suitable habitat for bald or golden eagles in the analysis area.

Micron Boise and the ID1 site area provide similarly limited nesting habitat suitability for migratory birds. Although many species of birds migrate through the vicinity, the disturbed nature of the analysis area limits the extent of suitable nesting and migratory stop-over habitat on the site to those that can nest on human-made structures (e.g., swallows).

3.6.2.3 INVASIVE SPECIES

There are no documented populations of invasive species within the analysis area. However, vegetated areas in the vicinity of the analysis area are characterized by an understory of invasive cheatgrass (*Bromus tectorum*), medusahead (*Taeniatherum caput-medusa*), and other non-native forbs including clasping pepperweed (*Lepidium perfoliatum*), rush skeletonweed (*Chondrilla juncea*), prickly Russian thistle (*Salsola tragus*), and Scotch thistle (*Onopordum acanthium*) (HDR Inc. 2022). Micron operates Micron Boise in compliance with local ordinances, which require vegetation management practices to prevent the spread of invasive species and noxious weeds.

3.6.3 ENVIRONMENTAL CONSEQUENCES

3.6.3.1 PROPOSED ACTION

TEMPORARY CONSTRUCTION EFFECTS

Potential temporary effects to vegetation and wildlife resources associated with the construction of ID1 include temporary vegetation impacts, spread of noxious weeds, temporary impacts to water quality, impacts associated with temporary construction noise, and potential for direct disturbance of individuals. These effects would be either negligible, or minor and localized.

The construction of ID1 would not result in any direct disturbance or loss of vegetation or habitat, as the entire analysis area is either developed or cleared of vegetation. USFWS determined that

the analysis area, including the 28-acre area of new disturbance associated with ID1 (Figure 2-2), was unoccupied by slickspot peppergrass (USFWS 2022) (Appendix D). Portions of the analysis area that are not paved or otherwise covered with buildings or other permanent infrastructure would be revegetated consistent with state and local regulatory requirements. For this reason, the potential for loss of vegetation or habitat is negligible.

Construction activities associated with ID1 could contribute to the spread of noxious weed species. Noxious weeds are widespread within the region and several species are documented as present at the analysis area (HDR Inc. 2022). Construction activities can mobilize and spread seed sources or expose areas of disturbed soil to colonization. Equipment can bring in new seed sources from off-site locations if not appropriately managed. Contractors would be required to comply with state and local laws and to implement BMPs established to minimize the spread of noxious weeds. In addition, once ID1 is constructed the site would continue to be managed by Micron in compliance with state and local laws. For these reasons, construction of ID1 would have only minor, localized effects on noxious weed populations.

Construction activities could potentially temporarily affect water quality in downstream surface waters. Contamination could occur through the accidental release of construction materials or wastes. Construction activities could also disturb sediment and construction stormwater could generate turbidity in downstream waterways. Appropriate BMPs would be implemented during all construction activities to avoid and minimize the potential for any temporary impacts to water quality, to the extent practicable. These BMPs include implementation of spill prevention plans and a SWPPP. All construction activities would be conducted in accordance with regulatory permit approvals including an IPDES Storm Water Construction General Permit, which would require compliance with state standards and the Clean Water Act. For this reason, the potential for temporary effects on water quality is negligible.

Background noise levels are relatively high within the vicinity of the analysis area, as it is located adjacent to an Interstate Highway and an active industrial manufacturing facility. Construction activities would temporarily increase noise levels compared to this existing baseline. Given the relatively low level of use of the analysis area by terrestrial species, there are no species that are expected to be exposed to levels of construction noise that would result in an adverse effect. Potential effects, if any, would be minor and localized, and would be limited to temporary behavioral modifications such as temporary avoidance of the area. Construction activities would be conducted consistent with the provisions of the MBTA, and no activities would be conducted that would require an MBTA permit from the USFWS.

LONG-TERM EFFECTS INCLUDING OPERATIONS

The long-term effects on biological resources from the operation of ID1 include permanent vegetation impacts, long-term effects on water quality (Section 3.4), noise and lighting effects during operation, and potential for direct disturbance of individuals. These effects would be either negligible or minor and localized.

There would be no permanent or long-term loss of vegetation or habitat, as the entire analysis area is either developed or cleared of vegetation. Portions of the analysis area that are not paved or otherwise covered with buildings or other permanent infrastructure would be revegetated

consistent with state and local regulatory requirements. For this reason, the potential for long-term effects on vegetation or habitat is negligible.

Background noise levels are relatively high within the vicinity of the analysis area, as it is located adjacent to an Interstate Highway and an active industrial manufacturing facility. Operation of ID1 would contribute incrementally to ambient noise levels compared to this existing baseline. Given the relatively low level of use of the analysis area by terrestrial species, there are no species that are expected to be exposed to levels of noise from operation that would result in any adverse effect. The facility would be operated consistent with local noise ordinances, which establish limits on the extent and timing of activities that generate noise. Effects associated with noise during operation of ID1 would be negligible.

ID1 would install new lighting and may contribute incrementally to an increase in visible ambient lighting. This could potentially affect species that are sensitive to ambient lighting, such as migratory birds. However, habitat suitability within the analysis area for migratory birds is minimal, and the potential contribution to ambient light would be similarly small. To the extent practicable, Micron would design light fixtures to be directional, and to minimize light spill, which would further reduce the extent of any potential effect. For this reason, effects associated with operational lighting would be minor and localized.

The operation of ID1 has the potential to increase direct disturbance of individual wildlife species, through on-site traffic interactions, and through the installation of structures which could present a collision hazard. Micron is coordinating with Idaho Power about typical animal guarding and deterrent practices for the types of transmission lines and structures associated with ID1. Generally, Idaho Power follows IEEE Guide for Animal Deterrents for Electric Power Substations (IEEE Standard 1264) and incorporates animal guards for new construction and adds them to existing apparatus as soon as possible. For this reason, effects associated with direct disturbance of wildlife would be minor and localized.

3.6.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be no CHIPS financial assistance for ID1, and existing operations would be expected to continue. Since no sensitive species are present in the analysis area and there is no suitable habitat for sensitive species in the analysis area, and since Micron Boise is a maturely developed industrial site and the ID1 site area was previously cleared, grubbed, and graded, the No Action Alternative would result in negligible to no effects on sensitive species or biological resources.

3.6.4 BMPS

Micron would implement BMPs to avoid and minimize adverse effects on vegetation and wildlife from ID1 construction and operations. Appropriate BMPs would be implemented during all construction activities to avoid and minimize the potential for any temporary effects on water quality, to the extent practicable, and to avoid and minimize potential spread of invasive species. These BMPs include implementation of spill prevention plans and a SWPPP. Moreover, Micron would restore temporarily disturbed areas consistent with applicable federal, state, and local regulations and applicable permits. Micron would design light fixtures to be directional, and to

minimize light spill, which would further reduce the extent of any potential effect. Micron would install animal guarding and deterrent measures consistent with IEEE Guide for Animal Deterrents for Electric Power Substations (IEEE Standard 1264).

3.7 LAND USE

3.7.1 REGULATORY SETTING

The following federal, state, and local laws, regulations, plans, policies, and guidance documents informed the assessment of land use:

- 23 C.F.R. Part 774 – Parks, Recreation Areas, Wildlife and Waterfowl Refuges, and Historic Sites.
- Section 6(f) of the Land and Water Conservation Fund Act.
- Blueprint Boise – Boise's Comprehensive Plan (updated 2021).
- Ada County 2025 Comprehensive Plan (updated 2019).
- Idaho Statutes Title 67 – Local Land Use Planning.

3.7.2 AFFECTED ENVIRONMENT

The analysis area is located on property owned by Micron and classified as Industrial: Technology (I-3) (City of Boise 2024a). The I-3 zoning district is intended to provide for manufacturing and technological facilities that may have a greater impact on surrounding areas than industries allowed in the mixed-use zoning districts (City of Boise 2024a). According to the Ada County Development Services, as shown in Figure 3-2, a small portion of the analysis area is classified as Areas of City Impact,[11] areas south of the analysis area are classified as rangeland, and areas to the north and west of the analysis area are classified as Mixed-Use: General (MX-2) and Industrial: Heavy (I-2), respectively (Figure 3-2).

The General (MX-2) zoning district is intended to provide opportunities for a mix of office, commercial, institutional, and residential zoning at a scale designed to serve community needs broader than those of nearby neighborhood, and the Heavy (I-2) zoning district is intended to accommodate general industrial activity, including uses that require significant heavy transportation services, uses that frequently operate during nighttime hours, and uses that require additional standards to protect health, safety, or general welfare (City of Boise 2024a).

The analysis area is located within the Airport Influence Area, which is established to restrict use and noise sensitive development. The Airport Influence Area is a defined area that experiences increased noise and safety impacts due to airport operations and flight patterns (City of Boise 2024b). In 2022, the Boise City Council approved the annexation of 358.2 acres located at 8000 South Federal Way and the rezoning of 32.1 acres of land located on 3851 East Columbia Road to

[11] Areas of City Impact are areas surrounding existing cities where future development, annexation, or incorporation is anticipated to occur.

Technological Manufacturing with Design Review and Development Agreement (Industrial). Additionally, on June 5, 2023, the Boise City Planning and Zoning Commissions recommended approval of Micron's application to annex 517 acres immediately south of Micron Boise, and 79 acres farther southeast of the Micron Boise.

Micron's conditional use permit application for the planned 160-foot-tall fabrication facility and two 185-foot-tall gas plant columns, which exceed the height standard of 150 feet for Technological Manufacturing zoning district (City of Boise 2022), also was approved by the Boise City Council.

3.7.2.1 LAND USE COMPATIBILITY

According to the Southeast goals and policies of the City of Boise's comprehensive plan updated in 2021, the area in the vicinity of Micron Boise is planned to provide a range of commercial and employment options, and it is the City of Boise's goal to reserve the area surrounding current Micron Boise for future high-tech industrial expansion (City of Boise 2021).

3.7.2.2 AESTHETIC AND VISUAL RESOURCES

The area of visual effect (AVE) is the area within which viewers may have clear views of the proposed ID1 site and would be close enough to visually distinguish the ID1 components, such as the fab building, gas plant towers, and other associated buildings. Within the AVE, viewsheds are what a viewer would see as they interact with the physical constraints in the environment and the physiological limitations of human perception (Federal Highway Administration 2015). The surrounding landform, land cover (vegetation and human-made structures), and atmospheric conditions delineate the viewshed.

The visual environment is also limited by distance, or proximity, from which viewers would be able to see ID1 with any discernable detail. Proximity can be defined using three distinct zones: foreground, middle ground, and background (Figure 3-3).

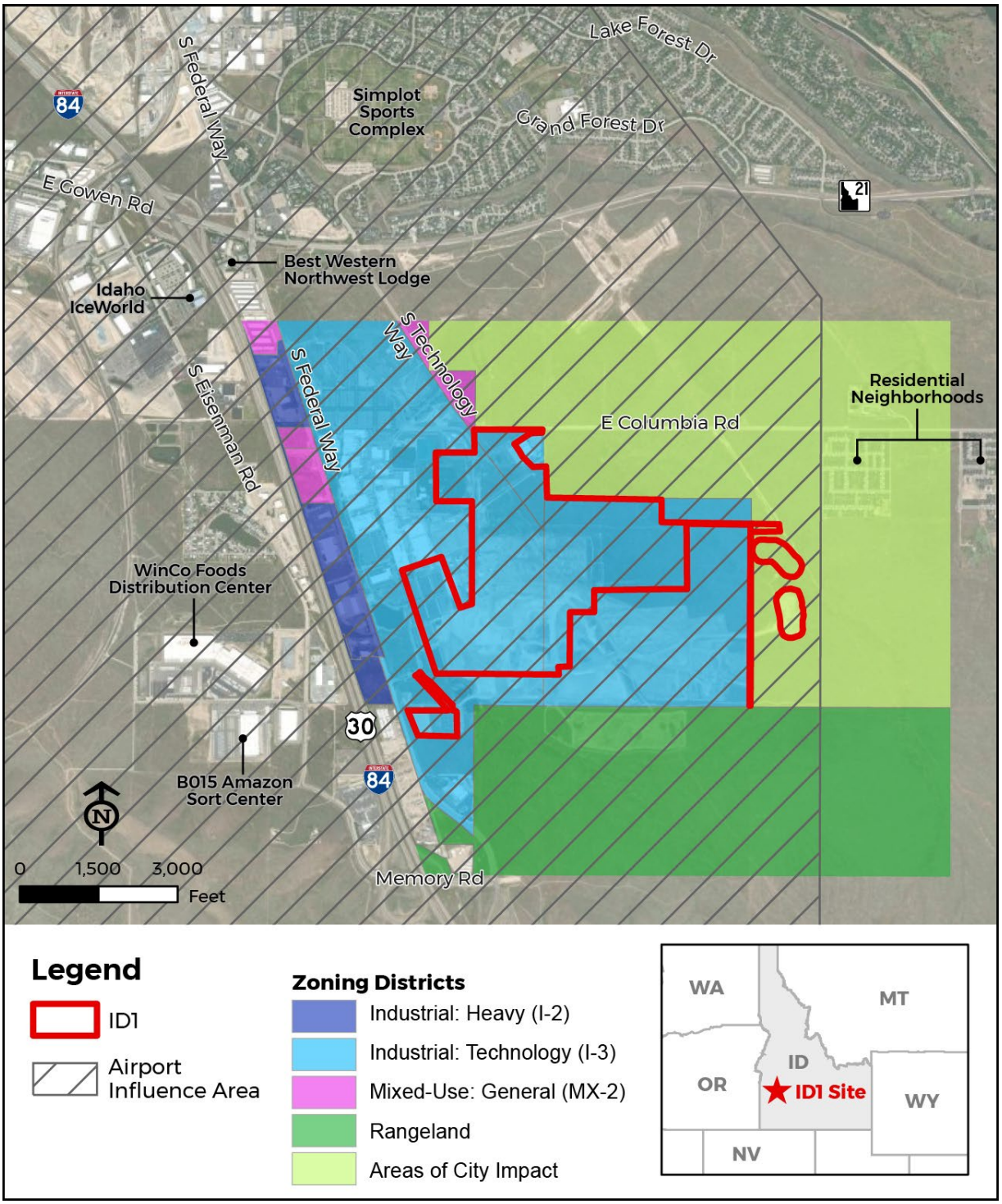
- Foreground: Comprises views from 0 mile (project limits) to 0.5 miles. Changes to the visual environment are mostly discernible in this zone. Foreground views tend to be the most affected by changes in visual quality, and views are generally not limited by atmospheric conditions. Views of ID1 would primarily consist of views from the foreground distance zone. Specific foreground views are identified and discussed in the analysis phase.

- Middle ground: Comprises views from 0.5 mile to 3.0 miles. In the middle-ground, changes in visual details may be discernible, but landform (hills and mountains) and land cover (buildings, structures, fences, signage, other physical objects, and existing vegetation) generally restrict line-of-sight views for most viewers. Some middle-ground views of the project may be available from elevated locations but may be affected by atmospheric conditions.

- Background: Comprises views beyond 3.0 miles. Project details and changes to visual quality are generally difficult to discern from this distance, and atmospheric conditions can easily affect or obscure views.

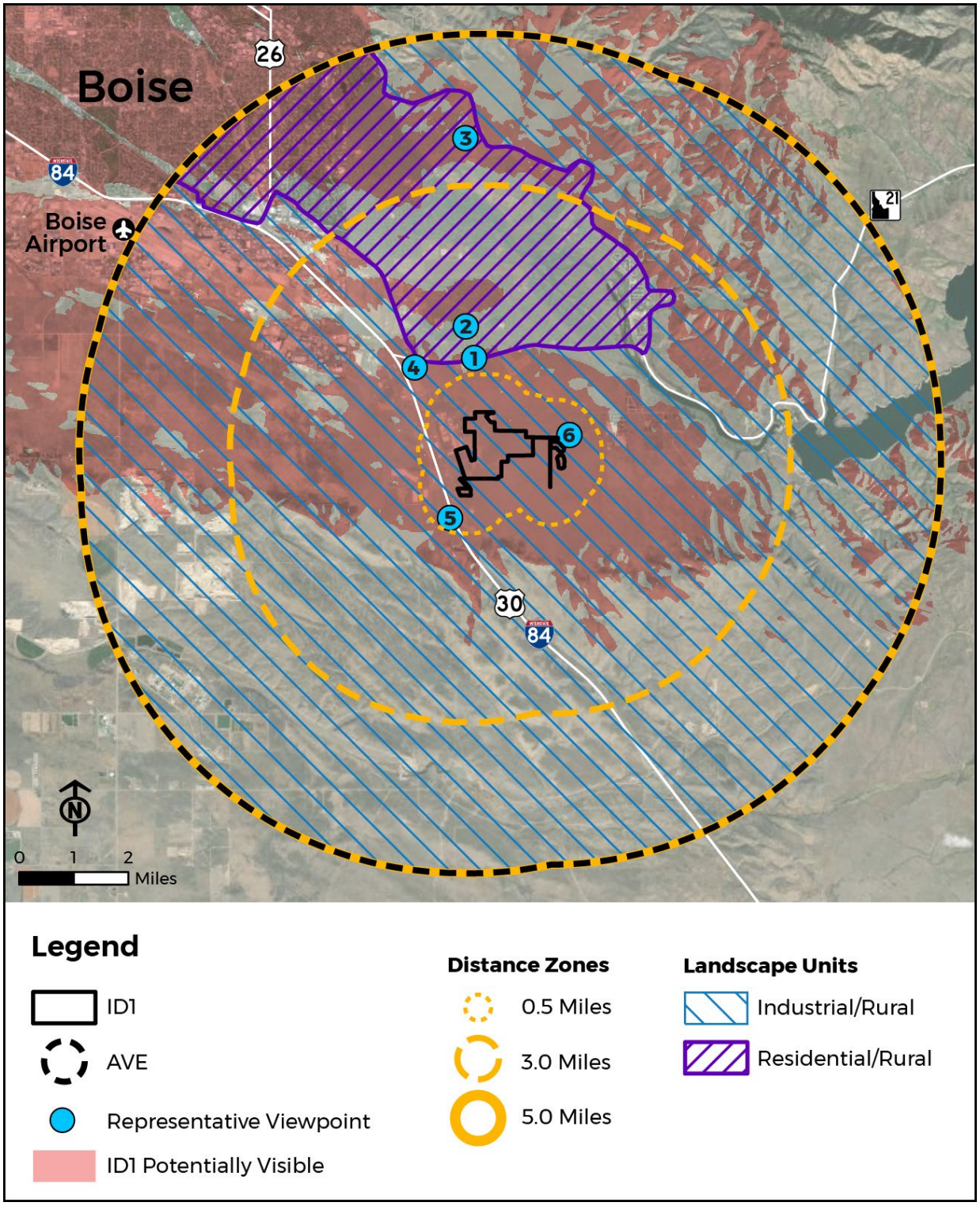
A landscape unit (LU) is a geographic area with a homogenous visual character within the AVE through which effects on viewers, visual character, and visual quality are assessed (Table 3-7). The AVE includes a Residential/Urban LU and Industrial/Rural LUs (Figure 3-3).

FIGURE 3-2 SURROUNDING ZONING



Source: Ada County Development Services 2024

FIGURE 3-3 LANDSCAPE UNITS AND REPRESENTATIVE VIEWPOINT LOCATIONS



Source: WSP USA

TABLE 3-7 REPRESENTATIVE VIEWPOINT DESCRIPTIONS

RVP	Description	Landscape Unit	Viewer Type
1	Highway 21 and Alta Ridge Ct. (Legend Ridge Neighborhood)	Residential/Urban	Residential
2	Simplot Sports Complex	Residential/Urban	Residential/Recreational
3	Vortex Drive	Residential/Urban	Residential
4	Hospitality Lane	Industrial/Rural	Commercial/Retail/ Industrial
5	Mr. Gas Travel Center	Industrial/Rural	Industrial
6	Amber Ridge Ave.	Industrial/Rural	Residential

Residential viewers generally have more potential sensitivity to changes in visual quality than commercial, industrial, or retail viewers due to residential viewers' long duration views and expectation for maintaining natural harmony and visual order.

Micron Boise consists of modern buildings featuring human-made materials and facades that create clean lines along building fronts and public facing areas. These areas are characterized by walkways and parking areas but include well maintained landscapes, shade and ornamental trees, lawns, and recreational facilities. It also includes heavy industrial visual elements such as overhead utilities, conveyor systems, large windowless building expanses, truck access, tanks, and other industrial process equipment. The existing nighttime environment includes parking and site lighting, safety and work lighting, and numerous other light sources.

3.7.3 ENVIRONMENTAL CONSEQUENCES

3.7.3.1 PROPOSED ACTION ALTERNATIVE

TEMPORARY CONSTRUCTION EFFECTS

Construction of ID1 and support buildings and the purchase and installation of tools would be consistent with industrial use zoning and result in no localized or regional impacts to land use. Moreover, ID1 would meet the City of Boise's Comprehensive Plan goals for high-tech industrial expansion for the analysis area.

Construction would involve the use of lighting, construction vehicles such as cranes, human-made structures and materials, and the movement of vehicles. Construction equipment is typically brightly colored to enhance visibility and ensure safety. There may be other visual changes during construction, such as the presence of staging areas, material storage, fencing, construction signage, and work lighting. Construction activities, lighting, human-made structures and materials, bright colors, and vehicle movement would be visible within the AVE.

Residential viewers with direct views of construction activities could perceive construction activities as degrading the existing visual quality. However, these impacts would be temporary and would be removed once building construction is complete. The presence of a large berm on the eastern side of ID1 would help to screen residential viewers' views (from homes south of Columbia Boulevard) toward ID1 construction activity. Moreover, to the extent practicable, Micron would minimize night-time construction to minimize night-time glare and light to nearby residences. Therefore, temporary construction effects on residential viewers would be localized and minor.

LONG-TERM EFFECTS INCLUDING OPERATIONS

Long-term operation and maintenance of ID1 would be consistent with the existing Industrial: Technology land use zoning and would be consistent with the City of Boise's Comprehensive Plan goals for high-tech industrial expansion. Therefore, ID1 would result in no direct or indirect adverse effects on land use.

The addition of a fab and support facilities associated with ID1 would change the existing visual environment. These changes would be seen within the existing visual context, which includes Micron Boise and other human-made structures, heavy industrial forms, materials, and lighting. Moreover, this visual change would be consistent with Industrial: Technology zoning.

Residential viewers with foreground views toward ID1 would experience some minor effects on visual quality with the expanded visual presence of ID1. However, these visual changes would blend with Micron Boise, which nearby residential viewers are already accustomed to seeing. Moreover, the presence of a large berm on the eastern side of ID1 would help to screen residential viewers' views (from homes south of Columbia Boulevard) toward ID1 operations and maintenance activities. Viewers with middle ground and background views toward ID1 would experience negligible visual impact because at these distances ID1 elements would be expected to blend into the visual context of Micron Boise and not be discernable.

Increased ambient light may be noticeable; however, to the extent practicable, Micron would design light fixtures to minimize light spill. Micron would consider exterior paint hues and sheens to minimize glare reflection and visibility and to blend in with Micron Boise, to the extent practicable. ID1 would have localized but minor effects on visual quality.

3.7.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be no CHIPS financial assistance for ID1; existing operations would be expected to continue and be consistent with the existing Industrial: Technology zoning. There would be no new visual elements (the fab and support facilities) to change visual quality for nearby residential viewers, who are already accustomed to Micron Boise. There would be no direct or indirect effects on land use or visual quality.

3.7.4 BMPS

Micron would minimize night-time construction to minimize visibility of night-time glare and light to nearby residences. To the extent practicable, Micron would design light fixtures to minimize light spill. Micron would consider exterior paint hues and sheens to minimize glare reflection and visibility and to blend in with Micron Boise, to the extent practicable.

3.8 NOISE

3.8.1 REGULATORY SETTING

According to Chapter 13 of the Ada County Code of Ordinances, no explicit numeric noise thresholds apply to Micron Boise. Ada County Code of Ordinances, Section 5-13-3 states that "Between the hours of ten o'clock (10:00) P.M. one day and seven o'clock (7:00) A.M. the next day, it shall be unlawful for any person or business to make, cause, or allow loud or unusual noise by means of voice, musical instrument, horn, radio, loudspeaker, automobile, machinery, other sound amplifying equipment, domesticated animals, or any other means which disturbs the peace, quiet, and comfort of any reasonable person of normal sensitiveness residing in the area. Loud or unusual noise is that which is plainly audible within any residence or business, other than the source of the sound, or upon a public right-of-way or street at a distance of 100 feet or more from the source of said sound." This is a general prohibition on unduly disturbing surrounding communities but does not reference specific noise thresholds. Additionally, the Boise Municipal Code does not state explicit noise threshold limits in Section 6-20 Noise.

Idaho Code 19-406 prohibits disturbing the peace, specifically stating "every person who maliciously and willfully disturbs the peace or quiet of any neighborhood, family, or person, by loud or unusual noise, or by tumultuous or offensive conduct, or by threatening, traducing, quarreling, challenging to fight or fighting, or fires any gun or pistol, or uses any vulgar, profane or indecent language within the presence or hearing of children, in a loud and boisterous manner, is guilty of a misdemeanor." This is a general prohibition regarding disturbance of the peace but does not reference specific noise thresholds for adherence. Since these regulatory codes do not have explicit numerical limits associated with them, there are no current enforceable sound level limits applicable to Micron Boise or ID1.

3.8.2 AFFECTED ENVIRONMENT

Based on the 2023 City of Boise Zoning Code revisions, ID1 would occur within Airport Influence Areas A and B. According to the City of Boise, an Airport Influence Area is an "area that experiences increased noise and safety impacts due to airport operations and flight patterns. Restrictions on land use and building occupancy, as well as requirements for new structure noise attenuation apply in this area." Micron Boise is located partially within these zones. Broadly, the zones have an influence on the acceptability of land uses, particularly for land uses sensitive to noise, such as residential development, rather than industrial land uses.

For Airport Influence Area A, "all new residential development and new schools are required to provide a sound level reduction of 25 decibels." Since the analysis area would not include a residential or school facility, this regulatory requirement is not applicable. For Airport Influence Area B, "residential development is not allowed. Sound insulation is required for noise sensitive areas or facilities." According to the City of Boise Zoning Code Rewrite, Adoption Draft design standards (d) published in February 2023, schools, universities, religious institutions, and adult or child day care facilities are prohibited in Airport Influence Area B.

To guide impact review, the EPA provides numerical sound level limit guidelines which can be used for an assessment of impacts to sensitive outdoor areas (EPA 1974). EPA interprets these as

residential areas or other areas sensitive to noise impacts. The nearest noise sensitive areas adjacent to the Micron property are approximately 1.2 miles east of the site. Table 3-8 details EPA noise guideline values for noise sensitive areas (EPA 1974).

TABLE 3-8 EPA NOISE GUIDELINE

Zoning District Classification	Limits (A-weighted decibels (dB(A))) Day-Night Sound Level (Ldn)	Limits (A-weighted decibels (dB(A))) Daytime (7:00 a.m. – 10:00 p.m.)	Limits (A-weighted decibels (dB(A))) Nighttime (10:00 p.m. – 7:00 a.m.)
Outdoors in sensitive areas	55*	55	45

* This would be a 24-hour average sound level with a 10-decibel penalty applied to the nighttime sound levels (i.e., 10:00 p.m. – 7:00 a.m.). Hence, the daytime limit evaluating to 55 dBA during the daytime and 45 dBA during the nighttime.

To assess baseline noise levels, Micron completed a noise monitoring program in January 2023 (Appendix E). The program sought to quantify baseline noise levels resulting from the current operations of Micron Boise, as well as principal surrounding noise sources. Five locations along the Micron Boise boundary were chosen to complete noise baseline measurements; each location and baseline noise levels are depicted in Figure 3-4. Due to the regular occurrence of vehicle traffic in the area, the A-weighted sound level exceeded for 50 percent of the measurement period (L_{A50}) value was used to determine the most realistic existing ambient noise levels at the Facility's boundary. The L_{A50} represents the value of the 50th percentile of the recorded monitoring data points, representing a median value of the dataset. Figure 3-4 displays the measured L_{A50} baseline sound levels at each location along ID1 during daytime and nighttime periods.

The existing acoustical environment east of the analysis area is typically rural or residential. South Federal Way runs along the western boundary of the site, and the primary source of noise is from vehicle traffic. Further west (0.1 miles) lies I-84, which represents a significant additional vehicle traffic noise source. Finally, Micron Boise is located within the southeast to northwest landing pattern for the Boise Airport. As a result, the monitored sources of baseline noise include limited Facility noise with more predominant vehicles and aircraft noise. During periods without vehicle noise, Micron Boise ranges from inaudible to barely noticeable at the Facility boundary. Micron Boise operation was not audible at the nearest residential area east of the Facility boundary.

FIGURE 3-4 NOISE MEASUREMENT LOCATIONS

Source: Trinity Consultants

3.8.3 ENVIRONMENTAL CONSEQUENCES

3.8.3.1 PROPOSED ACTION

TEMPORARY CONSTRUCTION EFFECTS

ID1 would generate temporary noise during construction installation of foundation pile or piers, blasting, and the use of heavy machinery such as bulldozers, graders, excavators, dump trucks, and cement trucks. The noise and sound levels would be typical of new industrial construction activities and would be limited to the area immediately adjacent to the construction activity. Further, the activity rates would be intermittent and are not proposed to occur in areas adjacent to residential land uses.

Micron would require construction contractors to implement construction noise mitigation strategies to minimize adverse effects on the human environment. Micron would designate an

Environment, Health, and Safety (EHS) employee as a primary contact for all noise complaints during construction activities. ID1 would manage noise using mitigation strategies, such as limiting outdoor construction activities, as practical, to daytime hours (7 a.m. to 10 p.m.), consistent with Ada County Code of Ordinances, Section 5-13-3), except for special circumstances when work would be required outside of that timing as driven by the ID1 schedule. Additionally, noise intensive activities such as installation of piles or piers and blasting would be completed exclusively during daytime hours.

LONG-TERM EFFECTS INCLUDING OPERATIONS

The operation of ID1 is anticipated to produce similar noise impacts to those generated by current Micron Boise operations. The major components of the operation of ID1 would be located centrally on the Micron Boise property, which would help mitigate potential off-site operational noise effects. Due to Micron Boise having limited effects on noise levels in the area, it is expected that vehicular and aircraft noise would continue to be the dominant noise sources within the analysis area.

The ID1 noise emitting sources are consistent with source types that occur at Micron Boise. Based on a review of the number of outdoor noise emitting sources associated with ID1 (primarily air handling units, cooling towers, scrubber exhausts, and generators), it was identified that the additional sources proposed for installation for the operation of ID1 were approximately equivalent to the total noise emitting sources currently in operation at Micron Boise. As a result, noise generation of ID1, in combination with existing Micron Boise operations, is anticipated to result in a doubling of the noise generated by the facility. Based on the acoustical principle of a doubling of sound pressure from a source, the combined operations would be predicted to increase ambient sound pressure at the facility boundary by approximately 6 A-weighted decibels (dB(A)).

When utilizing the monitored baseline noise conditions, the effect of a 6dB(A) increase in ambient noise would result in predicted noise levels of 46.0 dB(A) during the daytime and 43.2 dB(A) during the overnight hours, at the nearest residential area. These values would remain below the EPA noise guidelines for all periods and, as a result, would not be considered significant.

In addition to on-site operational noise, ID1 has the potential to affect traffic volumes on surrounding roadways as detailed in Section 3.9. Traffic volume adjacent to the surrounding residential areas near the Micron Facility are predicted to increase by approximately 10 percent due to the operation of ID1. Based on guidance from the Federal Highway Administration for traffic-related noise, doubling the number of sources (i.e., vehicles) increases the hourly equivalent sound level (Leq) by approximately 3 decibels (dB), which is usually the smallest change that people can detect without specifically listening for the change (USDOT 2018). Because the predicted increase in traffic volume is less than double the baseline traffic volume (only a 10 percent increase), the effects from traffic noise associated with ID1 adjacent to the nearest residential areas would be below 3 dB and therefore would not be perceptible or significant.

Based on the analysis in the previous sections, there are no anticipated significant adverse effects on noise levels in the area from ID1 operation. The long-term effects of ID1 on noise would be considered minor because a change in the amount of noise being generated by the Facility would occur, but no substantial resource effect would result; the change in noise would be detectable but not alter the condition or appearance of noise effects on residents surrounding the area.

3.8.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be no CHIPS financial assistance to expand Micron Boise to include ID1, and existing operations would be expected to continue. Based on a review of the baseline noise levels monitored at the nearest residential locations adjacent to the Micron Boise boundary, no exceedances of the EPA noise guideline were identified. As a result, the No Action Alternative is anticipated to have negligible effects on noise.

3.8.4 BMPS

Noise effects from the operation of ID1 are anticipated to be minor; therefore, no BMPs are proposed. The construction noise effects of ID1 would be managed through the use of work practices to avoid significant noise generating construction activities to the greatest extent practical between 10 p.m. to 7 a.m. daily.

3.9 TRANSPORTATION

3.9.1 REGULATORY SETTING

The analysis considered traffic and transportation effects of the No Action Alternative and Proposed Action within the traffic analysis area defined by the Ada County Highway District (ACHD) General Requirements and Procedures for Development, Section 7106, and in coordination with the Idaho Transportation Department (ITD).

3.9.2 AFFECTED ENVIRONMENT

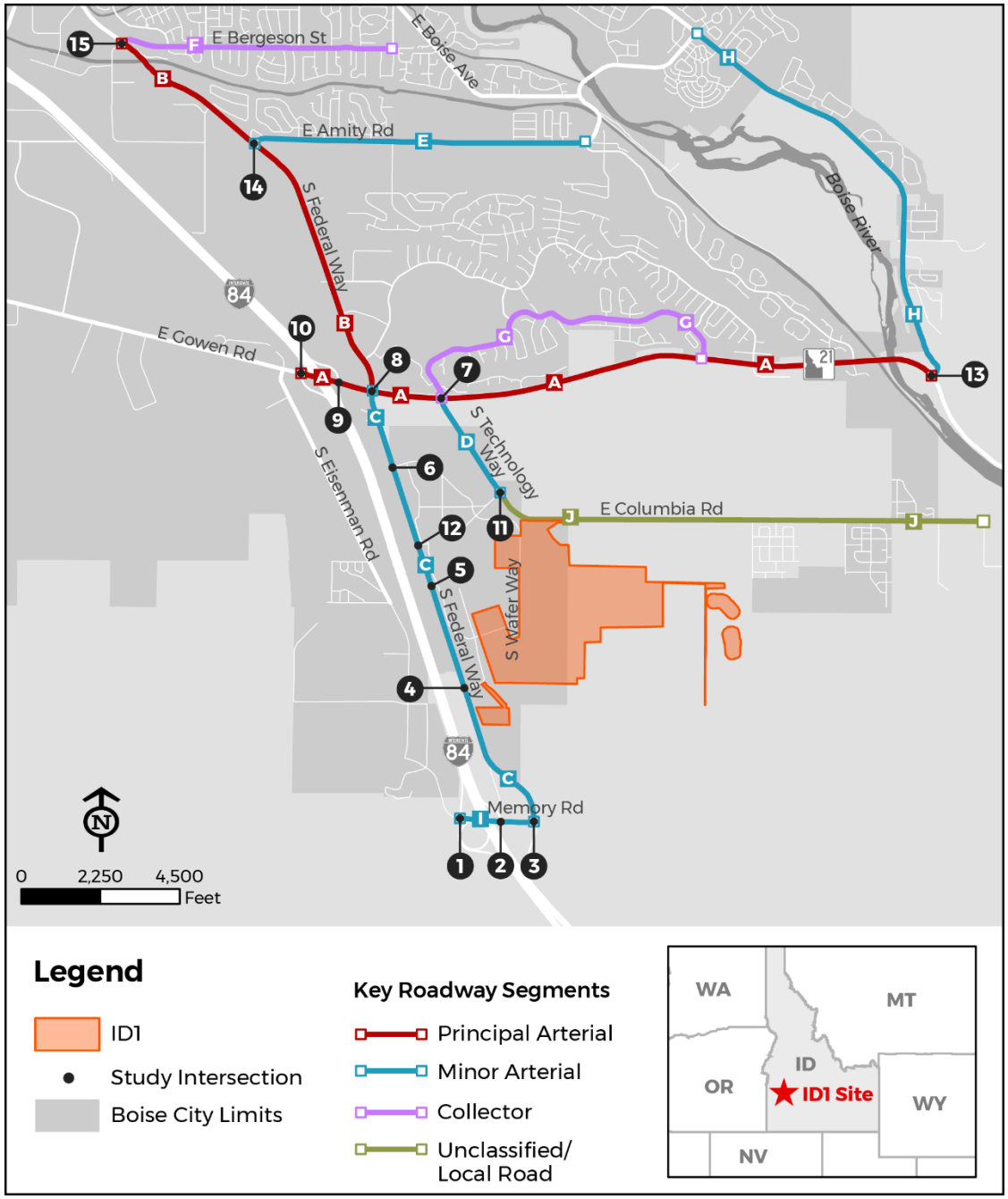
Micron Boise employs roughly 5,000 staff living across the various communities within Boise and the surrounding Treasure Valley (NV5 2022). Many of Micron Boise's staff who live in Boise commute on local roads, and those who live across the greater Treasure Valley typically commute on I-84. The transportation and traffic analysis area includes intersections, roads, and highways that may potentially experience traffic effects from ID1 (Figure 3-5). Key roadways and their functional classification are listed in Table 3-9. Traffic counts for these facilities are included in Appendix F.

TABLE 3-9 KEY ROADWAYS AND THEIR FUNCTIONAL CLASSIFICATION

Study Roadway	Facility Name	Segment	Functional Classification	Speed Limit (mph)
A	E Gowen Rd (SH-21)	I-84 to E Warm Springs Ave	Principal Arterial	45-55
B	S Federal Way	E Bergeson St to E Gowen Rd	Principal Arterial	45
C	S Federal Way	E Gowen Rd to Memory Rd	Minor Arterial	40
D	S Technology Way	E Gowen Rd to E Circuit Ln	Minor Arterial	40
E	E Amity Rd	S Federal Way to S Surprise Way	Minor Arterial	40
F	E Bergeson St	S Federal Way to S Apple St	Collector	30
G	Grand Forest Dr	E Gowen Rd to E Gowen Rd	Collector	30
H	E Warm Springs Ave	E Gowen Rd to E Eckert Rd	Minor Arterial	45
I	S Eisenman Rd / Memory Rd	I-84 to S Federal Way	Minor Arterial	40
J	E Columbia Rd	E Circuit Ln to End	Unclassified / Local Road	30

Source: NV5 2022

FIGURE 3-5 MAP OF TRAFFIC ANALYSIS AREA INTERSECTIONS



Source: NV5 2022

Current crash data for 2017-2021 from the Local Highway Technical Assistance Council were reviewed for each intersection and road segment in the analysis area. See Appendix F for rate of crash occurrence and severity. None of the intersections of interest has a crash rating higher than 1.0, meaning the intersections have less than 1 crash per million vehicles entering the intersection (NV5 2022).

There are no fixed-route transit services in the analysis area that would serve Micron Boise (NV5 2022). The analysis area contains sidewalks/multi-use paths and bike lanes in the areas as listed in Table 3-10.

TABLE 3-10 SIDEWALKS AND BIKE LANES IN THE ANALYSIS AREA

Type	Location
Sidewalks/multi-use path	South side of East Gowen Road (SH-21), west of South Federal Way
Sidewalks/multi-use path	North side of East Gowen Road between South Federal Way and South Technology Way
Sidewalks/multi-use path	Both sides of South Federal Way, north of East Gowen Road
Sidewalks/multi-use path	East side of South Federal Way, south of East Gowen Road for 1.25 miles
Bike Lane	East Gowen Road, west of South Federal Way
Bike Lane	South Federal Way, north of East Gowen Road
Bike Lane	South Federal Way, south of East Gowen Road
Bike Lane	South Technology Way, between East Gowen Road and East Circuit Lane

Source: Google Earth

The existing roadways vary in posted speed limits of 30 miles per hour (mph) on the local collector streets, to between 35 mph and 45 mph on the arterials (NV5 2022). State Highway 21 increases to 55 mph just east of South Technology Way. I-84 is 80 mph between the South Eisenman Road and East Gowen Road interchanges and slows to 65 mph before the Broadway Interchange to the northwest. According to the Traffic Impact Study, the peak hours were determined to be 5:15 a.m. to 6:15 a.m. in the morning, and 4:00 p.m. to 5:00 p.m. in the evenings.

Baseline conditions for operations at the study facilities are measured using level of service (LOS). LOS is an industry standard metric defined by the Highway Capacity Manual that takes into account delay, excessive volume to capacity ratio, and/or the reduction in travel speed in a corridor to measure the performance of a given roadway facility. LOS is scored A to F, where LOS A means that traffic is free flowing and there is no delay or reduction to travel time for users of the facility. Delay and volume to capacity ratio incrementally increase, and travel times increase as LOS approaches F, which represents a state of stagnant congestion. In the baseline condition, all facilities in the analysis area have additional capacity with an acceptable LOS except for the intersections listed in Table 3-11, which are operationally deficient because they do not meet the standard LOS for the agency with jurisdiction. In coordination with ACHD and ITD, Micron has constructed a construction access road that connects to the east side of the Eisenman Road Interchange and requires contractors and construction delivery vehicles to use this access road.

TABLE 3-11 EXISTING FACILITIES BELOW OPERATIONAL THRESHOLDS AT BASELINE CONDITIONS

Study Intersection	Facility Name	Control Type
8	E Gowen Rd at S Federal Way	Signal
10	E Gowen Rd at I-84 eastbound Ramp	Signal
14	S Federal Way at E Amity Rd	Signal
15	S Federal Way at E Bergeson Ave	Signal

Source: NV5 2023

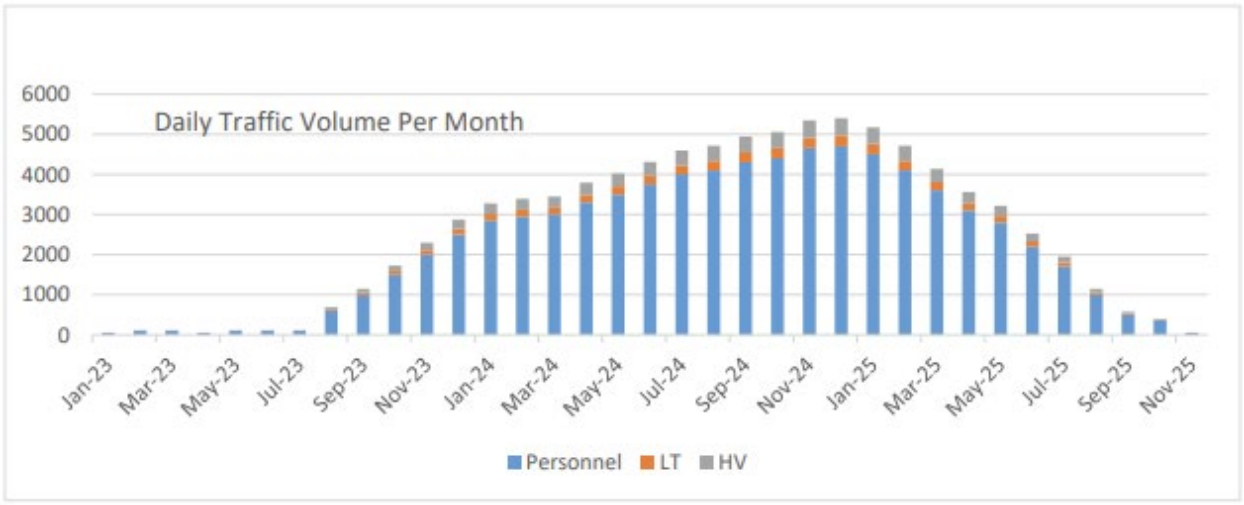
3.9.3 ENVIRONMENTAL CONSEQUENCES

3.9.3.1 PROPOSED ACTION

TEMPORARY CONSTRUCTION EFFECTS

Construction activities under the Proposed Action are projected to bring, on average, approximately 4,500 vehicle trips per day to the site, with a peak of approximately 5,500 vehicle trips per day in January 2025 (NV5 2023). Figure 3-6 depicts the anticipated changes in volume of construction trips to the site over time, which would include personal vehicles, light trucks, and heavy vehicles. A construction access road would connect at the east leg of the intersection of Memory Road and Eisenman Road and connect to the construction site to the north. Construction traffic would be directed to temporarily use this access during construction to make deliveries or construct elements of ID1. It is expected that temporary effects from construction activities on other analysis area intersections would be minor. Micron's construction contractor may consider a temporary traffic signal during construction to facilitate efficient movement of their construction vehicles. Due to the location of this road, it is anticipated that the majority of construction traffic would exit I-84 at the underutilized interchange at South Eisenman Road, which has sufficient capacity for this temporary traffic loading during construction (NV5 2023).

FIGURE 3-6 CONSTRUCTION TRAFFIC VOLUME OVER TIME



Source: NV5 2023
LT= Light Truck, HV= Heavy Vehicle

The following actions would be implemented to minimize temporary effects on traffic and transportation facilities during construction (NV5 2023):

- Develop a construction traffic management plan that would control vehicle and truck access to the construction site to the extent practicable.
- Limit on-site contractor parking to encourage carpooling and vanpooling from off site.
- Consider installing a temporary traffic signal at Memory Road and Federal Way/westbound I-84 off-ramp if traffic volumes impact efficient movement of construction vehicles.

The temporary reconfiguration of one intersection and construction of a dedicated construction site ingress/egress would be localized and minor and would not result in additional roadway congestion in the analysis area.

LONG-TERM EFFECTS INCLUDING OPERATIONS

Construction of ID1 is expected to last through 2025, with additional equipment installations and commissioning within the fab building itself occurring through the end of the decade. As a typical practice, a traffic impact study concludes at a "build" year, or 2025 in the case of ID1. For the purposes of this analysis, the "build" year is treated as an interim study year for traffic impacts. Beyond the "build" year, a "horizon" year of 2030 was studied, when ID1 would be fully operational. ACHD and ITD policies require that the analysis of ID1 traffic impacts assumes full operations in the "build" year of 2025, although that traffic may not be fully realized until the "horizon" year of 2030.

For this analysis, impacts were measured by traffic volume changes, changes to the safety of facilities in the analysis area, and changes to performance of each study facility.

It is reasonable to assume that, beyond 2030, background traffic within the analysis area would continue to grow, as the Community Planning Association of Southwest Idaho projects growth rates as high as 19.7 percent in some areas of southeast Boise (NV5 2023). ID1 would add 2,000 new employees and up to 750 new contractors to the site daily. Based on the Institute of Transportation Engineers Trip Generation Manual, for a Manufacturing land use, ID1 would result in 6,174 additional daily trips to and from the site. With the additional trips through the intersections in the analysis area, it is anticipated that crash frequencies would increase at the same ratio as the increase in overall volume to Micron Boise. As the speed limits and stopping sight distance on these facilities would not change, it is anticipated that severity of crashes would not change in the study facilities.

With the additional daily trips through the study intersections, the Traffic Impact Study made recommendations for improvements to address LOS impacts that were reviewed and considered by ACHD and ITD.

Table 3-12 summarizes traffic operations performance for all analysis area intersections and segments for the ID1 “build” year and “horizon” year, both without and with traffic improvement.

TABLE 3-12 LONG-TERM IMPACTS ON INTERSECTIONS AND ROAD SEGMENTS

Study Intersection	Facility	Control	Time of Day	Existing Condition (LOS)	Existing Condition LOS with Improvement	Build Year LOS	Build Year LOS with Improvement	Horizon Year LOS	Horizon Year LOS with Improvement
1	Eisenman at Interstate 84 (I-84) Eastbound (EB) Ramp	Side Street Stop	a.m.	A*	A*	B*	B*	B*	B*
1	Eisenman at Interstate 84 (I-84) Eastbound (EB) Ramp	Side Street Stop	p.m.	B*	B*	B*	B*	B*	B*
2	Eisenman at I-84 Westbound (WB) Ramp	No control	a.m.	N/A	N/A	N/A	N/A	A*	A*
2	Eisenman at I-84 Westbound (WB) Ramp	No control	p.m.	N/A	N/A	N/A	N/A	B*	B*
3	Memory Rd at Federal Way/I-84 WB Ramp	Side Street Stop	a.m.	A*	A*	A*	A*	A*	A*
3	Memory Rd at Federal Way/I-84 WB Ramp	Side Street Stop	p.m.	A*	A*	A*	A*	A*	A*
4	Federal Way at Gate C	Signal	a.m.	A	A	B*	A*	A*	A*

Study Intersection	Facility	Control	Time of Day	Existing Condition (LOS)	Existing Condition LOS with Improvement	Build Year LOS	Build Year LOS with Improvement	Horizon Year LOS	Horizon Year LOS with Improvement
4	Federal Way at Gate C	Signal	p.m.	A	A	A*	A*	A*	A*
5	Federal Way at Gate B	Side Street Stop	a.m.	F*	F*	F*	A*	F*	F*
5	Federal Way at Gate B	Side Street Stop	p.m.	D*	D*	D*	C*	E*	E*
6	Federal Way at Silicon Ln	Side Street Stop	a.m.	C*	C*	D*	D*	D*	D*
6	Federal Way at Silicon Ln	Side Street Stop	p.m.	C*	C*	C*	C*	C*	C*
7	Gowen Rd at Technology Way	Signal	a.m.	C	C	C	A	E	C
7	Gowen Rd at Technology Way	Signal	p.m.	B	B	C	B	E	C
8	Gowen Rd at Federal Way	Signal	a.m.	C	C	C	C	D	C
8	Gowen Rd at Federal Way	Signal	p.m.	D	D	E	D	F	D
9	Gowen Rd at I-84 WB Ramp	Signal	a.m.	A	A	A	A	A	A

Study Intersection	Facility	Control	Time of Day	Existing Condition (LOS)	Existing Condition LOS with Improvement	Build Year LOS	Build Year LOS with Improvement	Horizon Year LOS	Horizon Year LOS with Improvement
9	Gowen Rd at I-84 WB Ramp	Signal	p.m.	A	A	A	A	A	A
10	Gowen Rd at I-84 EB Ramp	Signal	a.m.	D	D	D	D	D	C
10	Gowen Rd at I-84 EB Ramp	Signal	p.m.	D	D	D	D	E	D
11	Technology Way at Circuit Ln	Side Street Stop	a.m.	B*	B*	B*	B*	C*	C*
11	Technology Way at Circuit Ln	Side Street Stop	p.m.	B*	B*	C*	C*	E*	E*
12	Federal Way at Gate A	Side Street Stop	a.m.	C*	C*	C*	C*	C*	C*
12	Federal Way at Gate A	Side Street Stop	p.m.	D*	D*	D*	D*	D*	D*
13	Gowen Rd at Warm Springs Ave	Side Street Stop	a.m.	B*	B*	B*	B*	B*	B*
13	Gowen Rd at Warm Springs Ave	Side Street Stop	p.m.	C*	C*	C*	C*	D*	D*

Study Intersection	Facility	Control	Time of Day	Existing Condition (LOS)	Existing Condition LOS with Improvement	Build Year LOS	Build Year LOS with Improvement	Horizon Year LOS	Horizon Year LOS with Improvement
14	Federal Way at Amity Rd	Signal	a.m.	D	C	E	C	F	C
14	Federal Way at Amity Rd	Signal	p.m.	D	D	F	C	F	D
15	Federal Way at Bergeson Ave	Signal	a.m.	D	C	D	C	F	B
15	Federal Way at Bergeson Ave	Signal	p.m.	D	D	E	D	F	B
Segment A	Federal Way, South of Silicon Way	Minor Arterial	a.m.	D	D	D	D	N/A**	N/A**
Segment A	Federal Way, South of Silicon Way	Minor Arterial	p.m.	D	D	D	D	N/A**	N/A**
Segment B	Gowen Rd, West of Technology Way	Principal Arterial	a.m.	D	D	D	D	N/A**	N/A**
Segment B	Gowen Rd, West of Technology Way	Principal Arterial	p.m.	D	D	D	D	N/A**	N/A**

Study Intersection	Facility	Control	Time of Day	Existing Condition (LOS)	Existing Condition LOS with Improvement	Build Year LOS	Build Year LOS with Improvement	Horizon Year LOS	Horizon Year LOS with Improvement
Segment C	Memory Rd, West of Federal Way	Minor Arterial	a.m.	D	D	D	D	N/A**	N/A**
Segment C	Memory Rd, West of Federal Way	Minor Arterial	p.m.	D	D	D	D	N/A**	N/A**
Segment D	Technology Way, South of Gowen Rd	Minor Arterial	a.m.	D	D	D	D	N/A**	N/A**
Segment D	Technology Way, South of Gowen Rd	Minor Arterial	p.m.	D	D	D	D	N/A**	N/A**

Source: NV5 2023.
*LOS represents the lowest rating among all lane groups. Overall, LOS is not available due to lack of a traffic signal.
**The segments on Federal Way are built to the identified maximum lane configuration in the Ada County Highway District (ACHD) Master Street Map and are not considered for widening. ACHD Policy Manual, Section 7106.7.2, Arterial Roadways Constrained by the Master Street Map.

Table 3-13 displays traffic that would be generated by ID1 as a percentage of the total traffic at each intersection in the analysis area. ID1 traffic as a percentage of total traffic would decline between 2025-2030 due to the background traffic growing and ID1 traffic remaining static.

TABLE 3-13 PERCENTAGE OF ID1 TRAFFIC AT STUDY INTERSECTIONS

Study Intersection	Facility	Build Year 2025 A.M. Peak	Build Year 2025 P.M. Peak	Horizon Year 2030 A.M. Peak	Horizon Year 2030 P.M. Peak
1	Eisenman at Interstate 84 (I-84) Eastbound (EB) Ramp	52.1%	40.9%	45.9%	35.0%
2	Eisenman at I-84 Westbound (WB) Ramp	71.2%	57.2%	65.8%	51.0%
3	Memory Rd at Federal Way/I-84 WB Ramp	80.8%	63.3%	76.6%	57.3%
4	Federal Way at Gate C	77.3%	62.7%	77.0%	62.4%
5	Federal Way at Gate B	17.7%	15.2%	17.6%	15.1%
6	Federal Way at Silicon Ln	12.9%	9.9%	12.4%	9.5%
7	Gowen Rd at Technology Way	8.5%	6.0%	6.4%	4.6%
8	Gowen Rd at Federal Way	6.6%	4.6%	5.2%	3.8%
9	Gowen Rd at I-84 WB Ramp	6.1%	3.7%	5.7%	3.5%
10	Gowen Rd at I-84 EB Ramp	6.2%	3.5%	5.7%	3.3%
11	Technology Way at Circuit Ln	16.3%	15.6%	10.2%	10.1%
12	Federal Way at Gate A	28.6%	25.7%	27.8%	24.8%
13	Gowen Rd at Warm Springs Ave	11.4%	7.3%	10.2%	6.4%
14	Federal Way at Amity Rd	3.0%	2.0%	2.1%	1.4%
15	Federal Way at Bergeson Ave	1.1%	0.8%	0.8%	0.5%

Source: NV5 2023

Based on the Traffic Impact Study for ID1, and based on continued discussion with ACHD and ITD (Appendix F), the following intersections would be impacted beyond the thresholds requiring improvement by the Agency Having Jurisdiction:

- Study Intersection 3 – Memory Road at Federal Way/I-84 Westbound Ramp.
- Study Intersection 5 – Federal Way at Gate B.

Micron has been coordinating closely and regularly with ACHD and ITD to discuss the Traffic Impact Study and potential improvements for ID1 long-term impacts to the analysis area intersections commensurate with the percentage of traffic from ID1 (Appendix F). Because the impacts to traffic due to ID1 are insignificant in nature, only minor improvements are required by the Agency Having Jurisdiction. The intersections and a description of the transportation infrastructure improvement that would address the minor traffic impacts are included in Table 3-14. Improvements for existing conditions and build year conditions for analysis area intersection 3 have been completed in conjunction with the commencement of construction activities. Improvements for existing conditions and build year conditions for analysis area intersection 5 are planned to be completed by Micron upon commencement of ID1 in 2025 to the extent required (and allowed) by ACHD based on traffic signal warrant analysis and use of Gate B.

Improvements for horizon year conditions have not been required by the transportation agencies; these are outside the scope of required Traffic Impact Study for ID1 and are attributed to background conditions. Micron is responsible for paying impact fees to ACHD, calculated at the time of each building permit, based on $2,750 per 1,000 square feet, per ACHD Impact Fee Ordinance 246A and Impact Fee Schedule, to cover the ID1 proportionate share of impacts to area roadways. ITD does not collect impact fees.

Micron and ITD have identified an ITD priority project that Micron would fund prior to commencement of ID1 in 2025 to improve pedestrian and bicycle safety adjacent to Micron Boise, which would be construction of a detached multi-use pathway along the north side of Gowen Road near the intersection with Technology Way. Micron would continue to coordinate with transportation agencies through 2030 on all identified improvements, including to obtain necessary further approvals. Therefore, it is anticipated that ID1 would result in regional and minor impacts to the transportation network in the analysis area.

TABLE 3-14 TRANSPORTATION IMPROVEMENTS

Study Intersection	Facility	Jurisdiction	Existing Condition Improvements	Build Conditions Improvements	Horizon Year Conditions Improvements
3	Memory Road and Federal Way / Interstate 84 Westbound (WB) Off Ramp	Joint Idaho Transportation Department and Ada County Highway Department (ACHD)	Complete.	• Re-configure the southbound approach to the intersection to include a left turn lane. • Configure the east side of the intersection to include a shared thru-right lane in the WB direction and a single eastbound lane. Improvements complete.	Complete.
5*	Federal Way and Gate B	ACHD	None at this time.	• Install a Traffic Signal (pending a warrant analysis). • Or eliminate left turn movement out of Micron Boise.	None at this time.

Source: NV5 2023
*Subject to ACHD approval

Only minor impacts on the transportation network would be attributable to ID1. For intersections 14 and 15, less than 10 percent of the traffic traveling through would result from ID1; therefore, according to ACHD policy 7106.3, there would be no significant effects and Micron would not be required to mitigate effects on these two intersections; nor is Micron authorized to construct improvements to the intersections. Similarly, less than 10 percent of the traffic travelling through intersections 7, 8, and 9 would result from ID1.

3.9.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be no CHIPS financial assistance to expand Micron Boise to include HVM, and existing operations would be expected to continue. It is anticipated that vehicle trips due to construction activities would halt. No additional traffic would be introduced to the transportation network as a result of the No Action Alternative; therefore, no significant effects on transportation would be anticipated.

3.9.4 BMPS

In addition to implementing actions to minimize temporary effects on traffic and transportation facilities during construction, Micron will continue to coordinate closely and regularly with ACHD and ITD regarding the potential improvements for ID1's long-term impacts to the analysis area intersections.

3.10 HUMAN HEALTH AND SAFETY

3.10.1 REGULATORY SETTING

Several federal, state, and local laws and regulations aim to protect human health and safety at semiconductor fabrication facilities and in surrounding communities. OSHA has promulgated health and safety regulations for general industry at 29 C.F.R. Part 1910. These regulations address a wide range of topics related to workplace safety, including hazard communication, electrical safety, machinery and equipment safety, personal protective equipment (PPE), and training requirements. EPA also issues regulations related to hazardous materials, chemical emergencies, and reporting.

3.10.1.1 OSHA

OSHA mandates safety requirements to protect workers and the public. OSHA standards codified at 29 C.F.R. Part 1910 most relevant to the semiconductor manufacturing sector include:

- Subpart D, Walking-Working Surfaces, establishes general requirements for stairways, ladders, fall protection and falling object protection, and training.
- Subpart G, Occupational Health and Environmental Control, § 1910.95, Occupational noise exposure, establishes guidelines and standards to protect workers from excessive noise in the workplace.
- Subpart H, Hazardous Materials, § 1910.119, Process safety management of highly hazardous chemicals, establishes requirements for preventing or minimizing the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals.
- Subpart H, Hazardous Materials, § 1910.124, establishes general requirements for dipping and coating operations. The standards cover: dip tank construction and entry; ventilation, air recirculation, and exhaust hoods; first aid training, treatment, and supplies; required hygiene facilities; and dip tank cleaning, inspection, and maintenance.
- Subpart I, PPE, establishes general requirements for PPE. The employer is responsible for ensuring the proper application, adequacy, and selection of PPE based on hazard assessment. The employer must provide PPE and associated training to employees. In addition, § 1910.134 establishes specific respiratory protection requirements.
- Subpart J, General Environmental Controls, § 1910.147, establishes general requirements for the control of hazardous energy (lockout/tagout).

- Subpart Z, Toxic and Hazardous Substances, establishes requirements relating to employee exposures to toxic and hazardous substances, including air contaminants, inorganic arsenic, and lead.

- Subpart Z, Toxic and Hazardous Substances, § 1910.1200, Hazard communication, establishes requirements for classifying potential hazards of chemicals and communicating information concerning hazards and appropriate protective measures to employees in a manner consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS). This includes container labeling, safety data sheets, and employee training.

OSHA standards most relevant for construction are codified at 29 C.F.R. Part 1926 and include subpart C, General Safety and Health Provisions; Subpart D, Occupational Health and Environmental Controls, Subpart E, respiratory protection requirements; Subpart H, Materials Handling, Storage, Use, and Disposal; Subpart I, Tools-Hand and Power; Subpart J, Welding and Cutting; Subpart L, Scaffolds; Subpart P, Excavations; Subpart Q, Concrete and Masonry Construction; Subpart R, Steel Erection; Subpart Z, Toxic and Hazardous Substances; Subpart AA, Confined Spaces in Construction; Subpart CC, Cranes and Derrick in Construction.

3.10.1.2 EPA

Regulations and reporting under the Toxic Substances Control Act (TSCA), 15 U.S.C. § 2601 *et seq.*, and the Emergency Planning and Community Right-to-Know Act (EPCRA), 42 U.S.C. § 11001 *et seq*., provide communities with essential information about hazardous material use in their neighborhoods.

- TSCA requires reporting, record-keeping, testing, and restrictions relating to chemical substances and/or mixtures including the use, and disposal of specific chemicals including polychlorinated biphenyls. TSCA authorizes EPA to regulate the production, use, and disposal of chemicals that have the potential to cause harm to human health or the environment.

- EPCRA helps employers, workers, and communities plan for chemical emergencies. It includes requirements for: Emergency Planning (Sections 301 to 303), Emergency Release Notification (Section 304), Hazardous Chemical Inventory Reporting (Sections 311 and 312), and Toxics Release Inventory reporting (Section 313) for chemicals that may pose a threat to human health and the environment.

Additionally, pursuant to CAA § 112(r) and EPA regulations at 40 C.F.R. Part 68, facilities that use more than threshold quantities of hazardous air pollutants (HAPs) are required to develop and implement a risk management program and submit a risk management plan to EPA. The risk management plan must identify the potential effects of a chemical accident, steps the facility is taking to prevent an accident, and emergency response procedures. These plans provide valuable information to local fire, police, and emergency response personnel.

3.10.1.3 EXECUTIVE ORDER 13045

EO 13045, Protection of Children from Environmental Health Risks and Safety Risks, directs federal agencies to "make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children and shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks."

Environmental health and safety risks to children are defined as those that are attributable to products or substances a child is likely to come into contact with or ingest, such as air, food, water, soil, and products that children use or to which they are exposed.

3.10.2 AFFECTED ENVIRONMENT

3.10.2.1 INDUSTRY STANDARDS AND HISTORICAL HEALTH RISKS

Many of the root causes of semiconductor manufacturing-related health risks have been addressed over the last 30 years due to stricter regulations on emissions, storage, and reporting under TSCA and EPCRA, other regulatory requirements, and through BMPs. According to the Semiconductor Industry Association, a U.S.-based industry coalition that was established in 1977, the semiconductor industry continues to make strong worker safety and health progress and has detailed surveys of workforce injury and illness since 2000. Survey results have pointed to lower on-the-job injuries and illnesses than the overall U.S. economy. Semiconductor tools and processes are now equipped with advanced leak detection, toxic gas monitoring, enclosed and automated handling, emergency response alarms, tool decontamination methods, and automatic tool shutdown. Personal protective equipment, such as respiratory protection, hearing protection, and personal protective clothing, has also improved in recent decades to provide additional worker protection.

Semiconductor Equipment and Materials International (SEMI) Standard 2 (S2) is one of the primary EHS guidelines for designing and manufacturing semiconductor fabrication facilities. SEMI S2 standard addresses EHS practices and incorporates several other standards, addressing equipment installation, gas effluent handling, exhaust ventilation, ergonomics, risk assessment, equipment decontamination, fire risk mitigation, and electrical design. SEMI S2 also references several other industry standards and guidelines, including, but not limited to: American National Standards Institute Standards, Institute of Electrical and Electronics Engineers Standards; International Organization for Standardization (ISO) Standards; National Fire Protection Association Standards; Underwriters Laboratories Standards; U.S. standards for radiological health and performance standards for electronic products; American Conference of Governmental Industrial Hygienists (ACGIH), Industrial Ventilation Manual; American Society of Hearing, Refrigerating, and Air-Conditioning Engineers Standard 110; Semiconductor Exhaust Ventilation Guidebook; Uniform Building Code; and Uniform Fire Code.

ISO comprises standards agreed upon by international industry experts on a variety of topics. ISO 45001 is the international standard for occupational health and safety. The standard was issued to protect employees from injuries, accidents, and diseases at work. An associated certification may

be issued to companies and facilities meeting and/or exceeding the requirements of the standard. Micron Boise is certified to ISO 45001:2018.

ISO 14001 is the international standard for the environmental management system. The standard provides a framework to organizations to implement an environmental management system and improving environmental performance. ISO 14001 encompasses many aspects of environmental management including compliance, resource use, waste management, monitoring environmental performance, training and employee engagement, and communications with internal and external stakeholders. Micron Boise is certified to ISO 14001:2015.

3.10.2.2 EFFECTS OF POLLUTION ON LOCAL COMMUNITIES

During construction and manufacturing operations activities, the potential for toxic materials and hazardous waste releases into the environment is present. Pollution from construction and manufacturing operations can contaminate groundwater, surface water, soil, and air, posing a threat to the health and safety of local communities.

Micron Boise houses hazardous materials necessary for its manufacturing process that are handled, transported, and disposed of in a manner that mitigates the potential for contamination into the environment, as consistent with regulatory requirements and industry standards. Mishandling of hazardous materials can lead to spills, leaching, and releases into the environment and may have short- and long-term detrimental effects on groundwater and soil. Micron Boise implements a detailed hazardous waste contingency plan designed to minimize hazards to human health or the environment from sudden or non-sudden release of hazardous waste or hazardous waste constituents to surface water or soil. Multiple BMPs described in Table 2-2 and employed at Micron Boise avoid and minimize hazards to human health from potential releases of hazardous waste or hazardous waste constituents to water, soil, and air. Moreover, Micron Boise has a program for implementing IDEQ's operations requirements for its Tier I (Title V) and Tier II Air Quality Operating Permits.

3.10.2.3 NOISE

Noise evaluation and management is important, as hearing loss is the third most common chronic health condition in the United States. Continual exposure to noise can cause stress, anxiety, depression, high blood pressure, heart disease, and many other health problems (CDC 2017). Noise can pose a serious threat to a child's physical and psychological health, learning, and behavior. Examples of effects include interference with speech and language, impaired learning, impaired hearing, elevated blood pressure and cardio-vascular ailments, and disrupted sleep (EPA 2009).

Micron Boise complies with OSHA's Occupational Noise Exposure standard, 29 CFR § 1910.95, which establishes guidelines and standards to protect workers from excessive noise in the workplace.

3.10.2.4 CONSTRUCTION SAFETY

Typical health and safety hazards associated with construction include, but are not limited to, falling, slipping, and tripping, noise, heavy machinery, being struck by moving construction equipment, and electrocutions. Micron Boise manages construction worker risk through implementation of pre-task planning, a detailed process performed before each work task to identify potential hazards and a corresponding plan to mitigate the hazards. Job hazard analysis, a method used to identify hazards and risk within the workplace, breaks down hazards associated with a task and identifies mitigation to reduce risk. Critical risk checklists are used by supervisory and construction workers to examine health and safety hazards for construction activities utilizing a checklist of common to high-ranking hazards. A permit-to-work system is also key in reducing risk. Permit-to-work is a special authorization used to control activities that are considered high-risk, where the permits only allow authorized personnel to perform the activities. Examples of permits-to-work include electrical work, hot work, work at height, confined spaces, lone work, and excavations. PPE, equipment worn to minimize exposure to hazards that can cause serious workplace injuries and health effects, is required for workers and supplied to them as needed.

3.10.2.5 PROVISIONS FOR CHEMICAL SAFETY

Micron Boise's current operations must comply with regulations guiding the safe management of various activities within its operations. Chemical hazards include the potential for direct and indirect exposure to hazardous materials and are regulated or managed under the Facility's permits and required plans:

- Air Permit — in accordance with the CAA, which limits airborne chemicals emitted from the Facility.
- Idaho Department of Water Resources Underground Injection Control Permit.
- City of Boise Industrial Wastewater Discharge Permit.
- Multisector General Permit.
- Risk Management Plan — EPA Risk Management Program (CAA Section 112(r)).
- Process Safety Plan — OSHA Process Safety Management Program (29 C.F.R. § 1910.119, Process Safety Management of Highly Hazardous Chemicals).

In addition, Micron Boise's EHS department develops and implements programs for regulatory compliance and measures for the protection of human health and safety.

Employers are required to identify and evaluate the respiratory hazard(s) in their workplaces. OSHA sets enforceable permissible exposure limits (PELs) to protect workers against the health effects of exposure to hazardous substances, including limits on the airborne concentrations of hazardous chemicals in the air. Most OSHA PELs were issued shortly after the adoption of the Occupational Safety and Health Act in 1970 and have not been updated since. Based on the experiences of industrial professionals, new technological developments, and scientific data, many PELs are considered to be outdated and inadequate for protecting worker health, which has led

many technical, professional, industrial, and governmental organizations in the United States and abroad to identify alternative exposure limits.

The ACGIH is a private, not-for-profit, nongovernmental scientific association that develops guidelines, such as Threshold Limit Values (TLVs), to assist in the control of occupational health hazards. TLVs represent airborne concentrations of chemical substances under which it is believed nearly all employees may be exposed daily over a working lifetime without adverse effects. ACGIH TLVs are health-based values that give no consideration to economic or technical feasibility. Therefore, ACGIH does not intend TLVs to be adopted as enforceable standards in their entirety without additional multifaceted analysis. However, ACGIH TLVs are widely recognized as authoritative, and are required to be included on safety data sheets by the OSHA Hazard Communication Standard.

National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limits are federal agency recommendations established according to the legislative mandate for NIOSH to recommend standards to OSHA. Recommended Exposure Limits are recommended exposure limits for hazardous substances in the workplace to protect worker health.

Micron Boise applies more protective chemical exposure levels based on published standards on a chemical-by-chemical basis for worker safety.

3.10.2.6 EMERGENCY RESPONSE SERVICES

Micron Boise's ERT routinely implements walks, drills, and evaluations with local fire and hazmat departments to enable emergency response and to familiarize responders in the event of an emergency. These evaluations consist of entrance and evacuation routes, chemical type, quantity, and management, as well as live drills related to hazardous waste spills, confined space, and high angle rescue. There are regular reviews of chemical information with local paramedic responders and hospital emergency room providers. Micron Boise ERT has toured local county dispatch centers to benchmark and understand best practices for emergency call coordination. The local LEPC assists in development and review of an emergency response plan.

3.10.3 ENVIRONMENTAL CONSEQUENCES

This section discusses the potential effects on human health and safety under the No Action Alternative and the Proposed Action.

3.10.3.1 PROPOSED ACTION

TEMPORARY CONSTRUCTION EFFECTS

Micron Boise's EHS Department would manage ID1 construction worker risk through implementation of pre-task planning, job hazard analysis, and a permit-to-work system. An on-site construction medical clinic, composed of an occupational health physician, nurse practitioners, physical therapists, and drug/alcohol screeners, would support construction workers with work-related construction injury or illness, as well as personal well-being needs such as mental health resources. On-site orientation and drug/alcohol testing would be required prior to issuance of badging for construction site access. At minimum, orientation includes construction site policies,

safety and health expectations and requirements, crisis management contacts/phone numbers, zero tolerance policy expectations, and environmental responsibilities. A crisis management plan, established mustering locations, and coordination with local emergency service agencies would be established for construction personnel in the event of an incident.

LONG-TERM EFFECTS INCLUDING OPERATIONS

For ID1 operations, Micron would implement occupational exposure limits that are more protective than the legally enforceable OSHA PELs. These more stringent limits, such as applicable TLVs, would be based on appropriate, published industry standards specific to each chemical used, with the goal of maximizing worker health and safety. Regardless of the exposure limit standard applied, Micron would implement a comprehensive approach to hazard control and mitigation by employing principles of the NIOSH hierarchy of controls, prioritizing elimination, substitution, and engineering controls before administrative controls and personal protective equipment. As acknowledged industry-wide, OSHA PELs are not adequately protective and, thus, as a BMP, the most protective occupational exposure limits based on published industry standards for each chemical use would be applied to ID1 operations for worker health and safety. Moreover, to confirm that tools purchased under the Proposed Action meet all appropriate safety and health standards, a SEMI S2 compliance report would be required from any potential manufacturer before purchasing equipment from the manufacturer. The SEMI S2 guideline ensures that semiconductor manufacturing equipment is compliant with current best safety practice in the industry.

Under the Proposed Action, CHIPS financial assistance would result in changes to the types and volumes of hazardous materials used and stored at ID1, co-located with Micron Boise, to support increased semiconductor wafer manufacturing (see Section 3.11).

ID1 would be constructed and operated in accordance with all applicable laws, regulations, and building codes.

ID1 operations would comply with regulations guiding the safe management of various activities within its operations. Chemical hazards include the potential for direct and indirect exposure to hazardous materials, regulated or managed under similar permits and plans applicable to Micron Boise's current operation as listed in Section 3.10.2.5.

Micron Boise's EHS department would develop and implement programs for regulatory compliance and confirmation of BMPs for the protection of human health and safety. Additionally, the existing Micron Boise health clinic for Micron employees would be expanded to support the employee growth associated with ID1.

A detailed hazardous waste contingency plan would be maintained and regularly reviewed, which is designed to avoid and minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water. Copies of the contingency plan and revisions would be submitted to local police departments, fire departments, hospitals, and state and local emergency planning committees that may be called upon to provide emergency services. A written emergency response plan would be followed in the event of an EPA reportable event or spill in accordance with 40 C.F.R. § 265.51. Facility EHS department members would continue to coordinate

regularly with local fire departments and emergency service agencies to ensure accidents, injuries, and emergencies would have the appropriate swift and safe response.

As described in Section 3.8.3.1, there are no anticipated significant adverse effects on noise levels in the area from ID1 operation.

ID1 is unlikely to have effects on children's health and safety in accordance with EO 13045. Children would not have access to the manufacturing facilities or associated hazardous materials areas. Potential releases to air and water would be regulated through operating permits. Micron Boise has fencing around the property, on-site security, as well as controlled access to chemical storage areas. Once completed, the manufacturing property would have fencing as well as required security access measures in place for hazardous materials storage areas, electrical substations, and bulk gas and chemical yards. The childcare facility was designed to meet all applicable childcare building code requirements. An additional barrier wall was added along the interstate to provide additional vehicular safety as well as noise mitigation. Additional plumbing modifications were extended for increased handwashing, separate sinks for food preparation to avoid any cross contamination, as well as hard surfaces throughout the facility to enable easy sanitization.

ID1 also would implement measures to mitigate and eliminate PFAS-related risks. Micron controls and mitigates chemical and process hazards in the workplace by employing the principles of the NIOSH Hierarchy of Controls, as well as EPA's waste management hierarchy for source reduction, reuse, recycling, treatment, and disposal. Micron incorporates these approaches in its evaluation and approval of chemical usage. Through its chemical use approval process, Micron identifies sources of PFAS in its fabrication process chemistries and can make efforts to identify possible non-PFAS containing alternative chemistries, where available and feasible. Micron eliminated both PFOA and PFOS from the fabrication process chemistries at all its facilities around the world ahead of industry-wide goals set by the WSC. Micron also employs industry standards set by SEMI, including facility and equipment design (e.g., enclosed and automated chemical delivery systems), risk management and work practice standards, and PPE usage.

OVERALL FOR PROPOSED ACTION

No significant adverse effects on human health and safety of workers or the public would be anticipated from construction or operations of ID1. Accidents and emergencies would be minimized through BMPs, internal site safety procedures, ongoing collaboration and communication with community emergency response agencies, and safe hazardous material handling and storage processes. The most protective occupational exposure limits, based on published industry standards, would be applied to ID1 to protect worker safety and health. The Micron Boise EHS department would continue to coordinate emergency response plans with local first responders for ID1. In addition, construction safety and health industry standards and BMPs would be implemented for construction and operation of ID1 to protect construction workers and the community.

3.10.3.2 NO ACTION ALTERNATIVE

Micron Boise's current operations must comply with regulations guiding the safe management of various activities within its operations and have a long history of doing so. Accidents and emergencies would continue to be avoided and minimized at Micron Boise through BMPs, internal

site safety procedures, ongoing collaboration and communication with community emergency response agencies, and safe hazardous material handling and storage processes. Under the No Action Alternative, there would be no anticipated significant adverse effects on human health and safety locally or regionally.

3.10.4 BMPS

Pre-task planning, a permit-to-work system, and risk activity assessments and audits would be applied as BMPs for construction workers. Fatigue management plans would be submitted by subcontracting companies to the General Contractor in the event overtime work is required.

Micron Boise would apply protective occupational exposure limits, based on published industry standards on a chemical-by-chemical basis, to ID1 operations to protect worker safety and health. ID1 emergency response plans would be coordinated with local first responders and updated for changes over time, as appropriate.

3.11 HAZARDOUS MATERIALS

This section discusses hazardous materials and toxic substances. Further analysis of the effects of hazardous material on human health and safety and the generation, reuse, and disposal of hazardous wastes is included in Sections 3.10 and 3.15, respectively.

3.11.1 REGULATORY SETTING

Hazardous materials are regulated by numerous state and federal laws and regulations. The U.S. Department of Transportation and the Pipeline and Hazardous Materials Safety Administration define these substances as "hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table, and materials that meet the defining criteria for hazard classes and divisions in 49 CFR § 173."

Table 3-15 identifies all laws and regulations relevant to the use and handling of hazardous materials and their associated controls on the effects on public health and safety and the environment.

TABLE 3-15 APPLICABLE LAWS AND REGULATIONS

Regulation, Statute, Guideline	Description
Federal: Occupational Safety and Health Administration (OSHA) Laws and Regulations (29 C.F.R. Parts 1900-1999).	• OSHA was established to protect the health of American workers. OSHA regulations require employers to provide workplaces that are free from recognized hazards. For example, OSHA has issued the Process Safety Management of Highly Hazardous Chemicals standard (29 C.F.R. § 1910.119), which contains requirements for the management of hazards associated with processes using highly hazardous chemicals at levels that exceed regulatory thresholds.

Regulation, Statute, Guideline	Description
Federal: Department of Transportation (DOT) (49 C.F.R. Parts 100-185).	• DOT regulates the transportation of hazardous materials pursuant to the Hazardous Materials Transportation Act. DOT is responsible for the oversight of hazardous materials labeling, shipping, and packaging and the issuance of DOT Special Permits and Approvals.
Federal: Toxic Substances Control Act (TSCA) and its implementing regulations (40 C.F.R. Parts 700-799)	• Under TSCA, EPA protects human health and the environment from the effects of chemical substances and is authorized to promulgate reporting, record-keeping, and testing requirements and other restrictions relating to chemical substances and/or mixtures.
Federal: Risk Management Program (40 C.F.R. Part 68)	• EPA's Risk Management Program implements Clean Air Act Section 112(r) requirements to improve chemical accident prevention at facilities. The requirements apply to processes that use regulated chemicals in excess of regulatory thresholds.
Federal: Emergency Planning and Community Right-to-Know Act (EPCRA) and implementing regulations (40 C.F.R. Parts 300-399)	• EPCRA protects public health, safety, and the environment from chemical hazards by requiring federal and state governments, local agencies, tribal nations, and industries to partner in implementing emergency planning and preparedness. • EPCRA and its regulations require facilities to provide EPA, state, local, and tribal agencies, and the public with information on hazardous and toxic chemicals posing potential chemical hazards to local communities.

3.11.2 AFFECTED ENVIRONMENT

Hazardous material usage may pose workplace and environmental hazards dependent on material type, quantity, and measures to control such risks. Current operations at Micron Boise consist of hazardous material usage typical of semiconductor manufacturing operations.

Semiconductor chip fabrication involves the use of chemicals and materials, such as photoresists, developers, chemical etchants, dopants, and gases, that may be regulated as hazardous materials. Some of these chemicals may be flammable, corrosive, reactive, or toxic. Some examples of the liquid and gas chemicals used are hydrochloric acid, ammonium hydroxide, sodium hydroxide, chlorine, silane, and hydrogen chloride. Sustained exposures to these hazardous materials at sufficiently high levels have the potential to cause harmful health effects to humans that could lead to respiratory issues and cancer. Additionally, the release of these hazardous materials into the environment could alter the biological properties of wildlife and impact ecological systems.

To protect public health and the environment, Micron Boise stores these hazardous chemicals and materials in containers and drums and storage areas equipped with secondary containment measures in the event of a spill or release. Table 3-16 shows a categorized list of different hazardous materials currently used in the fabrication process at Micron Boise. The hazards associated with each process area are listed in the table as well as the controls for these hazardous materials. These controls are used to protect workers from workplace hazards; help avoid injuries,

illnesses, and incidents; minimize or eliminate safety and health risks; and help employers provide workers with safe and healthful working conditions.

TABLE 3-16 HAZARDOUS MATERIAL TYPES, QUANTITIES, HAZARDS, AND CONTROLS AT EXISTING FACILITY

Process Area	Total Chemical Usage (pounds)	Hazards	Controls
Thin Films (PCVD + DIFI)	163,122.64	Flammable gases, pyrophoric gases, corrosives, toxic gases, oxidizers, asphyxiants, flammable liquids, water reactive substances	Point-of-use (POU) abatement systems, house scrubbers (ammonia and acid), interlocks (prevent tool running when POU systems are down), toxic gas monitoring (TGM)
Dry Etch	21,417.67	Flammable gases, torrosives, toxic Gases, oxidizers, asphyxiants, water reactive substances, pyrophorics	POU, house scrubbers (acid), interlocks, TGM
Wet Etch	4,628,814.07	Flammable liquids, corrosives, toxics, oxidizers	House scrubbers (ammonia and acid), POU systems, leak detection, TGM, VOC units
Photo	529,904.87	Flammable liquids, corrosives, toxics, oxidizers	VOC units, leak detection
CMP	45,002.10	Flammable liquids, corrosives, toxics, oxidizers	Leak detection, house scrubbers

Source: Micron 2023a

3.11.3 ENVIRONMENTAL CONSEQUENCES

3.11.3.1 PROPOSED ACTION

TEMPORARY CONSTRUCTION EFFECTS

ID1 would include workplace health and safety risks associated with construction projects, but no hazardous materials would be directly used during the construction phase. Construction vehicles would use petroleum-based materials, such as oil or diesel. Accidental spills or leaks of oil or diesel during refueling or construction vehicle maintenance could reach soil and surface water bodies. However, Micron would obtain coverage under the IPDES Construction General Permit, develop and implement a SWPPP as required under the IDP Permit, and adhere to BMPs outlined in the SWPPP. BMPs typically include procedures for handling and storing oil and diesel fuels to minimize the risk of spills, designation of specific areas for fueling and maintenance activities that are equipped with spill containment measures and impermeable surfaces, implementation of regular maintenance schedules for construction vehicles, implementation of erosion and sediment control measures to prevent soil erosion and runoff that could carry oil or diesel contaminants (e.g.,

erosion control blankets, sediment barriers, and vegetative buffers), and training of construction personnel on proper fuel handling and spill response procedures. BMPs such as these would be included in the SWPPP as applicable to ID1's site conditions and construction activities.

The Safety and Health programs in place today at Micron Boise would be maintained and extended to ID1 construction as part of Micron's Live Safe philosophy and requirements. Although unanticipated, if any hazardous materials are used during the construction phase, these safety protocols and plans would be sufficient for maintaining workplace safety. During construction, potential materials that would be used or removed include metal scraps, electrical wiring and cable, surplus consumable materials (e.g., paints, greases, lubricants, and cleaning compounds), packaging materials, and office waste. Based on a preliminary assessment of these activities, no hazardous materials would be anticipated except for oil or diesel used for construction vehicles, which would be controlled through applicable SWPPP BMPs. Therefore, the effects from construction activities on hazardous materials would be negligible and would only extend through the term of construction.

LONG-TERM EFFECTS INCLUDING OPERATIONS

Once constructed, the operation of ID1 would include workplace health and safety risks that are consistent with the types of risks already present at Micron Boise and addressed by existing Micron Safety and Health programs. Micron would continue to apply procedures for workplace health and safety and manage hazardous materials to meet or exceed applicable regulatory requirements and industry standards. At full operation, ID1 would have capacity to manage the additional hazardous material used or generated from process operations. Micron Boise has a mature hazardous material management program in place for its existing research and development operations, which would be expanded to control the additional materials required from the operation of ID1. Chemicals used in the manufacturing process for ID1 would be delivered to Micron Boise by truck utilizing a variety of containment packaging methods including tanks, drums, and pallets. Once on site, hazardous chemicals would be stored in specially designed facilities based on compliance with safety and regulatory requirements and their delivery to the fabrication processes would be carefully tracked through an automated chemical management system. This system ensures that any unintentional release of hazardous chemicals would be detected and controlled.

Table 3-17 shows a categorized list of different hazardous materials that would be used in the fabrication process for ID1 in addition to existing operations. The potential hazards associated with each process area are listed in the table as well as the associated controls that would be used for these hazardous materials to limit the potential for adverse environmental or safety effects.

TABLE 3-17 HAZARDOUS MATERIAL TYPES, QUANTITIES, HAZARDS, AND CONTROLS FOR ID1

Process Area	Total Chemical Usage (pounds)	Hazards	Controls
Thin Films (PCVD + DIFI)	1,540,557.92	Flammable gases, pyrophoric gases, corrosives, toxic gases, oxidizers, asphyxiants, flammable liquids, water reactive substances	POU abatement systems, house scrubbers (ammonia and acid), interlocks (prevent tool running when POU systems are down), toxic gas monitoring (TGM), ionizing wet scrubbers (IWS)
Dry Etch	335,250.89	Flammable gases, corrosives, toxic gases, oxidizers, asphyxiants	POU, house scrubbers (acid), GHG abatement, interlocks, TGM
Wet Etch	60,570,745.76	Flammable liquids, corrosives, toxics, oxidizers	House scrubbers (ammonia and acid), POU systems, leak detection, TGM, VOC units
Photo	9,147,524.05	Flammable liquids, corrosives, toxics, oxidizers	VOC units, leak detection
CMP	3,539,380.55	Flammable liquids, corrosives, toxics, oxidizers	Leak detection, house scrubbers

Source: Micron 2023a

Chemicals delivered to ID1 would be managed through an internal chemicals approval and management system. Micron Boise further maintains an Accidental Spill Prevention and Control Plan and Spill Prevention, Control, and Countermeasure Plan, which would be amended to include ID1 to include procedures to address any incidents. Should an emergency event occur, the on-site ERT would be deployed to assess, manage, and respond to the situation. Further, the operation of ID1 is expected to require development and implementation of EPA Risk Management Program and OSHA Process Safety Management program requirements for a limited number of chemistries. These regulatory requirements would further limit chemical risk and exposure to both on-site personnel and the surrounding public.

Overall, the usage of hazardous materials at Micron Boise would increase from the operation of ID1. This is observable by comparing the usage rates detailed in Table 3-16 and Table 3-17. Although the quantities of hazardous materials being utilized for operations would increase, the controls of these hazardous materials from entry to the site, storage, use, and disposal would limit the potential adverse environmental and safety effects of these materials. The proposed controls and regulatory requirements are consistent with those already in place for Micron Boise and Micron has extensive demonstrated experience with the safe handling and management of hazardous materials. As a result of the regulatory compliance and process controls proposed for ID1, the increase in use of hazardous materials would not result in an adverse effect on human health or the environment.

Therefore, the effects of hazardous materials from the operation of ID1 would be moderate and would extend throughout the term of operations.

3.11.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be no CHIPS financial assistance to expand Micron Boise to include HVM, and existing operations would be expected to continue. Micron Boise's existing hazardous materials handling practices would remain in place and Micron Boise would continue to operate in compliance with the facility's Safety and Health programs, which ensure that the usage and handling of hazardous materials at Micron Boise would be protective of human health and the environment. As a result, the No Action Alternative would be anticipated to have a minor effect on hazardous materials throughout the term of operation of Micron Boise.

3.11.4 BMPS

In addition to complying with EPA RMP and OSHA Process Safety Management requirements, Micron Boise would implement hazardous material BMPs, including those identified in the SWPPP, as applicable, to address oil and diesel used for construction vehicles. Additionally, the controls identified in Table 3-16 and Table 3-17 would help avoid or minimize potential hazards from the identified hazardous materials used during ID1 operations.

3.12 ENVIRONMENTAL JUSTICE

3.12.1 REGULATORY SETTING

In accordance with Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.*), each federal agency shall ensure that all programs or activities receiving federal financial assistance that affect human health or the environment do not directly, or through contractual or other arrangements, use criteria, methods, or practices that discriminate on the basis of race, color, or national origin.

EO 14096, Revitalizing Our Nation's Commitment to Environmental Justice for All, defines "environmental justice" as the just treatment and meaningful involvement of all people, regardless of income, race, color, national origin, tribal affiliation, or disability, in agency decision making and other federal activities that affect human health and the environment so that people:

- are fully protected from disproportionate and adverse human health and environmental effects (including risks) and hazards, including those related to climate change, the cumulative effects of environmental and other burdens, and the legacy of racism or other structural or systemic barriers; and

- have equitable access to a healthy, sustainable, and resilient environment in which to live, play, work, learn, grow, worship, and engage in cultural and subsistence practices.

EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires federal agencies to consider as a part of their actions any disproportionately high and adverse human health or environmental effects on minority and low-income populations. Federal agencies are required to ensure that these potential effects are identified and addressed.

3.12.2 AFFECTED ENVIRONMENT

As shown in Table 3-27, approximately 84 percent of Micron workers reside in Ada County. Since the majority of workers reside in close proximity to Micron Boise, the analysis area for the EJ analysis encompasses Ada County to assess the potential effects on communities with EJ concerns. The EJ analysis first identifies if low-income and minority populations exist within the analysis area, and if so, then examines whether the Proposed Action would result in disproportionate and adverse effects on low-income and/or minority populations under EO 12898 and EO 14096.

The EJ analysis identifies low-income and minority populations in accordance with CEQ EJ guidance where either: (a) the low-income and minority population of the analysis area exceeds 50 percent, or (b) the low-income and minority population percentage of the analysis area is meaningfully greater (discrepancy of 10 percent or more) than the low-income and minority population percentage in the general population or other appropriate unit of geographic analysis (CEQ 1997).

Micron Boise is located in Ada County and within census tract 105.03. As shown in Table 3-18, the demographic profile of the analysis area is similar to the state of Idaho and Ada County, with slightly more racial diversity and a lower percentage of people living in poverty than listed comparative geographies.

TABLE 3-18 ENVIRONMENTAL JUSTICE DEMOGRAPHIC PROFILE

Topic	State of Idaho	Ada County	Canyon County	Boise County	Gem County	Owyhee County	Analysis Area (Census Tract 105.3)
Below Poverty Level	11.9%	9.3%	12.5%	12.9%	13.9%	13.6%	3.6%
White alone	82.88%	83.50%	76.84%	93.70%	80.75%	75.28%	64.10%
Black or African American alone	0.58%	1.17%	0.29%	0.3%	0.07%	0.37%	1.16%
American Indian and Alaska Native alone	1.20%	0.49%	0.92%	0.5%	0.78%	2.69%	0.00%
Asian alone	1.30%	2.40%	0.79%	1.2%	0.52%	0.13%	12.09%
Native Hawaiian and Other Pacific Islander alone	0.17%	0.18%	0.34%	0.12%	-	-	-
Some Other Race alone	3.55%	1.48%	11.06%	0.63%	5.10%	13.06%	0.81%
Two or More Races	4.01%	4.12%	5.19%	3.45%	4.19%	5.61%	8.47%
Hispanic or Latino	11.87%	7.72%	24.34%	4.85%	7.89%	25.44%	8.53%

Source: U.S. Census Bureau 2020a, 2020b; ACS 5-year Estimates Subject Table S1701, Poverty Status in the Past 12 months, and Subject Table P1, Race.

According to the EPA EJScreen tool, 23 percent of residents in the analysis area are people experiencing low income, 17 percent of residents are people of color, and approximately 1 percent of households in the analysis area experience Limited English (Table 3-19).

TABLE 3-19 EPA EJSCREEN REPORT

Socioeconomic Indicators	Value (Ada County)	State Average	U.S. Average
People of Color	17%	19%	39%
Low Income	23%	32%	31%
Unemployment Rate	3%	4%	6%
Limited English-Speaking Households	1%	2%	5%

Source: EPA 2024

For the purposes of EJ analysis, there are no low-income or minority populations in the analysis area because (a) neither the low-income nor the minority population of the analysis area exceeds 50 percent, and (b) neither the low-income nor the minority population percentage of the analysis area is meaningfully greater (discrepancy of 10 percent or more) than the low income and minority population percentage in the general population or other appropriate unity of geographic analysis (CEQ 1997).

3.12.3 ENVIRONMENTAL CONSEQUENCES

3.12.3.1 PROPOSED ACTION

TEMPORARY CONSTRUCTION EFFECTS

Since there are no low-income or minority populations in the analysis area, per the EPA EJScreen tool, there would be no anticipated temporary construction effects on communities with EJ concerns, let alone significant or disproportionate and adverse effects.

LONG-TERM EFFECTS INCLUDING OPERATIONS

Since there are no low-income or minority populations in the analysis area, per the EPA EJScreen tool, there would be no anticipated long-term or operational effects on communities with EJ concerns, let alone significant or disproportionate and adverse effects.

3.12.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be no CHIPS financial assistance to expand Micron Boise to include HVM, and existing operations would be expected to continue. The No Action Alternative would have no adverse effects on communities with EJ concerns, let alone significant or disproportionate and adverse effects.

3.12.4 BMPS

There are no communities with EJ concerns in the analysis area; therefore, ID1 is anticipated to result in no effects communities with EJ concerns, let alone significant or disproportionate and adverse effects. No BMPs are warranted. Micron would continue its stakeholder outreach program and Diversity and Inclusion Program.

3.13 SOCIOECONOMICS

3.13.1 REGULATORY SETTING

This section addresses socioeconomic effects as relevant to the assessment of effects on the human environment under NEPA and its implementing regulations.

3.13.2 AFFECTED ENVIRONMENT

Micron Boise's existing operations and ID1 contribute to employment and economic activity at a regional scale. As such, socioeconomic conditions were generally evaluated using the Boise-Nampa, ID Metropolitan Statistical Area (MSA). This defined geography is composed of the counties of Ada, Boise, Canyon, Gem, and Owyhee in southwestern Idaho, although the majority of regional socioeconomic activity takes place in Ada and Canyon Counties. Beyond the MSA baseline geography, the geographic scope used for socioeconomic analysis varies depending on the metric analyzed, data availability, and other factors, and ranges from the state level down to the county level (and in some cases, the national level for comparison purposes).

Table 3-20 provides 2020 demographic data for the Boise-Nampa, ID MSA as well as the State of Idaho to provide a comparison with the total population and percentages of employment and race status in the analysis area for socioeconomics. As shown in Table 3-20, Ada County, where ID1 would be located, has the highest population of all counties in the Boise-Nampa MSA.

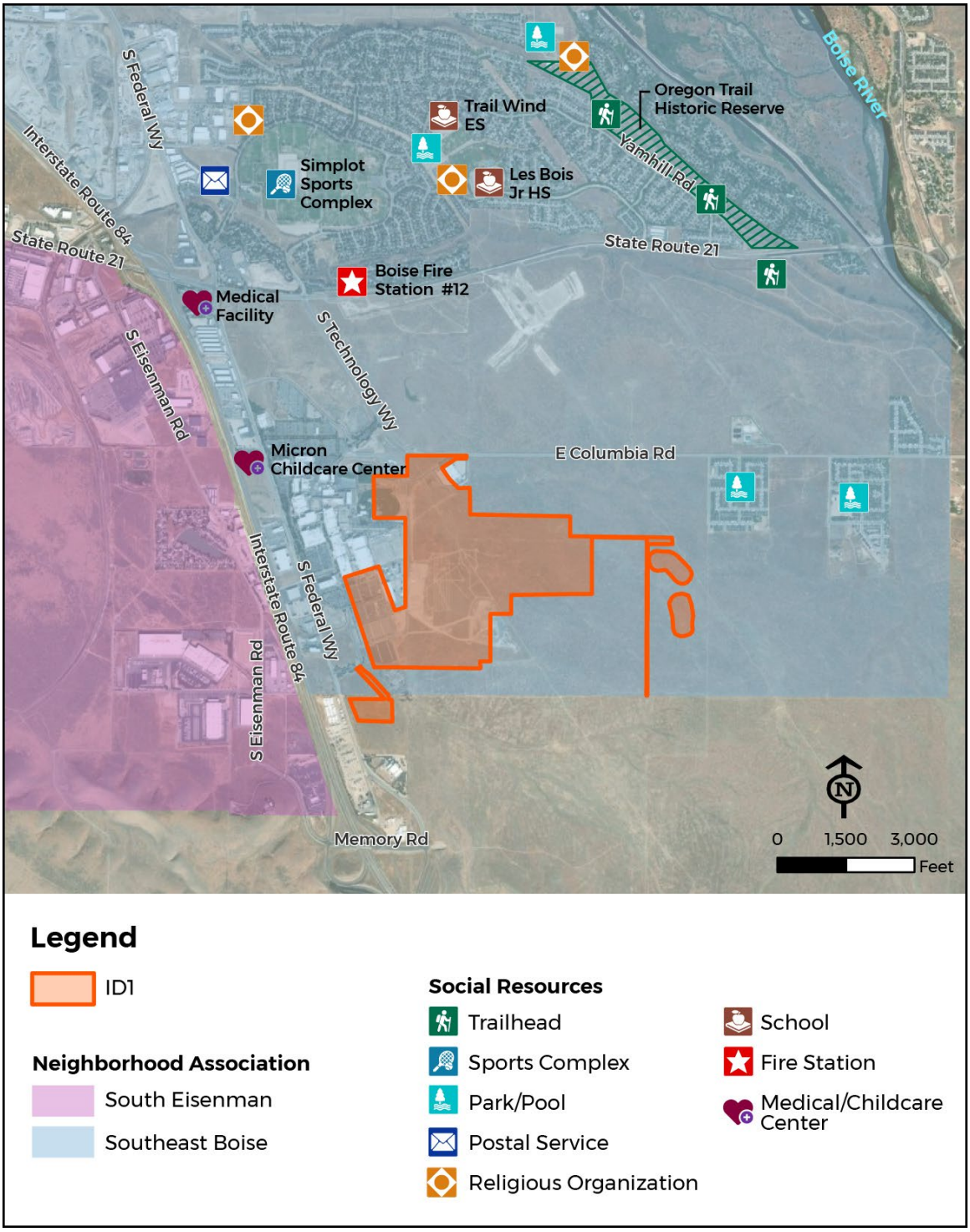
In addition to the social and community resources shown in Figure 3-7, there is a mix of commercial and retail uses along I-84, Federal Way, and Gowen Road, including but not limited to Albertsons, Utility Trailer Sales of Boise, Mesa Moving and Storage, Trinity Trailer Manufacturing, Winco Foods Distribution Center, and BOI5 Amazon Sort Center. The community resources shown in Figure 3-7 provide social, educational, and recreational services to residents and employees in the vicinity of the analysis area.

TABLE 3-20 BOISE-NAMPA MSA 2020 DEMOGRAPHIC DATA

Topic	State of Idaho	Ada County	Canyon County	Boise County	Gem County	Owyhee County	Analysis Area (Census Tract 105.03)
Population*	1,839,106	494,967	231,105	7,610	19,123	11,913	5,452
Employed (Civilian labor force 16 years and over)	818,085	242,385	100,721	3,370	7,765	5,135	2,376
Unemployed (Civilian labor force 16 years and over)	35,955	9,273	5,104	66	245	143	82

*Population data source is U.S. Census Bureau 2020c Decennial Redistricting Data
Source: U.S. Census Bureau 2020a, 2020d; ACS 5-year Estimates Subject Tables DP03, selected economic characteristics; S1701

FIGURE 3-7 SOCIAL AND COMMUNITY RESOURCES IN THE VICINITY OF ID1



Source: Google Earth Pro

Economic conditions in the Boise MSA are healthy, with relatively strong employment growth in recent years. Both the MSA and state economy exhibited resiliency following the rapid economic contraction in early 2020 caused by the global pandemic. Relative to the pre-pandemic peak employment level, Idaho was the first state in the country to fully recover from pandemic-related job losses and has had significantly stronger employment growth relative to the national average, as shown in Table 3-21.

TABLE 3-21 PRE- AND POST-PANDEMIC EMPLOYMENT TRENDS

Geography	February 2010	February 2020	March 2023	Growth 2020-2023 (%)
Boise-Nampa Metropolitan Statistical Area	249.5	353.7	382.9	10.6%
Idaho	600.6	773.0	846.8	9.4%
United States	129,702	152,371	155,420	2.0%

Source: BLS 2023a
Note: Employment numbers are in thousands

Employment in both the construction and semiconductor manufacturing sectors (those which would be most impacted by ID1) have also been healthy, albeit more cyclical than the broader economy, as shown in Table 3-22, Table 3-23, and Table 3-24.

TABLE 3-22 SEMICONDUCTOR MANUFACTURING SECTOR EMPLOYMENT, ADA COUNTY, IDAHO, 2011-2021

	2011	2013	2015	2017	2019	2021	2011-2021 CAGR*
Employment	6,280	6,520	6,930	7,200	6,710	6,390	0.2%
Average Annual Wages	92,900	119,500	118,300	158,900	153,800	165,900	6.0%

Source: BLS 2023b
*Compound Annual Growth Rate[12]

[12] According to the U.S. Census Bureau, the Compound Annual Growth Rate represents the average annual rate of growth over a period of several years. Compound growth is another name for exponential growth, wherein the growth rate is "compounded" or repeated, that is, an entity grows in proportion to its current value, as in a savings account, so that annual increments to the principal increase over time.

TABLE 3-23 CONSTRUCTION SECTOR EMPLOYMENT, BOISE-NAMPA MSA, 2007–2021

	2007	2009	2011	2013	2015	2017	2019	2021	2007-2021 CAGR*
Employment	22,880	13,740	12,200	14,690	16,740	20,470	24,930	28,660	1.6%
Average Annual Wages	43,100	41,800	41,300	42,600	42,400	45,400	48,800	55,400	1.8%

Source: BLS 2023b
*Compound Annual Growth Rate

TABLE 3-24 ALL EMPLOYMENT, BOISE-NAMPA MSA, 2007–2021

	2007	2009	2011	2013	2015	2017	2019	2021	2007-2021 CAGR*
Employment	277,300	253,100	252,900	267,400	283,300	306,200	333,200	351,500	1.7%
Average Annual Wages	37,600	37,400	38,900	40,300	42,500	45,400	48,500	55,400	2.8%

Source: BLS 2023b
*Compound Annual Growth Rate

Population increased dramatically in the most recent period from 2020 to 2021 relative to longer-term trends. The MSA's population increase of 26,000 (3.3 percent) in 2021 was almost 170 percent greater than the long-term historical annual average growth of about 15,000 per year from 2000 to 2020, as shown in Table 3-25 and Table 3-26.

TABLE 3-25 POPULATION GROWTH TRENDS, 2000–2021 FOR BOISE-NAMPA, ID MSA

Geography	2000	2010	2020	2021
Population (in thousands of people)	469.0	617.9	759.5	771.4

Source: U.S. Census Bureau 2023

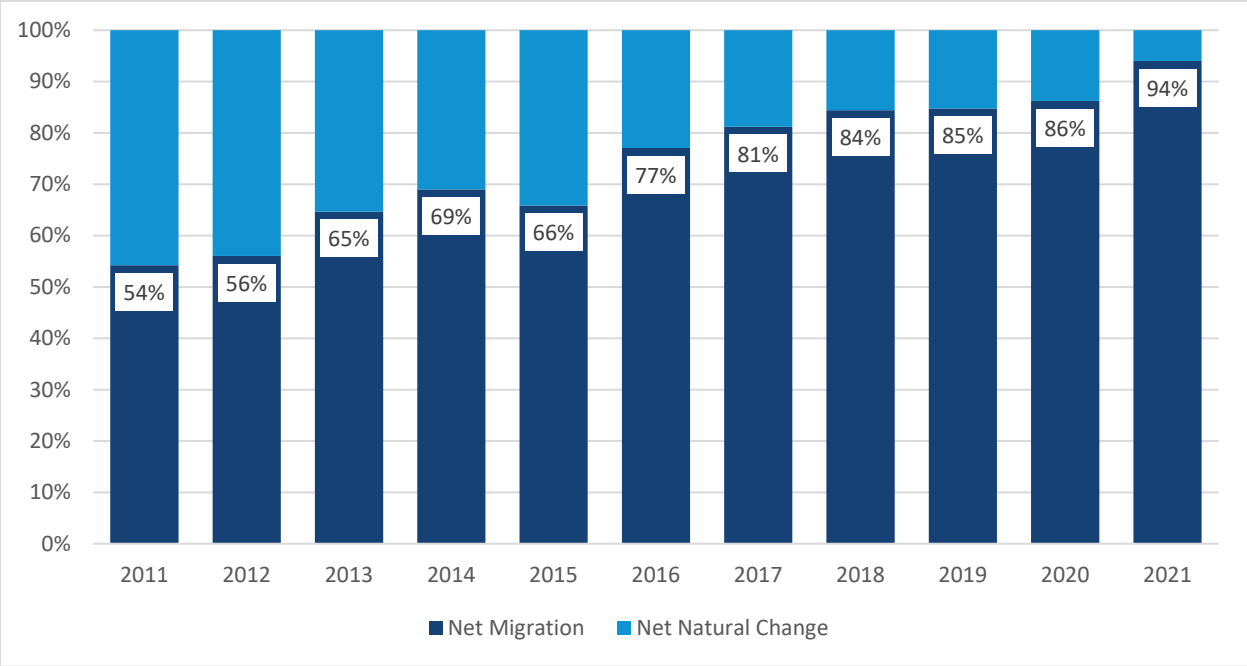
TABLE 3-26 POPULATION GROWTH TRENDS BY PERIODS FOR BOISE-NAMPA, ID MSA

Period	2000-2010	2010-2020	2020-2021
Incremental Population Growth (in thousands of people)	148.9	151.7	25.7
Average Annual Population Growth (in thousands of people)	14.9	15.2	25.7
Compound Annual Growth Rate	2.8%	2.2%	3.3%

Source: U.S. Census Bureau 2023

Census data show that the MSA's strong population growth is increasingly a function of growing net migration (Figure 3-8), meaning much larger numbers of people are relocating to the area than in the past.

FIGURE 3-8 NET MIGRATION SHARE OF TOTAL POPULATION GROWTH, BOISE-NAMPA, ID MSA



Source: U.S. Census Bureau 2023
Note: Net migration is the number of people moving to the area minus the number moving away. Net natural change is the number of births minus the number of deaths.

This influx of new population and households has sparked increased housing demand over the same period.

Focusing on Micron's role in the regional and state economy, as the second largest private employer in the state from 2017 through 2020, Micron's operations supported an annual average of 16,900 total jobs (including direct, indirect, and induced employment), contributed $1.4 billion to annual gross state product, and generated $2.9 billion in total annual economic activity (IHS Markit 2021).

3.13.3 ENVIRONMENTAL CONSEQUENCES

3.13.3.1 PROPOSED ACTION

TEMPORARY CONSTRUCTION EFFECTS

All social and community resources in the vicinity of the analysis area would be accessible and no business or residence would be displaced as a result of the construction of ID1. As discussed in Section 3.9, the existing construction access road that connects at the east leg of the intersection

of Memory Road and Westbound I-84 would help minimize impacts to the businesses and residences. All construction traffic would be directed to temporarily use the existing access point near Memory Road and I-84, which would minimize construction traffic impacts to the roadway network in the analysis area. The noise and dust from construction activities would not result in major effects on social or community resources because the activities would be far enough away from these resources, and Micron would follow any requirements or BMPs included in secured construction permits.

Construction of ID1 would generate positive economic benefits to the region as a result of the supplies and materials purchased and workers hired to conduct the proposed construction activities. As a result, construction effects of ID1 on regional socioeconomic conditions include additional demand for construction jobs. ID1 investment would total $20.2 billion in capital investment from 2023 through 2033 and would create approximately 15,000 construction jobs with an average of 4,700 jobs per year from 2023 through 2033 and would support an additional 20,000 jobs in supplier industries and the local community in the peak year of 2025 (S&P Global 2023). Such a large-scale investment would have strong, positive effects on the construction industry, which is a sector that tends to be the most responsive to economic cycles of expansion and contraction. The projected annual average construction jobs represent approximately 16 percent of 2021 regional construction employment and would be met with a combination of local workforce development and relocated employees.

In partnership with community organizations and government agencies at the city and state level, Micron and the General Contractor for ID1 would evaluate options around temporary housing for construction workers that would require travel away from home to work on ID1, including hotel blocks, RV parks, and vacant land. This evaluation would extend to surrounding communities that are reasonable commuting distance, including the greater Treasure Valley and Mountain Home. The General Contractor would work to establish a comprehensive housing strategy to house the required construction workforce that may be travelling from outside of commutable distance. The housing plan would take into consideration the evolving nature of ID1 and the non-static number and type of construction workforce, distance from Micron Boise, and transportation options to and from Micron Boise. Construction workforce spending on housing, goods, and services would indirectly benefit the local economy, creating indirect jobs to provide these services, and support the local tax base that funds schools, public safety, and community services.

In sum, the adverse construction effects of ID1 on housing would be regional, minor, and short term. These short-term adverse effects would be offset by moderately beneficial and regional effects on income, employment, and economic activity.

LONG-TERM EFFECTS INCLUDING OPERATIONS

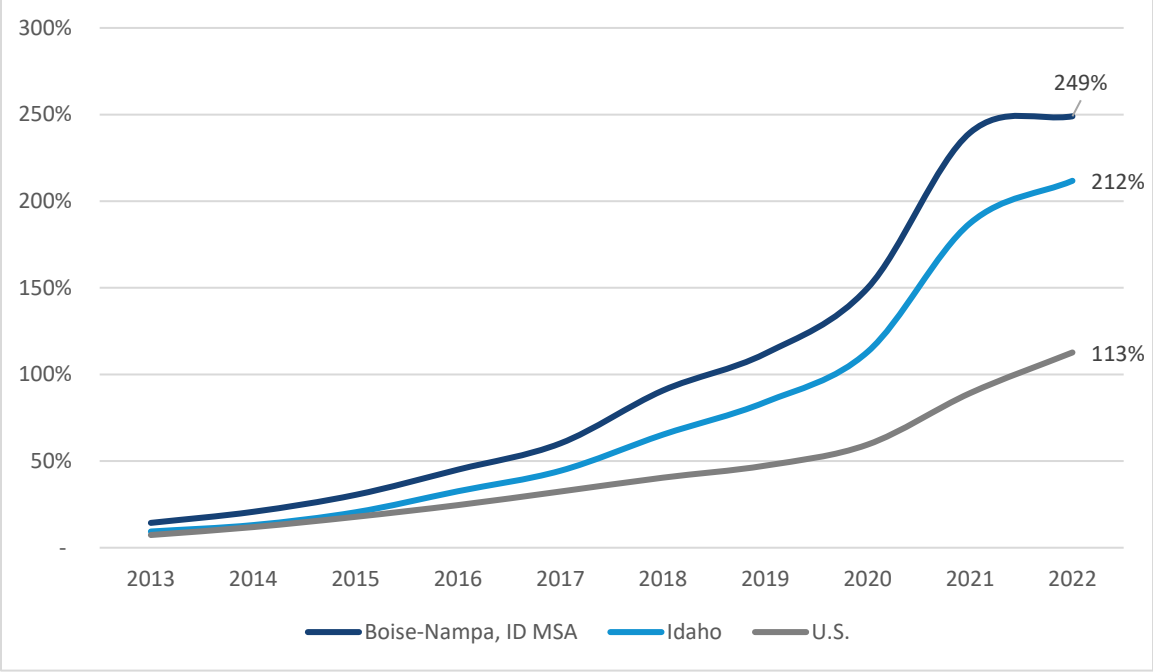
ID1 would create 2,000 direct jobs and about 15,000 community jobs with suppliers, contractors, and other support roles by the end of the decade. This would represent an approximately 5 percent increase over the number of jobs in the Boise MSA in 2021. It is anticipated that ID1 would improve the number of high-wage jobs, attract suppliers with additional high-quality jobs, and spur economic growth and workforce expansion over time. ID1 would induce growth in employment, community and social services, housing, and goods and service demands, and would support the local tax base to supply education, public safety, and community services.

According to a socioeconomic effects analysis, ID1 would spur investments from other companies and suppliers, which would directly and indirectly create numerous jobs in construction, professional, scientific, and technical services industries, reduce the poverty and unemployment rates, and increase household and per capita income (Deloitte 2022). According to the Boise Valley Economic Partnership, ID1 would serve as a catalyst for high-growth business investment and job creation, which would fuel growth and economic prosperity in the Boise metro area and surrounding regions. ID1 would boost Idaho's technology manufacturing industry and would enhance Boise's diverse and lively culture (BVEP 2022).

As discussed in Section 3.9, Micron would address the potential ID1 traffic impacts through a payment of impact fees to ACHD to cover ID1's proportionate share of roadway impact; therefore, localized traffic impacts to nearby neighborhoods would be minor. As discussed in Section 2.2, ID1 would create 2,000 direct jobs, which would increase the number of people travelling to and from the analysis area, which would potentially benefit businesses in the vicinity of ID1. ID1 would not displace any residence or business.

Although such a large-scale investment would generate positive economic benefits to the region and the state of Idaho, it may also affect regional housing affordability. As described above, the Boise MSA has experienced net in-migration over the past decade, which has resulted in imbalanced housing market conditions as growth in demand for residential units has outpaced delivery of new supply and resulted in rapidly rising housing costs. The average single-family home value in the MSA was 249 percent higher in the third quarter of 2022 compared to the third quarter of 2013, which outpaced that of the national average over the same 10-year period (113 percent) (Figure 3-9).

FIGURE 3-9 HOUSE PRICE INDEX, Q3 2013 - Q3 2022



Source: FHFA 2023

The primary driver of new regional housing demand is employment (despite the increasing trend of telecommuting). During periods of strong economic growth, demand conditions increase and the extent to which new employment requires on-site work activity (such as semiconductor manufacturing) that cannot be filled by the existing labor force will further fuel housing demand from worker in-migration from beyond the region. The extent to which ID1 would affect regional housing demand depends on how many of the new, direct Micron jobs would be filled by the existing regional labor force versus workers who would relocate to the region to fill a position. If a conservative estimate is used (e.g., 90 percent of new Micron jobs would be filled from workers relocating to the region), the extent to which this influx of new population impacts housing affordability still depends on several additional unknowns, including the following:

- Whether demand would be concentrated in a particular category of unit type (e.g., entry-level 1-bedroom apartments, luxury single-family detached units, etc.). These preferences are largely driven by age and income.

- Future economic and housing market conditions at the time. If the economy is in an extended period of growth and delivery of new housing inventory has not kept up with demand, ID1 may add to an existing and growing housing affordability issue. Should the opposite scenario occur and prices/rents have moderated or declined, ID1 could have a much-needed beneficial impact on housing market conditions.

Micron's current employees reside in various locations throughout the Treasure Valley as listed in Table 3-27. New Micron workers would likely demonstrate the same geographic pattern of residential location choice as current Micron employees. Using data from the U.S. Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) program, the densest concentrations of worker home location are within close proximity to Micron Boise. According to the LEHD data, over half (51 percent) of these employees live less than 10 miles from Micron Boise. The majority of workers, 84 percent, reside in Ada County, as shown in Table 3-27.

TABLE 3-27 WHERE EXISTING WORKERS LIVE RELATIVE TO MICRON BOISE, 2020

Distance	Amount	Percentage
Less than 10 miles	3,540	50.6%
10 to 24 miles	2,922	41.8%
25 to 50 miles	329	4.7%
Greater than 50 miles	202	2.9%
County	**Amount**	**Percentage**
Ada	5,895	84.3%
Canyon	692	9.9%
Boise	74	1.1%
All Others	332	4.7%

City	Amount	Percentage
Boise	3,486	49.8%
Meridian	1,065	15.2%
Nampa	347	5.0%
Kuna	213	3.0%
Eagle	164	2.3%
All others	1,718	24.6%

Source: U.S. Census Bureau 2023

The majority of impacts to residential demand from ID1 would likely take place in Ada and Canyon Counties, with about half within 10 miles of Micron Boise, and about half in the city of Boise. Regional and city plans, including the City of Boise's 2023 zoning code, accommodate anticipated commercial and residential growth and allow for new residential development to meet housing demand that may result from ID1. Based on the above discussion, ID1 would likely have both regional adverse or beneficial effects ranging between minor and moderate on the housing sector and housing affordability.

In conclusion, long-term regional impacts of ID1 on housing, while uncertain, could range from moderately adverse to minor beneficial. Due to the increased income, employment, and economic activity it would generate, overall ID1 would result in long-term, moderate, and regional beneficial socioeconomic effects.

3.13.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be no CHIPS financial assistance to expand Micron Boise to include HVM, and existing operations would be expected to continue. The No Action Alternative thus would continue to have a long-term, moderate, and beneficial, effect on the regional economy, but to a far lesser extent than the Proposed Action.

3.13.4 BMPS

The overall socioeconomic regional and local effects of ID1 would be moderately beneficial. Moreover, Micron would continue to partner with the city and state to identify long-term permanent opportunities around housing supply/demand dynamics, including continuing discussions with the City of Boise, the State of Idaho, Boise Economic Development Agency, and other local government agencies. Micron is exploring options to invest locally to address economic barriers to the need for long-term permanent affordable housing in Boise.

3.14 UTILITIES AND SUSTAINABILITY

This section describes utility usage and sustainability objectives associated with the Proposed Action and the No Action Alternative, including electricity, natural gas, and water.

3.14.1 REGULATORY SETTING

In the state of Idaho, the regulation of investor-owned utilities, including electricity, gas, and water, is overseen by the Idaho Public Utilities Commission (IPUC). The IPUC operates under the Idaho Public Utilities Law, as outlined in Title 61 of the Idaho Statutes. This regulatory framework grants the IPUC authority to ensure utilities provide safe, adequate, and reliable services (Idaho Statute § 61-302). The commission's responsibilities include setting "just and reasonable" rates, conducting investigations and hearings, and addressing consumer complaints (Idaho Statutes § 61-301, 61, Chapter 5). Additionally, the IPUC oversees utilities' adherence to both state and federal environmental standards, including the promotion of renewable energy and energy efficiency initiatives.

Specifically for electricity and water utilities, the IPUC regulates the expansion and capacity of these services through the issuance of Certificates of Public Convenience and Necessity. This process requires utilities to obtain approval from the IPUC before constructing new facilities or extending existing ones. This ensures that any expansion is in the public interest and does not negatively impact service quality or rates. For water utilities, the commission ensures there is sufficient capacity to meet current and future demand, regulating connections and expansions to maintain service reliability and safety standards.

Through its oversight and regulatory processes, the IPUC ensures that Idaho's utility infrastructure sustainably meets the needs of its residents while enhancing the system's capacity and resilience against future demands and potential disruptions.

3.14.2 AFFECTED ENVIRONMENT

Micron Boise currently receives domestic water from the Veolia municipal water system while receiving industrial water from numerous sources, including the municipal water system, groundwater wells, and surface water rights. Micron Boise currently receives electricity through an on-site substation from Idaho Power Company (Idaho Power). Natural gas is supplied to the facility by Intermountain Gas Company (Intermountain Gas). High-capacity natural gas supply lines and electrical connection infrastructure are in place to support Micron Boise. Micron Boise currently uses natural gas for HVAC and process heating, as well as to fuel on-site boilers that are used throughout the existing research and development processes. Electricity supplied to the site is used for office and building needs and to provide power to the existing Micron Boise research and development semiconductor manufacturing tools.

Table 3-28 details the current utility consumption at Micron Boise.

TABLE 3-28 MICRON BOISE EXISTING AVERAGE UTILITY CONSUMPTION

Utility Description	Existing Consumption
Domestic Water	48,700,000 gallons per year
Industrial Water	1,400,000,000 gallons per year
Electricity	600,000,000 kilowatt hours per year
Natural Gas	1,100,000,000 standard cubic feet per year

Source: Micron 2023a

The Veolia municipal water system serves approximately 105,000 customers in Ada County and recently invested over $70 million on improvements in water quality, storage capacity, and fire suppression in the Boise area. The Veolia municipal water system operates a total of 81 groundwater wells, 35 reservoirs, two treatment plants, and 1,241 miles of water mains, to serve a population of more than 240,000 total people. Approximately 70 percent of the Veolia water supply comes from underground wells located throughout the county, while the remaining 30 percent is sourced from surface water.

Idaho Power provided electrical service to approximately 24,000 square miles and more than 630,000 customers. Idaho Power is responsible for both electrical generation and distribution and utilizes a variety of energy-generating sources or purchased power. Table 3-29 itemizes the energy sources within Idaho Power's portfolio along with the percentage of energy sourced from each type as of 2023. As shown in Table 3-29, more than half of Idaho Power's energy mix comes from renewable energy sources, demonstrating progress toward the state's goal of 100 percent renewable energy by 2045 and elimination of coal-generated energy by the end of 2028, with two coal-fired generators no longer used by Idaho Power (exited in 2019 and 2020). Further, Idaho Power has contracts to buy energy from 24 commercial solar-energy projects in Idaho and Oregon, with projects currently under development anticipated to add 428 MW of solar energy, which aligns with Idaho Power's 20-year Integrated Resource Plan inclusion of significant increases in solar capacity (Idaho Power 2023a).

TABLE 3-29 IDAHO POWER ENERGY SOURCES – 2023

Energy Source	Percent of Energy Sourced
Natural Gas	15.4%
Coal	13.0%
Wind	9.8%
Solar	5.4%
Hydroelectric	36.8%
Geothermal, Biomass and Other	2.3%
Market Purchases	17.3%

Source: Idaho Power 2023b

Variability in renewable energy generation, primarily from solar and wind, and weather-related changes to peak energy demand may affect energy capacity going forward. However, Idaho Power has proactively been improving grid resilience through its diversification of energy sources, utilization of transmission lines that allow for easy import and export of energy from other areas in the northwest, and investment in storage systems, such as the 80-MW battery energy storage system at Idaho Power's Hemingway substation and a 40-MW battery energy storage system adjacent to the 40-MW Black Mesa solar project. These storage systems can discharge stored energy over four hours, providing power during peak demand periods.

Intermountain Gas Company is a natural gas distribution company serving more than 412,500 customers in 74 communities in southern Idaho. Within Intermountain Gas Company's distribution system, Large Volume (LV) customers comprised approximately 125 of the largest customers on both an annual therm use and a peak day basis. Only customers that use at least 200,000 therms per year are defined as LV customers. Based on the Intermountain Gas Company 2021-2026 Integrated Resource Plan, LV users on the Intermountain Gas Company system accounted for a base case usage in 2023 of 385,772,000 therms of annual usage (Intermountain 2021). Based on 2023 actual usage data, Micron Boise's usage was approximately 11,002,626 therms or 2.9 percent of the 2023 LV base case usage estimate.

3.14.3 ENVIRONMENTAL CONSEQUENCES

3.14.3.1 PROPOSED ACTION

TEMPORARY CONSTRUCTION EFFECTS

Construction of ID1 would require temporary additional electrical loads resulting from construction equipment and temporary construction personnel infrastructure. The temporary power supply would be accessed via the existing infrastructure from Micron Boise and temporary power supplies that tie into the existing power distribution surrounding the construction site. The temporary construction power infrastructure of ID1 has already been developed, and no additional electrical utilities are anticipated to be installed during the construction of ID1. Electrical consumption during construction is not anticipated to overlap with energy consumption during operation of ID1, and the energy consumption during construction is anticipated to be significantly below the electrical needs during operation. Electrical power would also be generated during the initial phases of construction from mobile diesel fired generators in support of equipment that is not immediately adjacent to fixed electrical infrastructure. Construction activities are not anticipated to require an increase in natural gas consumption.

Water supply for temporary construction use (control of fugitive dust, material moisture control, etc.) would not require additional utility connections as sufficient supply for construction activities is available through Micron Boise's existing infrastructure.

Based on the limited utility resource demands associated with the construction of ID1 and the pre-existing availability of utility infrastructure for construction activities, the effects of construction on utility use is anticipated to be minor and continue only through the term of construction of ID1.

LONG-TERM EFFECTS INCLUDING OPERATIONS

The operation of ID1 would require access to and additional consumption of utilities that are supplied to the analysis area. Table 3-30 summarizes the increase in consumption of utilities expected from the operation of ID1 and consumption of existing utilities at Micron Boise.

TABLE 3-30 EXISTING AND PROJECT UTILITY CONSUMPTION

Energy Description	Existing Consumption	Expected Consumption	Δ
Water Usage (all sources)*	**1,448 MG/yr**	**3,456 MG/yr**	**2,007 MG/yr**
Electricity for ID1 High-Volume Manufacturing (HVM)	600,000,000 kwh/yr	4,200,000,000 kwh/yr	3,600,000,000 kwh/yr
Electricity for Opal	0 kwh/yr	131,400,000 kwh/yr	131,400,000 kwh/yr
Electricity - Total	**600,000 MWh/yr**	**4,300,000 MWh/yr**	**3,700,000 MWh/yr**
Natural Gas for ID1 HVM	1,100,000,000 scf/yr	2,000,000,000 scf/yr	1,000,000,000 scf/yr
Natural Gas for Opal	0 scf/yr	100,000,000 scf/yr	100,000,000 scf/yr
Natural Gas - Total	**1,100,000,000 scf/yr**	**2,100,000,000 scf/yr**	**1,100,000,000 scf/yr**

*Current and ID1 water consumption are a mix of groundwater and municipal water resources. Projected maximum demand includes 5.5 MGD total use for ID1 from all sources of which up to 3.0 MGD could come from municipal sources. See additional detail on water supply from surface and groundwater sources in Section 3.4.

WATER

The operation of ID1 would require the installation of three additional municipal water (hereafter referred to as "Veolia") supply connections. These water supply lines are planned to have two connections on the south side of the ID1 analysis area and one to the east. In addition, a new 24-inch water main interconnection between Federal Way and Columbia Way would be installed. This water main has been part of Veolia's existing system planning within the analysis areas to allow for system redundance and enhanced reliability. The timing of the installation would be accelerated as a result of the operation of ID1 as the upgrades would allow for enhanced system reliability to the three water supply connections that would be associated with ID1.

Operation of ID1 would result in an increase in the consumption of water from the Veolia municipal supply. All domestic water would continue to be sourced from Veolia, as well as fire suppression and industrial water if on-site water reuse and ground water is not sufficient. Resource planning between Micron and Veolia has ensured that increased use of municipal water could be accommodated by Veolia's existing system capacity. As a result, the increased use of municipal water associated with the operation of ID1 would have a moderate effect on water utility use.

ELECTRICITY

The operation of ID1 would result in an increase of electrical use of approximately 3,700,000 MWh/yr. Micron has engaged in resource planning in cooperation with Idaho Power to ensure that ID1 can be accommodated through existing generation and service capacity and the operation of ID1 has been included in Idaho Power's integrated resource planning.

The operation of ID1 also includes operation of new Idaho Power Company electrical substations that would supply ID1 with sufficient electrical capacity for full operation during HVM. An independent substation may also be constructed to serve the Opal facility. These substations have been designed to ensure electrical supply stability as well as to eliminate connectivity disruption for existing customers of Idaho Power within the analysis area.

Micron Boise and the proposed ID1 operations are not subject to any regulatory limits on GHG emissions. While not required by regulations, MTI has established corporate sustainability goals that have significantly influenced the design of the proposed action and will continue to shape its development as plans are finalized. MTI has publicly committed to achieve 100 percent renewable energy use for U.S. electricity consumption by the end of calendar year 2025. MTI has also established a corporate commitment to net zero GHG emissions from operations (Scope 1) and energy use (Scope 2) by 2050. If sourced from traditional electrical grid resources within Idaho's power grid, ID1's anticipated annual electrical use would generate approximately 1,560,000 MT CO2e annually in Scope 2 emissions from purchased electricity.

To meet its energy commitment, Micron has begun planning for electrical supply purchases associated with projected electrical demands that would be required by ID1. In 2022, Micron announced its partnership with Idaho Power to facilitate the new 40-MW Black Mesa Energy solar facility to provide renewable energy for Micron Boise (separate from the Proposed Action). Additionally, a power purchase agreement with Terra-Gen has been secured for approximately 178 MW of wind electricity capacity (also independent of the Proposed Action) and associated RECs annually. Once Terra-Gen's project is operational, it would avoid more than 280,000 MT CO2e emissions annually, comparable to the average electricity use of more than 50,000 homes in the United States. Assuming Micron Boise's successful transition to 100 percent renewable energy for purchased electricity by the end of 2025, the operation of ID1 would avoid or offset up to 1,560,000 MT of GHG emissions.

Based on the cooperative planning completed between Micron and Idaho Power to ensure that existing generation and transmission networks are capable of accommodating the operation of ID1 and Micron's continued progress towards its public goal of use of 100 percent renewable energy sources by the end of calendar year 2025, the operation of ID1 would be anticipated to have a minor effect on electrical utility demands.

NATURAL GAS

The operation of ID1 would result in an increase of natural gas use of approximately 1,100,000,00 standard cubic feet or 11,002,626 therms per year. Micron is an existing LV customer of Intermountain Gas Company, and the expanded service required by the operation of ID1 would be provided by Intermountain Gas Company. When planning for system capacity, Intermountain Gas Company modeled a high growth scenario for LV customer planning. This planning, completed in 2021 for modeled usage from 2021-2026 accounted for 3.7 percent growth in the manufacturing section and assumed the addition of one large electronics/high tech related facility. Based on the anticipated use of 11,002,626 therms per year associated with ID1, the additional natural gas demand would be approximately 2.9 percent below the planned growth included in Intermountain Gas Company's 2021 Integrated Resource Plan (Intermountain 2021). Based on the existing system capacity planning for the Intermountain Gas Company's natural gas distribution capacity

and the ability to accommodate the operational requirements of ID1, the effects of ID1 on natural gas utilities are anticipated to be minor.

3.14.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be no CHIPS financial assistance to expand Micron Boise to include HVM, and existing operations would be expected to continue. Utilization of existing electrical, natural gas, and municipal water sources and consumption rates would be anticipated to continue. Based on the sufficiency of infrastructure and supply of Micron Boise's existing utilities, the environmental effect on utility use under the No Action Alternative would continue to be minor.

3.14.4 BMPS

The effects on the use of utilities associated with the construction and operation of ID1 would be minimized by the following commitments and BMPs. Micron anticipates providing 100 percent renewable energy for all electricity purchased for ID1 and Micron Boise by the end of calendar year 2025 through a combination of methods that may include physical and virtual power purchase agreements, REC purchases, green tariffs, and on-site solar. This includes, for example, agreements with the Terra-Gen project and partnerships with Idaho Power (for example, the Black Mesa Energy solar facility project). Micron is planning to achieve 75 percent water conservation through reuse, recycling, and restoration by the end of calendar year 2030. Micron would further reduce energy and water consumption through efficient designs and smart control systems.

3.15 WASTE

This section discusses solid and hazardous waste generation, recycling, and disposal.

3.15.1 REGULATORY SETTING

Waste materials are regulated based on the characteristics of the materials and the risks associated with each waste stream. EPA has developed detailed regulations that define what materials qualify as solid wastes and hazardous wastes.

The Resource Conservation and Recovery Act (RCRA) defines hazardous wastes as: "a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed." 42 U.S.C. § 6903(5).

RCRA hazardous wastes are regulated throughout their lifecycle from cradle to grave. RCRA Subpart C requires tracking hazardous waste (via use of manifests) from generation to disposal and permitting of hazardous waste management facilities. Treatment, storage, and disposal facilities carry out hazardous waste management using different pre-approved methods. These may include final waste treatment using chemicals, incineration or oxidation, or physical waste-

processing to reduce, remove, or destroy the contaminated element of the waste. In some cases, used materials may be reused or recycled in other manufacturing processes.

Storage facilities temporarily hold quantities of hazardous waste, produced on or off site until they are treated or disposed of in containers, tanks, containment buildings, waste piles, or surface impoundments. Disposal facilities permanently hold hazardous waste in landfills using specifically designed and constructed units that safeguard groundwater and surface water resources.

EPA further regulates "Universal Waste," which includes batteries, pesticides that are either recalled or collected in waste pesticide collection programs, mercury-containing equipment, aerosol cans, and lamps, such as fluorescent light bulbs. These wastes have separate regulatory requirements under 40 C.F.R. § 273.

In February 2024, EPA proposed a new rule to list nine PFAS as hazardous constituents, which authorizes EPA to address releases of these PFAS at permitted hazardous waste facilities under the RCRA corrective action requirements. 89 Fed. Reg. 8606 (Feb. 8, 2024). At this time, EPA has not proposed to list any PFAS as hazardous wastes under RCRA.

EPA recently finalized a rule designating PFOA and PFOS as hazardous substances under CERCLA Section 102(a). 89 Fed. Reg. 39124 (May 8, 2024). In addition to bringing these two PFAS into CERCLA's liability framework, the rulemaking also establishes reportable quantity thresholds for releases of these substances to the environment.

In addition to waste handling and management, EPCRA requires annual reporting of material and effluent generation for regulated sites through the Toxics Release Inventory (TRI). TRI reporting is triggered by the manufacture, process, or other use of individual TRI-listed toxic chemicals in excess of prescribed thresholds. Beginning with calendar year 2024 activities (RY2024; reports due July 1, 2025), EPA has removed the de minimis exemption from TRI reporting for PFAS. This exemption previously allowed facilities to exclude amounts of PFAS in chemical mixtures at concentrations below 1 percent (or 0.1 percent for carcinogens) in making threshold calculations and other reporting determinations. There are 196 TRI-listed PFAS compounds for RY2024. PFAS provide functional utility even at low concentrations. The existence of the de minimis exemption for PFAS has meant that most PFAS activities have not been subject to TRI reporting in recent years. With the removal of the de minimis exemption for PFAS, more reporting is anticipated where specified PFAS are manufactured, processed or used above the reporting threshold. 40 C.F.R.§ 372.28(a)(1). The removal of the de minimis exemption also requires chemical suppliers to provide PFAS chemical identities and concentrations on a Safety Data Sheet. This will expand data availability for conducting TRI reporting. Regulation for the control and management of PFAS are continuing to evolve. Table 3-31 identifies the laws and regulations relevant to solid and hazardous waste generation and the associated controls to impacts on public health, safety, and the environment.

TABLE 3-31 APPLICABLE LAWS AND REGULATIONS

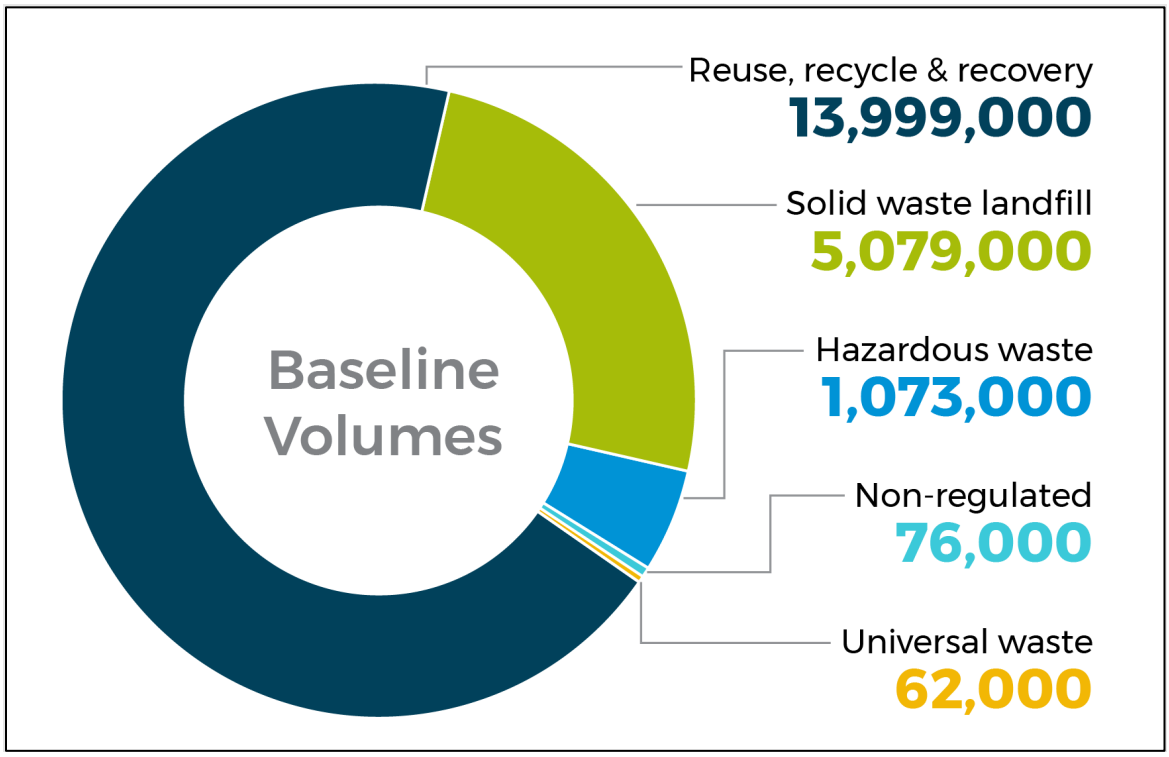
Regulation, Statute, Guideline	Description
Federal: Resource Conservation and Recovery Act (RCRA) and its implementing regulations (40 C.F.R. Parts 239-282)	• Creates the framework for the proper management of hazardous and certain non-hazardous solid waste. • Requires tracking of hazardous and certain non-hazardous waste from generation to disposal via manifests.
Federal: Toxic Substances Control Act (TSCA) and its implementing regulations (40 C.F.R. Parts 700-799)	• Under TSCA, EPA protects human health and the environment from the effects of chemical substances and is authorized to promulgate reporting, record-keeping, and testing requirements and other restrictions relating to chemical substances and/or mixtures.
Federal: Department of Transportation (DOT) (49 C.F.R. Parts 100-185).	• DOT regulates the transportation of hazardous materials pursuant to the Hazardous Materials Transportation Act. DOT is responsible for the oversight of hazardous materials labeling, shipping, and packaging and the issuance of DOT Special Permits and Approvals.
Federal: Emergency Planning and Community Right-to-Know Act (EPCRA) and implementing regulations (40 C.F.R. Parts 300-399)	• EPCRA protects public health, safety, and the environment from chemical hazards by requiring federal and state governments, local agencies, tribal nations, and industries to partner in implementing emergency planning and preparedness. • EPCRA and its regulations require facilities to provide EPA, state, local, and tribal agencies, and the public with information on hazardous and toxic chemicals posing potential chemical hazards to local communities.
State: Idaho Administrative Procedure Act (IDAPA) 58.01.05 Rules and Standards for Hazardous Waste	• Incorporates RCRA Subtitle C regulations into state code. Idaho rules generally mirror the federal regulations without significant changes or more stringent requirements.
State: IDAPA 58.01.06 Solid Waste Management Rules	• Implements an open dumping prohibition, sets standards for non-municipal solid waste facilities, and provides supplemental requirements to the Idaho Solid Waste Facilities Act for commercial solid waste facilities. The rules achieve this by requiring state authorization prior to disposal of solid waste, and by establishing standards applicable to solid waste and solid waste management facilities in Idaho, except as specifically excluded in the rule.
Local: Not applicable	• The City of Boise and Ada County do not have local rules applicable to the scope of review for waste as part of this project.

3.15.2 AFFECTED ENVIRONMENT

3.15.2.1 WASTE

Current operations at Micron Boise generate waste typical of semiconductor manufacturing operations. Waste is characterized and managed based on regulatory applicability and depending on the type of waste. Micron implements a reuse, recycle, and recovery (RRR) program that limits the amount of used materials or waste generated and minimizes the volume of materials ultimately disposed of in landfills, incinerated, or otherwise terminally discarded. Figure 3-10 shows the approximate volumes of RRR materials and wastes from current operations. Non-hazardous solid wastes include expired chemicals, debris, metals, and other materials that may go to RRR or solid waste landfill. Universal waste includes batteries and lamps. Non-regulated waste refers to waste that is not considered hazardous and is not subject to the regulations and oversight of the EPA under RCRA. Examples of nonregulated waste include common household trash, food waste, and yard waste.

FIGURE 3-10 MICRON BOISE VOLUMES OF RRR MATERIALS AND WASTE (POUNDS/YEAR)



Source: Micron 2023a

3.15.2.2 HAZARDOUS WASTE

As shown in Figure 3-10, approximately 1,073,000 pounds per year of hazardous waste is generated at the Micron Boise facility. These hazardous wastes include acids, solvents, and other materials used in the fabrication process. Micron currently has implemented various safety programs and protocols for maintaining and disposing of hazardous waste. Table 3-32 shows approximate quantities of different categories of hazardous waste generated at the existing facility and their ability to be utilized in Micron's RRR program.

TABLE 3-32 HAZARDOUS WASTE TYPES AND QUANTITIES AT MICRON BOISE

Hazardous Waste Type	Category	Reuse, Recycle, and Recovery (RRR)	Total Waste Quantity (pounds)
Bulk Solvent	Solvent	RRR	801,732
Drummed Acids (e.g., Incinerated, treated - nitric, HF, citric)	Acid	Non-RRR	28,423
Drummed Acids (recovered - $CuSO_4$, H_2SO_4)	Acid	RRR	39,489
Solvent and Arsenic Waste	Debris	RRR	27,625
Mercury Waste	Metals	RRR	75
Misc. (e.g., labpack, cylinders, expired material, aerosols, glues, resins)	Miscellaneous	Non-RRR	27,261
Drummed Solvent including SOD	Solvent	RRR	148,033

Source: Micron 2023a

3.15.3 ENVIRONMENTAL CONSEQUENCES

3.15.3.1 PROPOSED ACTION

TEMPORARY CONSTRUCTION EFFECTS

The construction of ID1 would have the capacity to generate solid waste associated with unused or partially discarded construction materials; however, no hazardous waste is anticipated to be generated during the construction phase. Specifically, hazardous waste that would potentially be generated from oil or diesel fuel used for construction vehicles would be avoided as described in Section 3.11.

During construction, potential waste or other materials would include earth and land clearing debris, metal scraps, electrical wiring and cable, surplus consumable materials (e.g., paints, greases, lubricants, and cleaning compounds), packaging materials, and office waste. Additionally,

the IDEQ would regulate hazardous waste management in the state including requirements for hazardous waste generators, transporters, and treatment, storage, and disposal facilities.

Reusable materials would be retained for future use, and recyclable materials would be periodically collected and transferred to recycling facilities. Metal scraps unsuitable for reuse would be sold to scrap dealers, while the other remaining materials would be collected in dumpsters and periodically trucked off site by a waste management contractor for disposal in a licensed landfill.

Based on the limited or entirely avoided generation of hazardous wastes, the maximization of recycling and reuse of construction wastes, and compliance with regulatory requirements for management, transport, and disposal of remaining waste materials, the impacts from ID1 construction activities are anticipated to have a minor and short-term effect on waste.

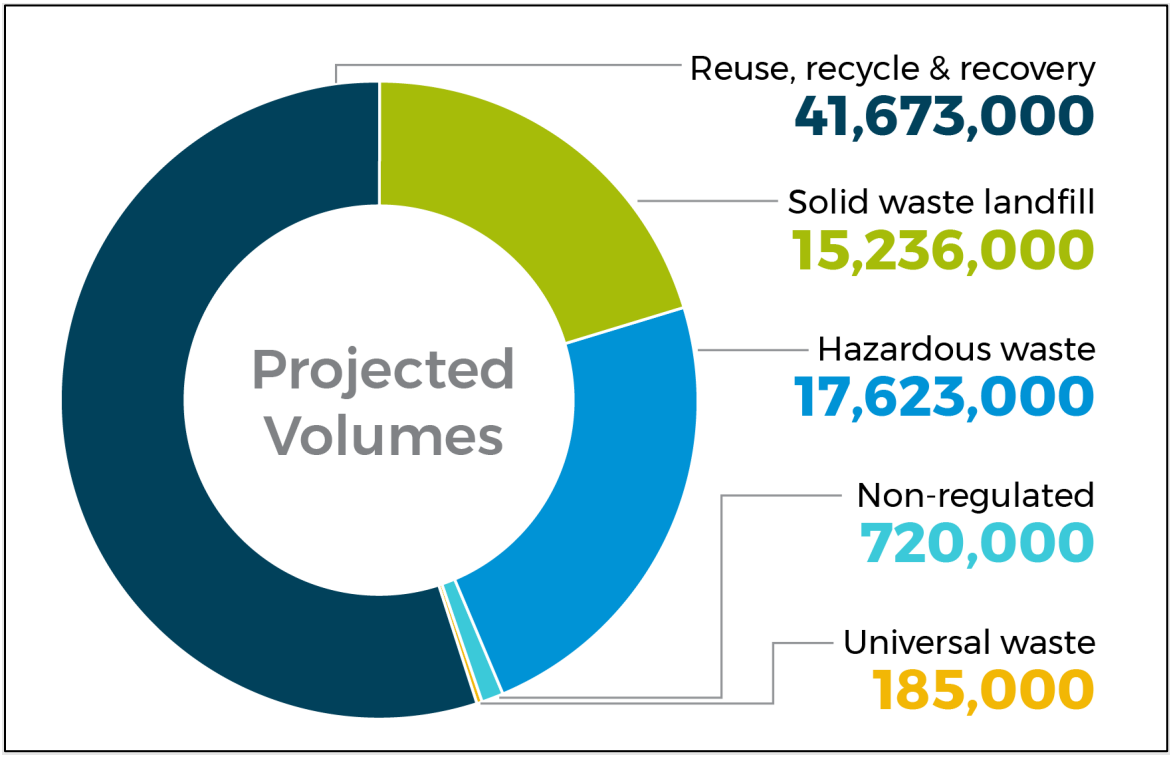
LONG-TERM EFFECTS INCLUDING OPERATIONS

WASTE

Solid waste generation would increase due to full-scale operation of ID1. At full operation, ID1 would have the capacity to manage the additional waste generated from employee activities and process operations. The majority of process wastes, or other materials generated from processes would be managed as RRR in accordance with regulatory requirements and Micron Boise's existing work practices.

Micron Boise activities would scale up, increasing the amount of RRR materials and wastes produced at Micron Boise. Micron Boise has a mature waste management and minimization process in place for its existing research and development and corporate oversight activities. This process would be updated to include ID1 operations to minimize waste streams to the greatest extent possible, and waste streams would be managed by regulatory requirements. ID1 involves the operation of HVM as well as the operation of the Opal facility. The wastewater from the new fab would be sent to the Opal facility, which would be a ZLD reclaim facility. Figure 3-11 shows the estimated maximum volume of wastes produced by operations of ID1 and the existing operations at the facility organized by category of management.

FIGURE 3-11 PROJECTED VOLUMES OF RRR MATERIALS AND WASTE FOR ID1 PLUS MICRON BOISE EXISTING OPERATIONS



Source: Micron 2023a

The Opal facility would generate volumes of non-regulated and universal waste typical of other similar sized wastewater treatment plants. There would be an opportunity to directly reuse some used chemicals from fab processes in water treatment processes (e.g., addition to bioreactor, general pH control) and, if deemed appropriate under applicable legal requirements, biosolids generated may be used for agricultural land application. Non-hazardous waste generated from the water softening process, bioreactors, and thermal processes are conservatively estimated to total approximately 130 tons per day of solids and 1,200 gallons per day of liquids.

Micron maintains programs to comply with waste management regulations under RCRA, as well as the provisions of EPCRA for emergency planning, emergency release notification, hazardous chemical storage reporting requirements, and TRI reporting. Compliance-related activities for waste (i.e., tracking, labeling, reporting, etc.) would scale up with the semiconductor production rate, but the types of waste and materials management strategies would generally remain the same as for current Micron Boise operations.

The impacts of solid waste generation would be moderate due to increases in quantities of solid waste generated at the facility for ID1. The characteristics of the solid waste that would be generated at the facility from ID1 are similar to the solid waste currently generated at Micron Boise. Therefore, Micron's current waste management plans would be scaled up to take into consideration increased quantities, but control and management strategies would largely remain the same as the solid waste types would not greatly vary. Micron Boise anticipates a RRR rate of approximately 93 percent, with a goal of 95 percent by calendar year 2030.

HAZARDOUS WASTE

Micron Boise is currently a RCRA large quantity generator of hazardous waste, registered under EPA ID No. IDD093120871. When considering the increased hazardous waste generation resulting from the operation of ID1, the facility would retain the same generator category because it would continue to meet the regulatory thresholds. A large quantity generator is defined as generating more than 2,200 pounds of hazardous waste or more than 2.2 pounds of acute hazardous waste per calendar month. Approximately 17,623,000 pounds of hazardous waste would be generated each year as a result of ID1 and the existing Micron Boise operations, compared to 1,073,000 pounds of hazardous waste generated each year by Micron Boise currently.

The hazardous materials generated would continue to include bulk solvent, drummed acids (nitric, hydrofluoric acid, citric, cupric sulfate (copper (II) sulfate), sulfuric acid, etc.), solvent and arsenic waste, miscellaneous mercury waste, (labpack, cylinders, expired material, aerosols, glues, resins), and drummed solvent. Many of these materials are subject to the RRR program preceding the transition to becoming wastes, which reduces the overall volumes of hazardous waste generation. Table 3-33 shows a more detailed list of hazardous waste types and quantities that would be generated from ID1 and the existing Micron Boise operations.

TABLE 3-33 HAZARDOUS WASTE TYPES AND QUANTITIES GENERATED BY ID1

Hazardous Waste Type	Category	Reuse, Recycle, and Recovery (RRR)	Total Waste Quantity (pounds)
Bulk Solvent	Solvent	RRR	13,172,126
Drummed Acids (e.g., Incinerated, treated - nitric, HF, citric)	Acid	Non-RRR	466,978
Drummed Acids (recovered - $CuSO_4$, sulfuric acid)	Acid	RRR	648,788
Solvent and Arsenic Waste	Debris	RRR	453,867
Mercury Waste	Metals	RRR	1,232
Miscellaneous (e.g., labpack, cylinders, expired material, aerosols, glues, resins)	Misc.	Non-RRR	447,886
Drummed Solvent including SOD	Solvent	RRR	2,432,121

Source: Micron 2023a

Micron anticipates that the operation of ID1 would result in the generation of PFAS-containing waste streams based on the use of fabrication process chemistries that contain PFAS. Micron is continuing to research alternative chemicals to eliminate the uses of PFAS, but at present, there are no known substitutes for many PFAS uses. Further, Micron has requested detailed chemical constituent documentation from their chemical vendors, including PFAS content, which often requires the use of non-disclosure agreements to obtain such information. Until non-PFAS containing chemical alternatives are developed and qualified, Micron would segregate PFAS-

containing wastewater streams for off-site disposal and/or treat PFAS in wastewater. Micron is also focused on identifying appropriate disposal or reuse, recycling, and recovery operations for PFAS-containing wastes, such as solvent waste and end of life fab infrastructure (e.g., tools, tubing, exhaust ducts). In compliance with EPCRA TRI reporting, Micron will report the manufacture, process, or other use of individual TRI-listed PFAS that exceed reporting thresholds. This will include the 196 TRI-listed PFAS compounds for reporting year 2024. Micron will continue to comply with all TRI-required reporting requirements as amended for PFAS.

The operation of ID1 would increase the volume of wastes transported off site. The surrounding region has a mature waste handling infrastructure with sufficient capacity for handling additional hazardous and non-hazardous wastes. The operation of ID1 is not expected to introduce any wastes substantially different than those being handled as part of existing Micron Boise operations. All wastes would be characterized using Micron's existing sampling requirements, which include a minimum of annual sampling of all wastes and additional sampling upon any change to waste material composition. Micron has discussed waste increases with waste management companies who are focused on opportunities such as handling through increased use of tanker trucks and rail cars for transport and shipping to final disposal locations. Micron Boise does not currently send hazardous waste to landfill and is not expected to send any hazardous waste to landfill because of the Proposed Project.

In addition to the HVM processes, the Opal facility is not expected to generate a continuous stream of hazardous wastes, but some leftover chemicals (e.g., pH adjusters or laboratory analysis reagents) may sporadically generate additional hazardous waste. Micron would characterize these waste streams through sampling upon occurrence and incorporate the wastes into their waste management strategy for the remainder of the facility.

Micron's waste management strategy involves managing a variety of used chemistries in the following ways, which would be extended to the operation of ID1. Micron generally avoids sending hazardous waste to permitted landfills. Instead, certain waste streams such as lab waste, cylinders, expired materials, aerosols, glues, resins, and certain acids would be incinerated at approved permitted disposal facilities. These incinerator facilities are Veolia Port Arthur, Texas, and Veolia Sauget, Illinois. Other waste streams such as bulk solvent, drummed solvent, and contaminated debris would be reused/recovered as fuels blend/energy recovery at approved permitted cement kilns that allow waste derived fuel to run the kiln, primarily Green America in Hannibal, Missouri, and Systech in Fredonia, Kansas. Additionally, certain drummed acids and metal bearing acid waste streams would be sent to PhibroTech in Santa Fe Springs, California, an approved permitted facility for used acid and metals reuse or recovery. Mercury waste and other universal waste streams would be shipped to permitted recyclers like Veolia Phoenix, Arizona, and Kinsbursky Brothers in Anaheim, California. The waste facilities to which Micron would send hazardous waste would continue to be reviewed and approved based on a systematic due diligence process standardized by Micron Global EHS. Micron anticipates a RRR rate of approximately 93 percent, with a goal of 95 percent and zero hazardous waste to landfill by the end of calendar year 2030.

Impacts of hazardous waste generation and disposal at the facility would be moderate due to the increase in quantity of hazardous waste generated. However, the wastes generated would remain consist with the hazardous waste types being generated by the existing Micron Boise operations. As a result, the additional quantity of hazardous wastes generated by the operations of ID1 would

be accommodated through expansion of Micron's existing materials management and RRR strategies. As a result of these RRR and regulatory control strategies, the operational effects of ID1 on hazardous wastes would be moderate, local to regional, and occur throughout the term of operation of ID1.

3.15.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be no CHIPS financial assistance to expand Micron Boise to include HVM, and existing operations would be expected to continue. Solid and hazardous materials and wastes generated by Micron Boise would continue to be managed through existing regulatory permits and RRR waste minimization strategies. These efforts are anticipated to result in a current rate of RRR of 93 percent, with a goal of 95 percent and zero hazardous waste to landfill by the end of calendar year 2030. As a result, the effects of the No Action Alternative are anticipated to be moderate for waste and would extend throughout the term of operation of Micron Boise.

3.15.4 BMPS

Micron would continue to manage waste streams in accordance with all state and federal regulatory requirements and continue to increase the RRR rate for the operation of ID1 and Micron Boise. Micron has a goal of 95 percent RRR and zero hazardous waste to land fill by calendar year 2030. Micron would also continue to explore non-PFAS chemicals for ID1 manufacturing processes.

3.16 GEOLOGICAL RESOURCES

3.16.1 REGULATORY SETTING

The following federal state, and local laws regulations, plans, policies, and guidance documents informed the assessment of geological resources:

- International Building Code 2024 (Chapter 18 Soils and Foundations)
- Farmland Protection Policy Act of 1981
- Ada County Zoning Ordinance

3.16.2 AFFECTED ENVIRONMENT

The area of analysis for geological resources includes Micron Boise and ID1. Micron Boise is in a location with no documented faults according to the Idaho Geological Survey County Geology and Hazard Maps of Idaho Database (IGS 2022a). Furthermore, no faults were encountered within the area during a geotechnical evaluation (GeoTek 2022). The most recent earthquake to affect Micron Boise occurred on February 26, 2024, and registered as 4.9 magnitude. It was located approximately 54 miles north of Micron Boise, originating at a depth of 10 kilometers beneath the ground surface. The earthquake's origin is likely from one of the many north-south trending recent-faults (within the last 15,000 years) that stretch across central Idaho (USGS 2024). Micron Boise was unaffected by the earthquake.

Steep slopes are present in this portion of the Boise River Valley; however, none were located within the analysis area (IDL 2022). No active or historic landslides were identified within the analysis area (IGS 2022b). Soil liquefaction susceptibility is ranked low (Class 0 and Class 1) for the analysis area due to the underlain bedrock of the region (Phillips 2011). No active or historic mines, active mining claims, or active aggregate, sand, and/or gravel operations exist within a 2-mile radius of the analysis area (USGS 2022; BLM 2022; IGS 2022c).

There are no steep slopes in Micron Boise or ID1. Soils are characterized in the Chilcott Series having well-drained and slow permeability characteristics with "moderate to moderately high susceptibility to erosion" and "high susceptibility to erosion by wind" (NRCS 2022). The erosion factor (K) indicates the susceptibility of soil to sheet and rill erosion by water. The K-factor is one of six factors used in the Universal Soil Loss Equation and the Revised Universal Soil Loss Equation to predict the average annual rate of soil loss by sheet and rill erosion in tons-per-acre-per-year. The estimates are based primarily on percentage of silt, sand, and organic matter, as well as soil structure and saturated hydraulic conductivity. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water. Data from the Natural Resources Conservation Service Web Soil Survey (NRCS 2022) indicate that the Chilcott Series within the analysis area have a K value of 0.49.

The Natural Resources Conservation Service Farmland Classification identified soils within the analysis area classified as "Prime Farmland, if Irrigated" (NRCS 2022). There is no active irrigation on the analysis area for agricultural production.

3.16.3 ENVIRONMENTAL CONSEQUENCES

3.16.3.1 PROPOSED ACTION

TEMPORARY CONSTRUCTION EFFECTS

As described in Section 2.2, ID1 was previously cleared, graded, and grubbed, and concrete pads were poured for construction of the Proposed Action. The Proposed Action would not result in new ground disturbance, with the exception of an approximately 28-acre area near the existing Mask Building. This 28-acre area has no steep slopes and Micron would implement and maintain BMPs identified in the SWPPP to limit potential erosion and reduce the amount of stormwater flowing into the disturbed area. Any routine maintenance activities would result in negligible soil compaction, runoff, or erosion because construction vehicles would remain on internal roads, to the extent practicable.

LONG-TERM EFFECTS INCLUDING OPERATIONS

Construction of the buildings associated with ID1 would not affect prime and unique farmland. There are soils at ID1 classified as "Prime Farmland, if Irrigated" and "Farmlands of Statewide Importance, if Irrigated." However, there is no active irrigation for agricultural production and the analysis area is zoned for industrial use. No active farmlands would be converted to non-agricultural use, and as the Farmland Protection Policy Act does not apply to land already committed to urban development or water storage, ID1 is not subject to Farmland Protection Policy Act requirements. As such, completion of the Natural Resources Conservation Service Farmland

Conversion Impact Rating Form (Form AD-1006) is not required. No long-term, localized effects on geological resources are anticipated from ID1.

3.16.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be no CHIPS financial assistance to expand Micron Boise to include HVM, and existing operations would be expected to continue. Micron would direct any construction vehicles associated with ongoing operations and maintenance activities to remain on access roads to the extent practicable to minimize unnecessary soil compaction. Whenever possible, Micron would schedule construction activities in the dry season when soils are less susceptible to compaction, and similarly postpone soil disturbances when soils are excessively wet. Therefore, there would be no anticipated adverse effects on soils.

3.16.4 BMPS

To reduce the potential for soil erosion, Micron would implement and maintain the BMPs identified within the SWPPP. The SWPP includes both structural and nonstructural BMPs. Examples of structural BMPs include the installation of silt fences or other physical controls to divert flows from exposed soils, or otherwise limit runoff and pollutants from exposed areas within the analysis area. Examples of nonstructural BMPs include management practices such as implementation of materials handling, disposal requirements, and spill prevention methods.

3.17 SUMMARY OF POTENTIAL EFFECTS ON RESOURCE AREAS AND AVOIDANCE AND MINIMIZATION

A summary of the potential effects of the No Action Alternative and the Proposed Action is provided in Table 3-34. A summary of BMPs to avoid and minimize effects is provided in Table 2-2.

TABLE 3-34 SUMMARY OF POTENTIAL EFFECTS ON RESOURCE AREAS

Resource Area	No Action Alternative	Proposed Action
Air Quality	Minor – No significant effects through use of required emissions controls and BMPs.	Minor – No significant effects through use of required emissions controls and BMPs.
Climate Change and Resiliency	Minor – No significant effects through use of control equipment, BMPs, and climate commitments.	Minor – No significant effects through use of control equipment, BMPs, and climate commitments.
Water Resources	Minor – No significant effects.	Minor – No significant effects through use of BMPs and sustainability commitments.
Cultural Resources	No adverse effects.	Negligible, non-adverse construction effects. No adverse long-term effects.

Resource Area	No Action Alternative	Proposed Action
Biological Resources	Negligible adverse effects.	Negligible to minor adverse temporary construction effects and long-term effects.
Land Use	No potential effects.	No potential effects.
Noise	Minor – No significant effects.	Minor – No significant effects through use of BMPs for construction.
Transportation	No potential effects.	Minor temporary construction effects and long-term effects.
Human Health and Safety	No significant adverse effects.	No significant adverse effects.
Hazardous Materials	Minor – No significant effects through use of required controls and BMPs.	Moderate – No significant effects through use of required controls and BMPs.
Environmental Justice	No potential effects.	No potential effects.
Socioeconomics	Moderate long-term beneficial effects from continuation of existing operations due to employment and income generation.	Minor temporary beneficial effects from construction-related employment and minor to moderate long-term beneficial effects due to employment, income generation, and economic activity.
Utilities and Sustainability	Minor – No significant effects.	Moderate – No significant effects through use of BMPs and sustainability commitments.
Waste	Minor – No significant effects through use of required controls, BMPs, and sustainability commitments.	Moderate – No significant effects through use of required controls, BMPs, and sustainability commitments.
Geological Resources	No adverse effects.	Negligible construction effects and no long-term operational effects.

4. CUMULATIVE EFFECTS

This Section: (1) defines cumulative effects; (2) describes past, present, and reasonably foreseeable future actions relevant to the cumulative effects analysis; (3) analyzes the incremental interaction the Proposed Action may have with other actions; and (4) evaluates cumulative effects potentially resulting from these interactions.

4.1 DEFINITION OF CUMULATIVE EFFECTS

The approach taken in the analysis of cumulative impacts follows the objectives of NEPA and CEQ implementing regulations and guidance. Cumulative effects are defined at 40 C.F.R. § 1508.1(g)(3) as "effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time."

Cumulative effects are most likely to arise when a relationship or synergism exists between a Proposed Action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in close proximity to the Proposed Action would be expected to have more potential for a relationship than those more geographically separated.

4.2 SCOPE OF CUMULATIVE EFFECTS ANALYSIS

The scope of the cumulative effects analysis involves both the geographic extent of the effects and the timeframe in which the effects could be expected to occur. For this EA, the geographic extent of the cumulative effects analysis includes the analysis area previously identified in Section 3 for the respective resource areas. The timeframe for cumulative effects centers on the timing of the Proposed Action; ID1 is anticipated to operate for decades.

Beyond determining the geographic scope and timeframe for past, present, and future actions, the analysis employs the established "reasonably foreseeable" standard to include or exclude other actions. For the purposes of this analysis, public documents prepared by federal, state, and local government agencies form the primary sources of information regarding reasonably foreseeable actions.

4.3 PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS

Past actions are accounted for in the baseline for the No Action Alternative and comprise the affected environment. Past actions date back to the establishment of the Idaho territory in 1863 and include the introduction of computer technology companies to Boise in the 1970s and 1980s. The combination of new industries and established companies encouraged the rapid population growth in the late Twentieth and early Twenty-First Century. This Section identifies present actions and reasonably foreseeable actions affecting the same resources affected by the Proposed Action; discusses the contribution of the Proposed Action to cumulative effects and benefits on

relevant environmental resources; and identifies measures to avoid, minimize, or mitigate cumulative effects from the Proposed Action.

The present and reasonably foreseeable actions included in this analysis (Table 4-1) were developed through review of publicly available information and planning documents. These actions, combined with the Proposed Action, could contribute to cumulative environmental effects. Table 4-1 provides a brief description of each action as described in the corresponding planning document. As depicted, most of these other actions are transportation-related, rather than industrial development. It is not reasonable to obtain details of all possible, potential future actions beyond what is described in this EA.

TABLE 4-1 PRESENT AND REASONABLY FORESEEABLE ACTIONS

Project	Description	Time Period	Jurisdiction
Orchard Street Extension West to Eisenman Road	Construct a new five-lane road.	2036 – 2040	Community Planning Association of Southwest Idaho
Third Water Renewal Facility (WRF)	It is planned to be operational by 2030. This facility is anticipated to initially accept only industrial used water. In the future, it will need to be able to accommodate increased industrial customer demand in the area and potentially domestic used water.	By 2030	City of Boise
Roadway and ADA Improvements (2026) – Maintenance	Corridor improvement projects to improve select roadways for all users. Project will improve road surface condition and adjacent ADA ramps on arterial and collector road segments as identified as part of ACHD's Pavement Management Program. Project supplemented with Federal-Aid funding. Project may include curb and sidewalk accessibility improvements, filling sidewalk gaps, bulb-outs, bikeway signage, and enhanced crossings.	2026	ACHD
Southeast Boise Improvements A: Columbia Village Bikeway, Hwy 21/Boise Ave	Community improvement project which includes establishing a new bikeway corridor on Holcomb, Yamhill, Lake Forest, and Grand Forest in Columbia Village as per the adopted Bike Master Plan. Project includes wayfinding/bikeway signage, pavement markings and enhanced crossings. Concept Study in 2022.	Future	ACHD
Southeast Boise Improvements B:	Community improvement project to improve roadways for all users. Concept study will	Future	ACHD

Project	Description	Time Period	Jurisdiction
Bergeson St. Traffic Calming, Federal Way/Holcomb Rd.	identify and recommend improvements that include traffic calming elements, enhanced crossing opportunities and implementation of bikeway as identified in Bike Master Plan. Concept Study scheduled for 2023.		
TECHW2 – Technology Way Extension	Industrial Arterial connecting Eisenman Road to Technology Way.	Future	ACHD
Southeast Boise Improvements C: Federal Way and Malad St./Targee St.	Intersection improvement project which includes evaluating the need for a signalized intersection at either Federal Way and Malad St and/or Federal Way and Targee St. Commission Directive Project: Project evaluation/scoping efforts in FY22 to explore implementation/feasibility.	Future	ACHD
Federal Way Maintenance Yard	Development of a new Maintenance and Operations facility located on Federal Way. Development of the site includes construction of internal roadways/access roads, administration building, multiple sheds and storage structures, parking areas, fuel pumps, etc. Development of the site is estimated to be completed through eight phases between 2022-2029.	2022 - 2029	ACHD
Idaho Power Solar Farm	Idaho Power's new 40-megawatt solar project (Black Mesa) came online in June 2023. The project supports Micron's goal to source 100% renewable energy for purchased electricity for its U.S. operations by the end of 2025. The solar farm will encompass 365 acres and will be located approximately 70 miles southeast of Micron Boise, near King Hill, Idaho.	2025	Idaho Power Company
Childcare center	A nearly 20,000 square-foot childcare center to support Micron Boise operations. The childcare center would be located close to Micron Boise and would support approximately 120 children.	2024	Micron

4.4 CUMULATIVE EFFECTS ANALYSIS

4.4.1 AIR QUALITY

As discussed in Section 3.2, the analysis area is designated as attaining all NAAQS based on ambient air quality monitoring. In association with NSR pre-construction permitting, Micron completed air dispersion modeling which demonstrated NAAQS compliance for the combined effect of Micron Boise operations and the operation of ID1, including Micron-owned areas that may become publicly accessible as a result of future projects, such as the construction of public roadways. NAAQS compliance is demonstrated when there is no calculated exceedance of any NAAQS in the ambient air as a result of a facility's operations at maximum capacity.

As depicted above, reasonably foreseeable future projects largely involve transportation that is subject to local and regional planning to alleviate congestion and vehicular emissions from travel. Further, additional industrial development in the vicinity of ID1 that could increase ambient atmospheric pollutants would require compliance with IDEQ NSR pre-construction permitting, including compliance with the NAAQS. As a result, cumulative effects on air quality are likely to be minor to moderate depending on the degree of economic development in the local area and associated population increase, and ID1 is not anticipated to result in cumulatively significant effects on air quality.

4.4.2 CLIMATE CHANGE AND RESILIENCY

CEQ's interim guidance recognizes that climate change analysis is inherently cumulative in nature. Potential effects on climate change and resiliency are dependent on the impact of GHG emissions. Though Micron presently lacks information to quantify anticipated GHG impacts from other present and reasonably foreseeable projects, it is anticipated that transportation improvements would reduce GHG emissions through improved traffic flow, and that GHG emissions from ID1 would continue to be minor within the context of regional GHG emissions and global climate change.

Incremental GHG emissions from the operation of ID1 would not undercut climate action goals or commitments. Based on Micron's 2023 Sustainability Process Summary (Micron 2023a), Micron has committed to a goal of 100 percent renewable energy use for electricity in the U.S. in calendar year 2025 and a 42 percent absolute reduction in Scope 1 emissions by calendar year 2030 from the calendar year 2020 baseline (Micron 2023b).

Additionally, the downstream improvements that would result from the products of ID1 would reduce the inevitable impacts of increased computational demands in terms of operational expenses, carbon footprints, and environmental effects. Therefore, cumulative effects on GHG emissions, climate change, and resiliency are likely to be minor depending on the degree of economic development in the local area and associated population increase, and ID1 is not anticipated to result in cumulatively significant effects.

4.4.3 WATER RESOURCES

The operation of ID1 would have the potential to affect water resources; however, as discussed in Section 3.4.3, these effects would be controlled through the enhanced reuse of process water from the Opal facility and through efforts to optimize ground water recharge using Micron's existing surface water rights and potentially through treated water reuse.

Additional development of a maintenance yard and projects upgrading the road network in the analysis area would have the potential to impact stormwater runoff through the increase of impervious surfaces. For each of these projects, as final designs are developed, they would be required to complete regulatory permitting and adhere to permit conditions. Specifically, for stormwater and surface runoff, the design and construction would be required to comply with stormwater management and control practices included in their construction general permit, which would limit significant cumulative effects of the reasonably foreseeable future actions.

The proposed development of a Third Water Renewal Facility (WRF) would be designed to accommodate increased industrial customer demand and potentially domestic used water in the analysis area. The proposed WRF would not be directly utilized by Micron, as the Opal facility would serve to treat and renew water for on-site reuse. However, the development of the WRF would have the potential beneficial effect of providing additional industrial wastewater treatment capacity in the analysis area for any future industrial development. Further, the facility may accommodate additional treated water supply in the analysis area that could be used for ground water recharge if provided treatment systems are installed to meet groundwater protection water quality standards.

Therefore, cumulative effects on water resources are anticipated to be moderate, and ID1 is not anticipated to result in cumulatively significant effects. Water supply cumulative effects are further addressed in Section 4.4.13 below.

4.4.4 CULTURAL RESOURCES

The analysis area is a cleared, graded, and prepared site with minimal new land disturbance resulting from ID1 (Figure 2-2). The one historic resource that was previously recommended eligible for listing to the NRHP, Fivemile Creek, would not be affected by ID1. As discussed in Section 3.5, elements of ID1 would not be easily discernable from the NRHP-listed segments of the Oregon NHT. No other historic resources were identified in the analysis area that could be affected by new development within the analysis area. Future projects would also have to comply with the NHPA if applicable and any similar BMPs to address unanticipated discoveries during construction. Therefore, ID1 is not anticipated to have significant cumulative impacts to cultural resources.

4.4.5 BIOLOGICAL RESOURCES

Cumulative effects on biological resources could occur if there are adverse effects on sensitive species or habitat from ID1 when combined with other past, present, or reasonably foreseeable projects. However, as described in Section 3.6.3.1, construction and operations of ID1 would not affect sensitive species, there is no critical habitat that would be affected, and the vast majority of ID1 was previously cleared, grubbed, and graded. USWFS previously determined that ID1 was

not occupied by slickspot peppergrass, so that previous clearing, grubbing, and grading would not contribute to adverse cumulative effects on slickspot peppergrass plants. The small portion (28 acres) of land near the Mask Building that would be cleared, grubbed, and graded is already highly degraded and does not contain sensitive species or critical habitat (see Section 3.6.2). Although noise, dust, and emissions during construction may disturb species in the area, the effects would be temporary and would be managed to the extent possible by BMPs.

As development occurs near the analysis area, there could be incremental effects on removal of habitat generally, subject to applicable requirements and BMPs for wildlife and plant protections. But ID1's contribution to cumulative effects on biological resources is anticipated to be negligible.

4.4.6 LAND USE

The anticipated land use effects of ID1 were evaluated in the context of the reasonably foreseeable future projects identified in Table 4-1. ID1 would be constructed and operated consistent with classified zoning of the analysis area and on the land zoned for industrial uses. ID1 would meet the City of Boise comprehensive plan's goals for providing a range of commercial and employment options and implementing high-tech industrial expansion in the area reserved for that purpose. It is anticipated that projects identified in Table 4-1 would comply with applicable regulations and codes and would be consistent with local and regional land use planning; therefore, there would be no anticipated cumulative effects on land use from ID1 in combination with the projects identified in Table 4-1. Additionally, the visual elements associated with the projects identified in Table 4-1 would mostly consist of horizontal elements (intersection improvements, crossing enhancement, bike and pedestrian improvements) and would be built along existing transportation corridors through urban environments and, therefore, would not result in substantial changes to the existing visual landscape. ID1, which would not cause adverse effects on visual quality or Oregon NHT viewer experiences, is not anticipated to cause significant cumulative effects on visual and aesthetic resources.

4.4.7 NOISE

Due to Micron Boise currently having limited effects on noise levels in the area, it is expected that vehicular traffic from the adjacent highway and aircraft noise would continue to be the dominant noise sources within the analysis area. As described in Section 3.8.3, the predicted noise effects associated with the operation of ID1 and Micron Boise would result in noise levels of 46.0 dB(A) during the daytime and 43.2 dB(A) during the overnight hours, at the nearest residential area. These values would remain below the EPA noise guidelines for all periods and, as a result, would be considered to have a minor effect.

Road construction projects surrounding Micron Boise would also generate temporary noise during construction. The nature of the noise generated would be consistent with road work projects within the region and would be constrained by the noise BMPs required by each agency overseeing the construction. Further, the reasonably foreseeable roadway improvements surrounding the site would be designed to facilitate more efficient traffic flow and reduce the duration of traffic noise influences once in place. Finally, although no additional industrial development is reasonably foreseeable, should additional development occur, future projects would be expected to utilize

similar BMPs to limit noise from construction and operations. As a result, the cumulative effects on noise are anticipated to be minor.

4.4.8 TRANSPORTATION

As detailed in Section 3.9, upon initiation of ID1 full operation in 2030, background traffic in the area would likely continue to grow. ID1 would result in approximately 6,174 additional daily trips to Micron Boise at full operation, but starting in 2025, when initial operations commence, through 2030, ID1 traffic as a percentage of total traffic would decline as the background traffic grows.

Most of the present and reasonably foreseeable future projects listed in Table 4-1 would entail intersection improvements, traffic calming, crossing enhancement, and bike and pedestrian improvements, which would enhance transportation infrastructure near the analysis area once constructed. While Boise has grown and is anticipated to continue to further grow, overall, as discussed in Section 3.9, the traffic improvements that Micron developed in coordination with ITD and ACHD, along with payment of impact fees to ACHD to cover the project's proportionate share of roadway impacts, would address the minor traffic impacts from ID1. Moreover, Micron will make an in-lieu payment to ITD for an ITD-priority project to improve pedestrian and bicycle safety adjacent to Micron Boise: construction of a detached multi-use pathway along the north side of Gowen Road near the intersection with Technology Way (Appendix F). ID1 would not have significant cumulative effects on transportation.

4.4.9 HUMAN HEALTH AND SAFETY

Potential effects on human health and safety from hazards associated with potential releases to air, soil, surface water, and groundwater would be reduced or avoided for ID1 and other past, present, and reasonably foreseeable projects through compliance with regulatory and permitting requirements, as well as facility design in accordance with industry standards and use of other BMPs. ID1, as well as any new industrial development in the analysis area, would be required to comply with permit and regulatory requirements. For example, air permits would manage emissions to avoid harmful releases to air, the OSHA would mandate responsibilities of employers to ensure employee safety, and a robust health and safety program would reduce or avoid human health and safety effects. First responders would be anticipated to coordinate with new businesses and facility owners in the area so that they are prepared, like they would be for ID1, to respond as efficiently as possible to emergencies that could possibly occur at new facilities. Therefore, there are no anticipated significant cumulative effects on human health and safety.

4.4.10 HAZARDOUS MATERIALS

Since the hazardous materials that would be managed for use in ID1 are the same types of materials currently used by Micron Boise, Micron would continue to use similar storage, handling, and disposal protocols that are currently practiced on site. Additionally, there is no expected industrial growth in the area surrounding the facility. Therefore, cumulative effects from hazardous materials of ID1 and any external sources stem principally from ID1 and Micron Boise and would be mitigated using existing site protocols and regulatory mechanisms. Moreover, any new industrial facilities that may be added to the analysis area would be subject to regulations regarding the safe handling, storage, and disposal of hazardous materials and waste. Therefore, cumulative effects

from hazardous materials are anticipated to be moderate, and ID1 is not anticipated to result in cumulatively significant effects.

4.4.11 ENVIRONMENTAL JUSTICE

There are no low-income or minority populations in the analysis area, and ID1 would result in no anticipated effects on communities with EJ concerns, let alone significant or disproportionate and adverse effects. Since ID1 would have no such effects to combine with projects identified in Table 4-1, no significant cumulative effects on communities with EJ concerns would occur.

4.4.12 SOCIOECONOMICS

As discussed in Section 3.13, ID1 would have economic benefits, including both temporary benefits from construction and long-term benefits from ongoing operations. Completion of the projects identified in Table 4-1 would further support employment in several industry sectors, including professional services and construction, as contractors are hired to design and build the proposed improvements. The demand generated by these investments would directly support employment in these sectors and generate indirect economic benefits from demand for equipment and materials and induced economic benefits as these workers spend money on household expenditures in the regional economy. These economic benefits, along with construction of ID1, would take place at the regional level, although the majority would be concentrated in Ada and Canyon Counties. Although economic benefits from construction are temporary by nature, many of the improvements, particularly those that are transportation focused, would deliver long-term benefits resulting from reduced congestion, increased safety, and other benefits resulting from improved mobility. It is also anticipated that temporary construction of ID1 in combination with the projects listed in Table 4-1 would further strain the state of Idaho's construction industry, as approximately 4,500 construction workers would be needed for construction of ID1 at its peak.

Ongoing operations of ID1 would also have economic benefits in the region, including thousands of new, high-paying jobs in the semiconductor manufacturing sector. It is anticipated that the indirect community jobs as a result of ID1 would put additional demand pressure on the housing in the area, which could outpace new housing construction in the Boise area, and contribute to cumulative adverse effects on housing availability in combination with the projects listed in Table 4-1. As described in Section 3.13, Micron would continue to partner with the City of Boise and the State of Idaho to identify long-term permanent opportunities around housing supply/demand dynamics, including continuing discussions with the City of Boise, the State of Idaho, Boise Economic Development Agency, and other local government agencies. Micron is exploring options to invest locally to address the housing needs in Boise. As part of its overall efforts to enhance future housing affordability, Micron would work with local and regional planning agencies so that they are informed on the details of future housing demand from ID1, including the likely timing, scale, and demographic mix of this demand, to the extent possible.

4.4.13 UTILITIES AND SUSTAINABILITY

Development of ID1 includes the accelerated development of a new Veolia main water line proposed by Veolia that would link Federal Way and Columbia Way. The new main line would

provide for greater system reliability in the analysis area, reducing the potential for effects on water distribution for past, present, and reasonable future projects.

Further, Micron has worked cooperatively with utility providers to ensure that existing generation and transmission networks are capable of accommodating concurrent operation of ID1 and Micron Boise so that service to Idaho Power and Intermountain Gas customers for past, present, and reasonably foreseeable future projects can be accommodated.

Idaho Power's solar farm project would have a cumulative beneficial effect on energy utility capacity and associated energy generation emissions. The ACHD's Federal Way maintenance yard is not expected to have a sizeable impact on utility usage and would therefore have minimal effects on utility capacity from Idaho Power and Intermountain Gas.

Additionally, the utility providers have included the operation of ID1 as a planned and proposed project for development of their resource planning to ensure the project can be accommodated through existing service capacity. No other projects in the reasonably foreseeable future affect utility availability or consumption. The proposed development of a third WRF would be designed to accommodate increased industrial customer demand and potentially domestic used water in the analysis area. The proposed WRF would not be directly utilized by Micron, as the Opal facility would serve to treat and renew water for on-site reuse. As a result, the operation of ID1 would not result in a cumulative effect on wastewater utilities associated with the proposed WRF. Therefore, cumulative effects on utilities are anticipated to be moderate, and ID1 is not anticipated to result in cumulatively significant effects on utilities.

4.4.14 WASTE

Micron would continue to use similar waste segregation, storage, handling, and disposal protocols for ID1 that are currently practiced for Micron Boise. Hazardous waste storage expansion accompanies the operation of ID1, so the increase in hazardous waste would be mitigated by these safeguards. Additionally, there is no expected industrial growth in the area surrounding the facility. Therefore, cumulative effects of solid and hazardous waste of ID1 and any external sources stem principally from ID1 and Micron Boise, which would be mitigated using existing site protocols and regulatory mechanisms. Moreover, any new industrial facilities that may be added to the analysis area would be subject to regulations regarding the safe handling, storage, and disposal of waste, including hazardous waste. Therefore, cumulative effects from waste are anticipated to be moderate, and ID1 is not anticipated to result in cumulatively significant effects.

4.4.15 GEOLOGICAL RESOURCES

As discussed in Section 3.16, no known unique geologic and mineral resources or prime farmlands exist within the analysis area. Construction of ID1, which includes erecting buildings on a prepared site, would not result in direct or indirect effects on geological resources. Moreover, with the implementation of BMPs, including erosion, sediment control, and stormwater pollution prevention measures, there would be no anticipated significant cumulative effects on geological resources from ID1 in combination with the projects identified in Table 4-1.

5. PERMITS

Table 5-1 lists the status of permits for ID1.

TABLE 5-1 PERMITS

Permits	Completed or Estimated Approval Date
Air Quality Tier II Permit – Approval to construct	8/16/2023
Air Quality Tier II Permit – Approval to operate	3/1/2025
Air Quality Permit Operating Permit – Tier I (Title V)	12 months after submission at commencement of operation of ID1 sources
Stormwater Multi-sector General Permit	8/1/2025
Industrial Discharge Permit	8/1/2025
Underground Injection Control Permit	8/1/2025

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Bruce S. Wong	Ada County Highway District Headquarter Director
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Kari Kostka	Ada County Parks & Waterways Advisory Board Chair
Joe Lombardo	Ada County Emergency Management Director
Mark Carnopis	Valley Regional Transit Public Information Officer
John Patten	Boise Valley Irrigation Ditch Co. President
Donald Barksdale	Nampa & Meridian Irrigation District Board of Directors
Russell A. Duke	Central District Health Director

City Government

Name	Title
Lauren McLean	Mayor Lauren McLean
Holli Woodings	City of Boise Council President
Jimmy Hallyburton	City of Boise Council President Pro
Patrick Bageant	Council Member Patrick Bageant
Luci Willits	City of Boise Council Member
Steve Burgos	City of Boise Department of Public Works
Sean Keithly	City of Boise Economic Development
	City of Boise Housing and Community Development Division
	City of Boise Planning and Development Services
Rebecca Hupp	Boise Airport Administration
Mark Niemeyer	Fire Chief Boise Fire Department

Other Organizations or Individuals

Name	Title
	Idaho Power
David Swenson	Intermountain Gas
	Veolia North America Water Company
	Boise Metro Chamber of Commerce
	CHIPS Communitites United
Margie Gonzalez	Idaho Commission on Hispanic Affairs
Clark Krause	Boise Valley Economic Partnership
Jennifer Hensley	Downtown Boise Association
Latonia Haney Keith	Capital City Development Corporation
	Public Affairs, Albertsons Companies
	Public Relations, St. Luke's Health System
Mark Snider	Saint Alphonsus Health System

Name	Title
	Walmart
Bonnie Hardey	South Eisenman Neighborhood Association
Mark French	Southeast Neighborhood Association
John Mooney	Barber Valley Neighborhood Association
Kellee Adams	Warm Springs Mesa Neighborhood Association
Sheila Grisham	East End Neighborhood Association
Lisa Kusnierz	South Boise Village Neighborhood Association
Ty Guinn	Sunny Ridge Homeowners Association
Matthew Sabin	Painted Ridge Homeowners Association
MGM Association Management	Rush Valley Homeowners Association
MGM Association Management	Bonneville Point Homeowners Association
Charles Degenhardt	Columbia Village Homeowners Association
John Kirkpatrick	Surprise Valley Homeowners Association
	Advocates for the West
Laurel York Odell	Land Trust of The Treasure Valley
Lisa Young	Idaho Chapter Sierra Club
Justin Hayes	Idaho Conservation League
Lenny Seigel	Center for Public Environmental Oversight
Ted Smith	International Campaign for Responsible Technology
Mark Menlove	The Nature Conservancy
Emily Frandsen	Idaho State University Public Information Specialist
Lauren Griswold	Boise State University Chief Communications and Marketing Officer
Jodi Walker	University of Idaho Boise Communications Director
Communications and Marketing	College of Western Idaho
Dan Hollar	Boise School District Public Affairs Administrator
Beverly Boyd	Trail Wind Elementary School Principal

Name	Title
Chad Wright	Les Bois Junior High School Principal
	Dallas Harris Elementary School
Darryl Gerber	East Junior High School Principal
Jeff Paulson	Riverstone International School
Sophie Sestero	Treasure Valley Family YMCA Director of Marketing and Communications
Colleen Braga	Boys & Girls Clubs of Ada County Executive Director
Chris Taylor	Riverside Elementary Principal
Steve Novotny	White Pine Elementary Principal
Nancy Gersack	Liberty Elementary Principal
Public Relations	St. Luke's Boise Medical Center
Mark Snider	Saint Alphonsus Regional Medical Center Media Relations
	Treasure Valley Hospital
Humberto Fuentes	Hispanic Cultural Center of Idaho, Nampa
Abraham Armenta	Iglesia Bautista Agua Viva
Gerald Margil	Iglesia Adventista del Septimo Dia Boise
Aaron Wendt	The Potters House Christian Fellowship Church
Jorge Castillo	Boise International Christian Church
	El-Ada Community Action Partnership
Cathy Hagadone	St Vincent de Paul Southwest Idaho
Beatrice Black	Women's and Children's Alliance
	The Community Center Inc
	Inclusive Idaho
Trish Walker	Idaho Black Community Alliance
Slobodanka Hodzic	Agency for New Americans
Amy Ridenour Little	Jannus Inc
Jessica Furhman	Idaho Women in Technology

Name	Title
	STEM Revolution
Mari Ramos	Idaho Hispanic Chamber of Commerce
Sam Byrd	Centro de Comunidad Y Justicia
Doug Alles	Catholic Charities of Idaho
	RISE Services Inc
	LINC Living Independence Network
	Advocates for Inclusion
	Disability Rights Idaho
	Islamic Center of Boise
	Dick Eardley Boise Senior Center
	Southwest Idaho Area Agency on Aging
	Metro Community Services
	Idaho Women's Business Center
Ivan Castillo	Idaho Hispanic Foundation
	Western Idaho Community Health Collaborative
David Garrett	Idaho Community Health Center Association
Scott Hauser	Upper Snake River Tribes
	Indigenous Idaho Alliance
Hillary Xoumanivong	Big Brothers Big Sisters of SW Idaho
	Community Action Partnership Association of Idaho
Cory Rodriguez	Wyakin Foundation
	Idaho Rural Partnership
	Idaho Rural Health Association
Karen Vauk	The Idaho Foodbank
Motoko West	Idaho Japanese Association
Scott Hauser	Idaho Chinese Organization

Name	Title
	Boise Valley Japanese-American Citizens League
Chadd Cripe	Idaho Statesman Editor
Teddy Feinberg	Idaho Press Managing Editor
Newsroom	Idaho Business Review
Advertising	Idaho Business Review
Newsroom	Idaho State Journal
Jennifer Swindell	Idaho Education News Managing Editor
Don Day	Boise Dev Publisher
Lori Ann Edmo	Sho-Ban News Editor
Radio Ranchero	La Gran D
Radio Ranchero	La Poderosa
	Radio Voz Latina
Christopher Campbell	Interested Party
Stephen Beall	Interested Party
Steve Antolic	Interested Party
Ralph Sanders	Interested Party

Federally Recognized Tribes

Name	Title
Chairman	Blackfeet Tribe Tribal Business Council
Chairman	Burns Paiute Tribe Tribal Council
Chairman	Coeur D'Alene Tribe of Idaho Tribal Council
Rodney Cawston	Confederated Tribes of the Colville Reservation Chairman, Colville Business Council
Chairman	Duckwater Shoshone Tribal Council
Maxine Redstar	Fort McDermitt Paiute-Shoshone Tribe, Tribal Council Chairman
Kevin Lyons	Kalispel Tribe Cultural Resources Manager

Name	Title
Gary Aitken, Jr.	Kootenai Tribe of Idaho, Tribal Council Chairman
Shannon Wheeler	Nez Perce Tribe of Idaho Chairman
Chairman	Confederated Salish and Kootenai Tribes, Kootenai Tribal Council
Chairman	Northwestern Band, Shoshone
Ladd Edmo	Shoshone-Bannock Tribes of Fort Hall, Chairman, Business Council
Chairman	Shoshone-Paiute Tribes of the Duck Valley Indian Reservation Tribal Council
Chairman	Spokane Tribe, Business Council
Chairman	Confederated Tribes of the Umatilla Indian Reservation, General Council
Chairman	Confederated Tribes of the Warm Springs Reservation of Oregon, Tribal Council

APPENDIX A AIR QUALITY – PROPOSED ACTION: OPERATIONS EMISSIONS CALCULATIONS

APPENDIX B WATER RESOURCES – JURISDICTIONAL DETERMINATION FOR NORTH FIVEMILE CREEK AND WATER RIGHTS

APPENDIX C CULTURAL RESOURCES

APPENDIX D IPAC AND USFWS COORDINATION

APPENDIX E NOISE EXISTING CONDITIONS ASSESSMENT

APPENDIX F TRAFFIC IMPACT STUDIES AND ITD AND ACHD COORDINATION