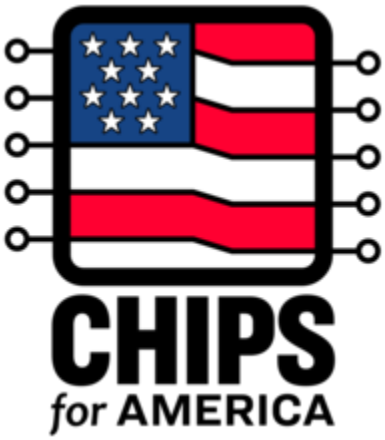
Draft Environmental Assessment for Intel Ocotillo



NIST-CPO/EA-003

July 8, 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 Intel Ocotillo

Designation	**Draft Environmental Assessment NIST-CPO/EA-003**
Title of Proposed Action	**Draft Environmental Assessment for Intel Ocotillo**
Project Location	**City of Chandler, Maricopa County, Arizona**
Lead Agency	**U.S. Department of Commerce**
Affected Region	**Maricopa County, Arizona**
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 8, 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 Intel Corporation for the purchase and installation of semiconductor manufacturing equipment (SME) at the Intel Ocotillo semiconductor manufacturing facility in Chandler, Arizona (Intel OC or the Facility). SME would be installed in one existing semiconductor fabrication building (fab), referred to as Fab 42, and in two new fabs, referred to as Fabs 52 and 62, to support Intel OC's production of advanced semiconductors (the Proposed Project). Intel is not requesting federal financial assistance for the construction of the Intel OC fab buildings.

The purpose of CPO's Proposed Action is to respond to Intel'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, disaster resiliency and sustainability; water resources; cultural resources; biological resources; noise; transportation; human health and safety; hazardous materials and wastes; socioeconomics; and environmental justice. 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 30-day public comment period, from July 8 to August 6, 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) is considering a Proposed Action to provide federal financial assistance under the CHIPS Incentives Program (Program) to Intel Corporation (Intel) for the purchase and installation of semiconductor manufacturing equipment (SME) at the Intel Ocotillo facility in Chandler, Arizona (Intel OC or the Facility). Intel currently owns and operates multiple semiconductor fabrication buildings (fabs) at the Facility (Fabs 12, 22, 32, and 42). SME would be installed in existing Fab 42 and in two fabs currently under construction (Fabs 52 and 62) to support Intel OC's production of advanced semiconductors (the Proposed Project). Intel is not requesting federal financial assistance for the construction or modernization of the Intel OC fab buildings.

ES.2 Purpose and Need

The purpose of CPO's Proposed Action is to respond to Intel'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, advanced packaging, production, or research and development of semiconductors, materials used to manufacture semiconductors, or semiconductor manufacturing equipment.

ES.3 Alternatives Considered

This 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 Intel OC for the Proposed Project. The Proposed Project is the purchase and installation of SME in three fabs (Fabs 42, 52, and 62). The Proposed Action assumes that all three fabs would advance to achieve full operational capacity for semiconductor manufacturing. SME to be purchased and installed under the Proposed Action would generally include equipment that supports the process steps of deposition, diffusion, lithography, etching, ion implantation, passivation, and planarization. SME to be purchased and installed in Fabs 52 and 62 would enable manufacturing of Intel's advanced process nodes, starting with Intel 18A and more advanced nodes, which include technological innovations to improve performance and efficiency. SME to be purchased and installed in Fab 42 would allow Intel to retrofit Fab 42 to manufacture the same types of semiconductors as Fabs 52 and 62.

Under the No Action Alternative, CPO would not provide federal financial assistance to Intel OC. Although Intel OC could potentially procure and install leading-edge SME without federal financial assistance over a span of several years depending on market conditions, to provide a comparison of environmental effects, the No Action Alternative assumes that Intel OC would not install SME in Fabs 52 and 62 and would continue to operate with its existing equipment in Fab 42. For purposes of this analysis, the No Action Alternative assumes that Fabs 52 and 62 would be completed to a state of weather-tightness but would not become functioning fabs. 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 NIST (the agency) 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, disaster resiliency, and sustainability; water resources; cultural resources; biological resources; noise; transportation; human health and safety; hazardous materials and wastes; socioeconomics; and environmental justice. This EA does not evaluate effects on geological resources and land use because the potential effects of the Proposed Action and the No Action Alternative on those resource areas are anticipated to be negligible or nonexistent.

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 the best management practices (BMPs)[1] or mitigation measures that factor into the effects analysis for the Proposed Action, where applicable.

Table ES-1. Summary of Environmental Consequences

Resource Area	No Action Alternative	Proposed Action	BMPs or Mitigation
Air Quality	No significant effects	No significant effects	Pursuant to its existing air permit requirements, Intel OC will offset 204.3 tons of volatile organic compounds and 189.5 tons of nitrogen oxides using emission reduction credits already purchased within the relevant nonattainment area boundary.
Climate Change, Disaster Resiliency, and Sustainability	No significant effects	No significant effects with BMPs	Pursuant to existing greenhouse gas (GHG) emission reporting requirements, Intel OC uses abatement equipment for fluorinated GHG emissions from fab processes that has an average Destruction or Removal Efficiency of 97 percent. In addition, Intel OC offsets Scope 2 GHG emissions through an on-site solar project, the purchase of electricity from an off-site renewable energy project, and purchase of renewable energy certificates.

[1] BMPs are policies, practices, and measures that Intel OC will adopt or expand to reduce the environmental effects of various Facility activities, functions, or processes.

Resource Area	No Action Alternative	Proposed Action	BMPs or Mitigation
Water Resources	No significant effects	No significant effects with BMPs	Intel OC will expand on-site treatment of wastewater with capacity to serve the two new fabs and use recycled water from the Ocotillo Brine Reduction Facility (OBRF) in its operations.
Cultural Resources	No significant effects	No significant effects	In the event of unanticipated discoveries of historic or cultural resources during implementation of the Proposed Action, CPO and Intel will immediately notify the Gila River Indian Community Tribal Historic Preservation Office and other authorities, as appropriate.
Biological Resources	No significant effects	No significant effects	During implementation of the Proposed Action and ongoing construction at the Facility, Intel OC will continue to implement BMPs for the protection of bald eagles located adjacent to the Facility boundary.
Noise	No significant effects	No significant effects	Intel OC will continue to implement BMPs to inspect construction equipment to ensure mufflers are properly operating and to conduct construction only during hours allowed by the local noise ordinance.
Transportation	No significant effects	No significant effects	Intel OC will continue to implement BMPs to reduce employee single occupancy vehicle use, access parking lots from Old Price Road, and shuttle contractors to the workplace from off-site parking areas to reduce traffic.
Human Health and Safety	No significant effects	No significant effects with BMPs	Intel OC will continue to implement BMPs to: incorporate engineering controls into its manufacturing systems to prevent worker accidents and chemical exposures; apply protective worker chemical exposure limits based on published industry standards (on a chemical-by-chemical basis) to its manufacturing operations; purchase, install, and decontaminate SME in accordance with SEMI safety standards; coordinate and train with local fire and emergency services on emergency management procedures; and ensure construction personnel are well versed in the Facility's Environmental, Health, and Safety Manual and use Pre-Task Plan Worksheets to identify and mitigate hazards.

Resource Area	No Action Alternative	Proposed Action	BMPs or Mitigation
Hazardous Materials and Wastes	No significant effects	No significant effects with BMPs	As a BMP, Intel OC will segregate known process organic waste containing per- and polyfluoroalkyl substances (PFAS) from other waste streams to a closed bulk storage system and remove more than 90 percent of residual PFAS in wastewater discharges treated through its Water Treatment and Reclaim (WaTR) plant. Segregated organic waste will be managed at an off-site permitted treatment and disposal facility. Intel will also optimize recycling at the Facility to reduce landfill waste and ensure appropriate handling and disposal of waste.
Socioeconomics	Beneficial effects from jobs created for continued operation of Fab 42	Greater beneficial effects from direct and indirect jobs created at Fabs 42, 52, and 62 and increased tax revenue	No BMPs or mitigation are required.
Environmental Justice	No significant effects	No significant effects	As BMPs, Intel OC will continue its Community Advisory Panel, which provides a two-way forum for the community and Intel to review issues and create a positive, proactive dialogue, and will continue its Good Neighbor Policy to identify and address potential effects of its operations on neighbors.

Section 4 of this EA analyzes the cumulative effects of the Proposed Action, which are the incremental effects of the Proposed Action when added to the effects of other past, present, and reasonably foreseeable actions. Based on this analysis, no significant cumulative effects are anticipated.

ES.6 Public Involvement

CPO is issuing the Draft EA for a 30-day public comment period, from July 8 to August 6, 2024. CPO will consider substantive comments on the Draft EA timely submitted during the public comment period.

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ACRONYMS AND ABBREVIATIONS

ACGIH	American Conference of Governmental Industrial Hygienists
ADEQ	Arizona Department of Environmental Quality
ADOT	Arizona Department of Transportation
AHPA	Archeological and Historic Preservation Act
AMA	Active Management Area
APE	area of potential effects
A.R.S.	Arizona Revised Statutes
AWN	acid waste neutralization (systems)
AWRF	Airport Water Reclamation Facility
AWS	Alliance for Water Stewardship
AZ	Arizona
AZGFD	Arizona Game and Fish Department
BACT	Best Available Control Technology
BG	block group
BGEPA	Bald and Golden Eagle Protection Act
BMP	best management practice
BRT	bus rapid transit
CAA	Clean Air Act
CAP	Community Advisory Panel
CB	census block
CBG	census block group
CDC	Centers for Disease Control and Prevention
CEJST	Climate and Economic Justice Screening Tool
CEQ	Council on Environmental Quality
C.F.R.	Code of Federal Regulations
CH_4	methane
CHIPS	Creating Helpful Incentives to Produce Semiconductors
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalent

CPO	CHIPS Program Office
CT	census tract
CWA	Clean Water Act
dB	decibel
DOC	U.S. Department of Commerce
DRE	destruction or removal efficiency
EA	environmental assessment
EHS	environmental, health, and safety
EIS	environmental impact statement
EJ	environmental justice
EJScreen	Environmental Justice Screening and Mapping (tool)
ELG	effluent limitation guideline
EO	Executive Order
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ERC	emission reduction credit
ERT	Emergency Response Team
ESA	Endangered Species Act
EV	electric vehicle
FEMA	Federal Emergency Management Agency
F-GHG	fluorinated GHG
FIP	Federal Implementation Plan
FONSI	finding of no significant impact
GHG	greenhouse gas
GHGRP	Greenhouse Gas Reporting Program
GRIC	Gila River Indian Community
GWh	gigawatt-hour
HAP	hazardous air pollutant
HIP	High-Tech Interconnection Project
ISO	International Organization for Standardization
ITP	incidental take permit

kV	kilovolt
kW	kilowatt
kWh	kilowatt-hour
LAER	Lowest Achievable Emission Rate
LED	light-emitting diode
LEED®	Leadership in Energy and Environmental Design®
LOS	level of service
MBTA	Migratory Bird Treaty Act
MCAQD	Maricopa County Air Quality Department
MGD	million gallons per day
MT	metric ton
MW	megawatt
MWh	megawatt-hour
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NF_3	nitrogen trifluoride
NHPA	National Historic Preservation Act
NIST	National Institute of Standards and Technology
NOFO	Notice of Funding Opportunity
NOx	nitrogen oxides
NO_2	nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NSR	New Source Review
OC	Ocotillo
OBRF	Ocotillo Brine Reduction Facility
OEL	Occupational Exposure Limit
OSHA	Occupational Safety and Health Administration
OWRF	Ocotillo Water Reclamation Facility
PAL	Plantwide Applicability Limitation

PAWN	plated acid waste neutralization
PBL	protected bike lane
PCB	polychlorinated biphenyl
PEL	permissible exposure limit
PFAS	per- and polyfluoroalkyl substances
PM	particulate matter
PM_{10}	particulate matter equal to or less than 10 microns in diameter
$PM_{2.5}$	particulate matter equal to or less than 2.5 microns in diameter
PMT	preliminary memorandum of terms
POTW	publicly owned treatment works
POU	point-of-use
PPE	personal protective equipment
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
REC	renewable energy certificate
RMM	Risk Management Measure
RMP	Risk Management Plan
ROI	region of influence
RWIF	Reclaim Water Interconnect Facility
SDWA	Safe Drinking Water Act
SEMI	Semiconductor Equipment and Materials International
SHPO	State Historic Preservation Office
SIA	Semiconductor Industry Association
SIL	significant impact level
SIP	State Implementation Plan
SME	semiconductor manufacturing equipment
SO_2	sulfur dioxide
SOV	single occupant vehicle
SRP	Salt River Project
STEAM	science, technology, engineering, arts, and mathematics
SWPPP	Stormwater Pollution Prevention Plan

THPO	Tribal Historic Preservation Office
TLV	threshold limit value
tpy	tons per year
TRP	Travel Reduction Program
TSCA	Toxic Substances Control Act
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service
UPW	ultrapure water
UV	ultraviolet
V/C	volume-to-capacity
VOC	volatile organic compound
WaTR	Water Treatment and Reclaim (plant)
$\mu g/m^3$	microgram per cubic meter

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 CHIPS Incentives 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 facility. 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

CPO is considering a Proposed Action to provide federal financial assistance under the Program to Intel for the purchase and installation of state-of-the-art semiconductor manufacturing equipment (SME) at Intel's facility at 4500 S. Dobson Road, Chandler, AZ, within Maricopa County (Intel OC or the Facility[2]). SME would be installed in three of Intel OC's existing and to-be-constructed semiconductor fabrication buildings (fabs), referred to as Fabs 42, 52, and 62, to support Intel OC's production of advanced semiconductors (the Proposed Project).

Intel has conducted semiconductor manufacturing operations at its Ocotillo location since the mid-1990s. The surrounding properties to the south, east, and north are largely residential and industrial. The land on the Facility's western border is part of the Gila River Indian Community. Figure 2-1 depicts the project location.

1.3 Purpose and Need

The purpose of CPO's Proposed Action is to respond to Intel'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, advanced packaging, 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 U.S.C. § 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, disaster resiliency, and sustainability; water resources; cultural resources; biological resources; noise; transportation; human health and safety; hazardous materials and wastes; socioeconomics; and environmental justice.

Construction at the Intel OC Facility is currently ongoing with non-federal financial support. Therefore, certain current and planned activities at the Facility 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 the Facility's other activities and features (under the term Facility) to the extent necessary to analyze the direct, indirect, or cumulative effects of the Proposed Action. In general, these other activities may include: construction of fab "shells"; outfitting of interior clean room spaces; and construction, modification,

[2] The term Facility refers to the entire Intel OC site.

or upgrade of infrastructure or systems that serve more than one fab, including but not limited to on-site bulk gas and hazardous material storage and delivery systems, wastewater pre-treatment and reclamation systems, air emission control systems, administration buildings, and utility lines.

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 March 20, 2024, DOC and Intel OC signed a non-binding preliminary memorandum of terms (PMT) for DOC to provide up to $8.5 billion in direct funding under the CHIPS Act toward the purchase and installation of SME to support Intel's investment across four of its U.S. sites, including the Intel OC Facility.

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 Relevant Laws, Regulations, and Permits

CPO, in collaboration with the applicant, has prepared this EA based upon an evaluation of federal, state, and local laws, statutes, regulations, and policies relevant to the Proposed Action, as described in Section 5 (Table 5-1).

The Proposed Action (described in Section 2.2.2) will require several permits, some of which have already been obtained. Existing Fab 42 and Fabs 52 and 62, which are presently under construction, are covered under an existing Clean Air Act (CAA) Title V permit. Under this permit, Intel OC is subject to a Plantwide Applicability Limitation (PAL) for air emissions. Modeling has confirmed that the air emissions associated with Intel OC's proposed activities will not violate applicable air quality standards.

Emissions generated at the Facility include volatile organic compounds (VOCs), nitrogen oxides (NO_X), carbon monoxide (CO), particulate matter (PM), particulate matter equal to or less than 10 microns in diameter (PM_{10}), particulate matter equal to or less than 2.5 microns in diameter ($PM_{2.5}$), sulfur dioxide (SO_2), greenhouse gases (GHGs), and hazardous air pollutants (HAPs).

The Intel OC Facility is located in a nonattainment area for the National Ambient Air Quality Standards (NAAQS) for ozone and PM_{10}. Pursuant to the CAA General Conformity Rule, 40 C.F.R. Parts 51 and 93, federal activities must not cause or contribute to new violations of NAAQS or worsen existing violations or delay attainment of NAAQS. Accordingly, CPO has prepared a draft Conformity Applicability Analysis for the Proposed Action (Appendix A).

The Intel OC Facility is subject to the Title V permitting program as a major source of VOCs, NO_X, CO, PM, PM_{10}, $PM_{2.5}$, and GHGs and therefore must comply with the requirements of its Title V permit, including applicable technology-based emission control standards.

Table 1-1 includes a list of environmental and safety permits associated with the Intel OC Facility and indicates whether additional changes, permit modifications, or new permits may be needed in connection with the Proposed Action.

Table 1-1. Intel OC Facility Environmental and Safety Permits

Jurisdiction	Permit	Approval Date	Responsible Party	Change or New Permit Needed
Maricopa County Air Quality Department	Title V operating permit No. P0010018 (reviewed by EPA) Title V permit renewal application submitted on July 29, 2020 (still in effect pending renewal)	30-Aug-2023	Intel	Yes
U.S. Fish & Wildlife Service	Short-term bald eagle incidental take permit	1-Apr-2022	Intel	No
Arizona Department of Environmental Quality	Type 2 Reclaimed Water General Permit No. R105568	18-Jun-2019	Intel	No
	Ocotillo Brine Reduction Facility Aquifer Protection Permit No. P-102865	22-Sep-2023	City of Chandler	No
City of Chandler	Wastewater Industrial Discharge Permit No. 9 Revision 6 (Updated in July 2023 to include Fabs 52 and 62)	1-Jul-2023	Intel	No
Environmental Protection Agency	EPA Hazardous Waste Identification No. AZR000001107	29-Jun-1995	Intel	No
City of Chandler Fire Department	Fire Department Review	NA	Intel	Yes
	Hazardous Materials Inventory Sheet submittal	Prior to operations and annually	Intel	Yes
	Fire Department Hazardous Material Permit	Prior to operations and annually	Intel	Yes
Maricopa County	Storm Water Management Plan	1-Aug-2020	Intel	No
	Dust Control Permits	Various	Intel	No
State of Arizona	Salt River Project Substation Easement	9-Nov-2021	SRP	No

1.7 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).

The draft EA will be available for public review and comment for thirty (30) days from July 8 to August 6, 2024. CPO will consider substantive comments on the Draft EA timely submitted during the public comment period.

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

2. ALTERNATIVES

2.1 Facility Background

Intel currently owns and operates multiple semiconductor wafer[3] fabrication buildings (Fabs 12, 22, 32, and 42) at its 682-acre Ocotillo campus located 24 miles southeast of downtown Phoenix in Chandler, Maricopa County, Arizona and is currently constructing two additional fabs (Fabs 52 and 62) at the campus without federal financial assistance. Intel has conducted semiconductor manufacturing operations at the Ocotillo campus since the mid-1990s.

Intel has applied for CHIPS financial incentives for the purchase and installation of SME for Fabs 42, 52, and 62 (the Proposed Project).

These three fabs are all within the existing developed area of the Intel OC Facility, as shown in Figure 2-1 below. Intel's construction of Fabs 52 and 62 began in September 2021 and is partially complete, with Fab 52 to be completed earliest. Intel is undertaking the construction of Fabs 52 and 62 without federal financial assistance. Although construction of Fabs 52 and 62 is outside the scope of the Proposed Project (purchasing and installing SME at Fabs 42, 52, and 62), this EA identifies and refers to the Facility's overall buildout, the future operation of installed SME, and other features to the extent necessary to analyze the direct, indirect, or cumulative effects of the Proposed Action.

Intel OC is a mature semiconductor facility with four million square feet of climate-conditioned space. The Facility includes: four wafer fabrication plants; two central utility plants that house chillers, boilers, and waste and wastewater treatment; four office buildings; two process waste buildings; one wafer testing building; two emergency generator buildings; and a process utility building and boiler/chiller plant dedicated to Fab 42. These buildings share integrated systems critical to the Facility's semiconductor fabrication processes. Intel is in the process of expanding on-site centralized support infrastructure to serve new Fabs 52 and 62.

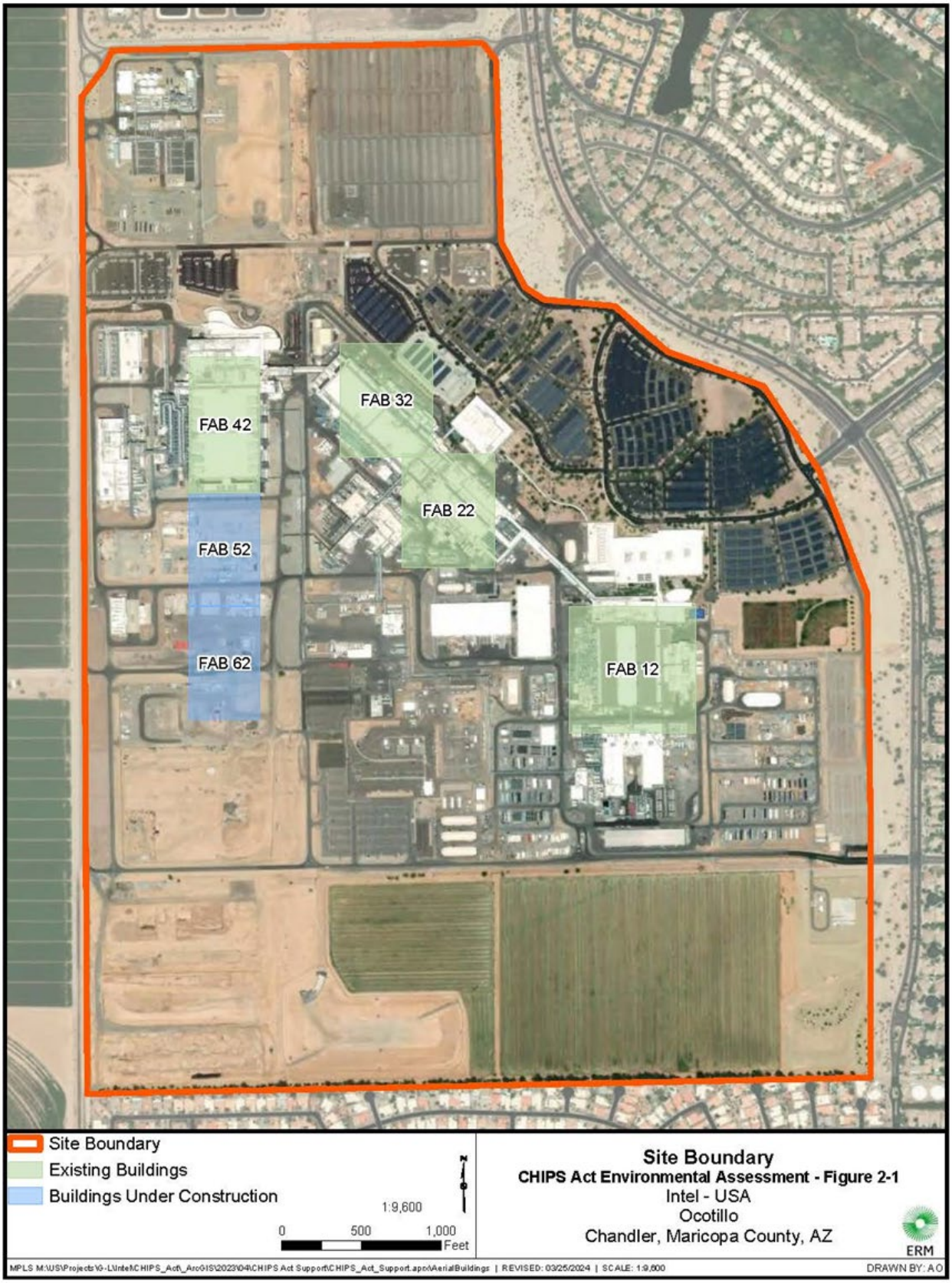
Intel also has been working with state and local agencies and public utilities to arrange for utility and transportation upgrades necessary to support the Proposed Project. The environmental and safety permits associated with the Intel OC Facility buildout are listed in Table 1-1.

Intel incorporates green design into new construction and renovation of its Ocotillo facilities, enabling efficiencies in energy consumption, water use, and recycling to mitigate effects from droughts and power shortages. The Facility is currently certified under U.S. Green Building Council® Leadership in Energy and Environmental Design (LEED)® for Existing Buildings: Operations & Maintenance. As discussed in Section 2.3, Intel also follows several construction and operational BMPs.

Section 3 of this EA discusses the Facility buildout to the extent necessary to analyze the direct, indirect, or cumulative effects of the Proposed Action.

[3] Intel manufactures patterned semiconductor wafers used for making integrated circuits as an end product, not to be confused with bare silicon wafers, which Intel purchases from vendors and are used as an input for the early stages of the fabrication process. For ease of reference, this EA refers to Intel's product as "wafers".

Figure 2-1. Site Boundary



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.

2.2.1 No Action Alternative

Under the No Action Alternative, the CHIPS Incentives Program would not provide federal financial assistance for SME installation at Intel OC. Although Intel could potentially procure and install leading-edge equipment with non-federal funding over a span of several years depending on market conditions, to provide a comparison of environmental effects, the No Action Alternative assumes that absent CHIPS financial incentives, equipment not already purchased or installed as of the date of the PMT (March 20, 2024) would not be procured and installed at Fabs 42, 52, or 62.

Specifically, under the No Action Alternative:

- Fab 42 would continue to operate with its existing equipment at its current production rate and produce less-advanced semiconductors than under the Proposed Action. Specifically, Fab 42 would not be able to produce the quantity or type of advanced semiconductors necessary to meet the already high and growing demand for such products across many industries, such as the automotive, medical device, and aerospace industries.
- The shells of buildings 52 and 62 would be completed to a state of weather-tightness without federal financial assistance but would not become functioning fabs and no SME would be installed. Intel could potentially evaluate future use scenarios for buildings 52 and 62 based on cost competitiveness, market conditions, and business needs.

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.

Under the No Action Alternative, Intel OC's operational workforce is estimated to be approximately 6,000 Intel employees and 4,300 contractors. Wafer manufacturing steps and required resources under the No Action Alternative would be similar in nature to those described under the Proposed Action (Section 2.2.2). However, the No Action Alternative would result in a lower semiconductor production rate than under the Proposed Action, and therefore the Facility would consume less resources (electricity, water, natural gas, hazardous materials) and release less air emissions and wastewater compared to the Proposed Action.

2.2.2 Proposed Action

Under the Proposed Action, CPO would provide federal financial assistance to Intel OC for the modernization of equipment for existing Fab 42 and the purchase and installation of SME in Fabs 52 and 62 to support production of advanced semiconductor wafers at all three fabs.

Specifically, under the Proposed Action, Fabs 42, 52, and 62 would manufacture leading-edge semiconductor logic wafers at high volume and would offer leading-edge foundry service capabilities for customers across many industries, such as the automotive, medical device, and aerospace industries. The modernization of Fab 42 and completion of Fabs 52 and 62 with state-of-the-art SME would substantially increase U.S. logic semiconductor capacity in the near term to meet high and growing demand.

Intel OC began construction of Fabs 52 and 62 in Q3 2021 and Q4 2021, respectively. Intel is undertaking the construction of Fabs 52 and 62 without federal financial assistance. In addition, Intel would not apply federal financial assistance toward operation of the Ocotillo fabs or the follow-on operations and maintenance costs of the SME after it is purchased and installed using federal financial assistance. Although construction of Fabs 52 and 62 and the aforementioned operations activities are outside the scope of the Proposed Project (purchasing and installing SME at Fabs 42, 52, and 62), this EA discusses the Facility's overall buildout, including operations, to the extent necessary to analyze the direct, indirect, or cumulative effects of the Proposed Action. Operational demands on environmental and energy resources are described in Section 2.2.2.1.

The operational workforce associated with the Proposed Project is estimated to be 3,250 workers and approximately 650 contractors (added to the existing Ocotillo campus workforce of 6,000 Intel employees and 4,300 contractors).

2.2.2.1 Facility Resource Demands

Table 2-1 shows the expected resource utilization and waste that would be generated during implementation and operation of the Proposed Project based on: (1) current fab operations and design of the two new fabs; and (2) anticipated semiconductor production rates and SME utility demands.

Table 2-1. Operational Resource Demands of the Proposed Project

Resource	Estimated Maximum Demand Per Day	Estimated Discharge Per Day
Fab 42 Water Use and Wastewater Discharge	5 MGD* (38% City Potable Water, 37% Intel Reclaimed Water 25% City Reclaimed Water)	2 MGD Wastewater to the City POTW
Fab 52 Water Use and Wastewater Discharge	Estimated 4.6 MGD (47% City Potable Water, 45% Intel Reclaimed Water, 8% City Reclaimed Water)	2.2 MGD Wastewater to the City POTW
Fab 62 Water Use and Wastewater Discharge	Estimated 4.4 MGD (46% City Potable Water, 46% Intel Reclaimed Water, 8% City Reclaimed Water)	2.1 MGD Wastewater to the City POTW
Total Project Water Use and Wastewater Discharge	Estimated Total 14 MGD Estimated Total City Potable Water Demand: 6.1 MGD	6.3 MGD Wastewater to the City POTW
Fab 42 Electricity Use	1.7 GWh/day	N/A
Fab 52 Electricity Use	Estimated 3.4 GWh/day	N/A
Fab 62 Electricity Use	Estimated 3.4 GWh/day	N/A
Total Project Electricity Use	8.5 GWh/day	N/A
Fab 42 Natural Gas Use	9,500 therms/day	N/A
Fab 52 Natural Gas Use	Estimated 10,500 therms/day	N/A
Fab 62 Natural Gas Use	Estimated 10,500 therms/day	N/A
Total Project Natural Gas Use	30,500 therms/day	N/A

*MGD = million gallons per day; GWh = gigawatt-hours; N/A = not applicable. POTW = publicly owned treatment works.
Notes: Resource demand and discharges are those expected once each fab is operating at full production volume. A therm is a unit of heat energy equal to 100,000 British thermal units.

Intel reclaims and reuses water through on-site treatment systems (internal reclamation) and partnerships with the City of Chandler to reuse treated wastewater (external reclamation) to reduce the overall water demand of its operations. As shown in Table 2-1, Intel's total water demand for the three fabs would be 14 MGD. Reclaimed water from Intel and City systems would provide 7.9 MGD of the daily total needed, resulting in only 6.1 MGD necessary from City potable (fresh) water sources. Details of the water reclamation systems are provided in Section 3.3.2 (Water Resources). Intel is installing an advanced reclaim system for Fabs 52 and 62, which will allow for additional water streams from the manufacturing operation to be captured and reclaimed on-site. Additionally, Intel is installing a new ultrapure water (UPW) process that is more efficient than previous UPW processes installed at the facility.

Electricity represents approximately 80 percent of the 2022 total Facility energy usage. Intel generates electricity from a 7.7 megawatt (MW) solar carport structure covering more than 3,000 employee parking spaces. Intel also purchases renewable electricity for the Facility from the Salt River Project (SRP)'s 100 MW East Line Solar project in Coolidge, AZ, which began supplying electricity to the Facility in December 2020. Lastly, Intel purchases renewable energy certificates (RECs) in an amount corresponding to the Facility's remaining energy usage.[4]

The Facility achieved U.S. Green Building Council® LEED® Silver certification in 2011; since that time, the Facility added Fab 42, which achieved LEED® Gold certification, and three associated support buildings (the Fab Support Building,[5] the Process Utility Building,[6] and the Boiler/Chiller Plant[7]), which achieved LEED® Silver certification. The Facility also aims to achieve LEED® certification for Fabs 52 and 62.

Intel is in the process of increasing the electrical power supply for the Facility to meet the needs of the Proposed Project. The existing 69 kilovolt (kV) supply lines serving the Facility are insufficient to supply the necessary electrical capacity. Therefore, Intel is renovating the Facility to accommodate 230 kV supply lines. The SRP is constructing 2.7 miles of overhead 230 kV lines, 4.8 miles of underground 230 kV lines, and a dedicated substation (Parlett Substation) to serve the Facility. In December 2021, the Arizona Corporation Commission approved a Certificate of Environmental Compatibility for the SRP's High-Tech Interconnection Project (HIP), which will provide approximately 630 MW of load serving capacity to the Facility (SRP 2021). The first phase of the HIP was energized in December 2023, and subsequent phases needed to provide full capacity for Intel OC were completed in April 2024.

In 2023, Intel OC used approximately 24,700 gallons of diesel fuel, primarily for on-site emergency generators. Intel OC purchases natural gas from Southwest Gas Corporation. In 2023, Intel OC used approximately 15,800,000 therms of natural gas. Natural gas is used primarily within the Facility's

[4] 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.

[5] The Fab Support Building is a general-purpose building that supports the Intel OC manufacturing process and includes office areas, conference rooms, and a café.

[6] The Process Utility Building provides operational support for the fabrication facilities, including front end water softening and purification, heating and air conditioning, boilers, waste storage, and wastewater treatment systems.

[7] The Boiler/Chiller Plant supports temperature controls for Intel OC manufacturing operations.

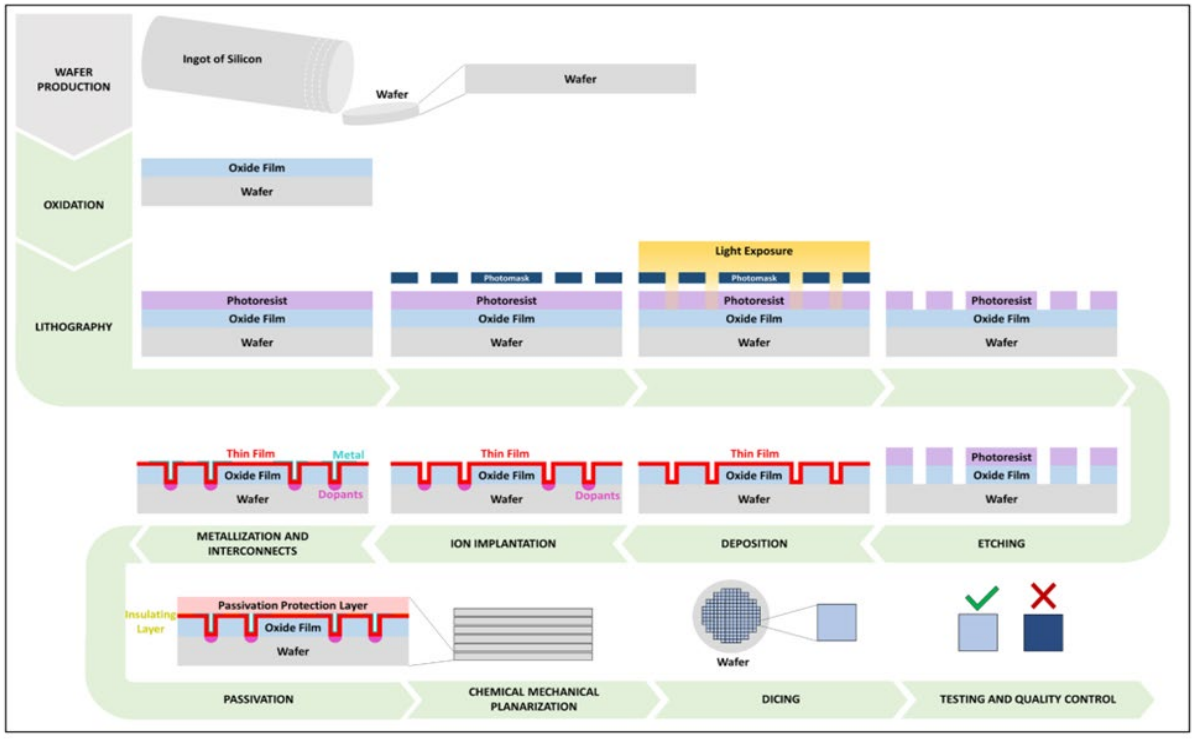
boilers, gas-fired heaters, and emission-abatement systems. Under the Proposed Action, natural gas use would be approximately 71 percent higher when compared to the No Action Alternative.

The semiconductor manufacturing process generally consists of steps known as deposition, photoresist, lithography, etch, ionization, and packaging (ASML 2023) (Figure 2-2). In the deposition step, thin films of conducting, isolating, or semiconducting materials are deposited on the wafer to enable the first layer to be printed on it. The wafer is then covered with a light-sensitive coating called 'photoresist', or 'resist' for short. Lithography uses ultraviolet light to degrade a precise pattern in the resist layer so that the next process, etching, can remove portions of the layer to create a three-dimensional pattern of open channels. Once the pattern is created, the wafer may be bombarded with positive or negative ions to tune the electrical conducting properties of part of the pattern. Directing electrically charged ions allows for control of electricity flow. To get the chips out of the wafer, it is sliced and diced with a diamond saw into individual chips. Packaging refers to the protective enclosure for a semiconductor device that shields circuitry from corrosion and physical damage while allowing electrical connections. Packaging is generally conducted by specialized third-party facilities.

SME to be purchased and installed under the Proposed Action would generally include equipment that supports the process steps of deposition, photoresist, lithography, etching, and ionization. Most commercial SME is designed to meet Semiconductor Equipment and Materials International (SEMI) Standard S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment. As a BMP, Intel would purchase SME that meets S2 standards (Table 2-2).

Sections 2.2.2.2 and 2.2.2.3 describe materials used in manufacturing and typical manufacturing wastes.

Figure 2-2. Semiconductor Manufacturing Process Overview



Source: U.S. Department of Commerce, 2023.

2.2.2.2 Materials Used in Manufacturing

Semiconductor manufacturing uses various hazardous materials to etch, clean, and deposit layers on silicon wafers. Some of the most common hazardous materials used in semiconductor manufacturing include:

- **Acids**: Hydrofluoric acid, hydrochloric acid, sulfuric acid, and nitric acid are frequently used for cleaning and etching purposes.
- **Bases**: Ammonium hydroxide and potassium hydroxide are used in cleaning processes.
- **Solvents**: Organic solvents like acetone, isopropyl alcohol, and various photoresist solvents are used for cleaning and developing photoresist layers.
- **Gases**: Toxic and corrosive gases such as hydrogen chloride, hydrogen fluoride, silane, and dichlorosilane are used in deposition and etching processes.
- **Heavy Metals**: Some processes involve the use of heavy metals such as arsenic, cadmium, and mercury in the metallization process.
- **Photoresist Chemicals**: Photoresist chemicals like acetone, methanol, and various solvents are used in the lithography process.
- **Dopants**: Dopant materials such as arsenic, boron, and phosphorus are used to modify the electrical properties of silicon.

These same materials are already present at the Intel OC Facility. Due to the potential hazards associated with these materials, Intel implements strict safety protocols, including proper storage, handling, and disposal procedures, and extensive employee training. Environmental regulations also govern the use and disposal of hazardous materials in semiconductor manufacturing to minimize the risk of exposure to workers and the surrounding environment.

2.2.2.3 Manufacturing Waste Streams

In semiconductor manufacturing, several waste streams are generated throughout the production process. Some of the typical waste streams include:

- **Chemical Waste**: This includes spent chemicals used in various processes such as etching, cleaning, and doping. These chemicals can be hazardous and require proper handling and disposal.
- **Wastewater**: Semiconductor manufacturing processes often produce wastewater containing chemicals, heavy metals, and other waste materials. Treatment is required to remove these chemicals before discharge or reuse.
- **Solid Waste**: Solid waste can include used filters, gloves, protective clothing, and other disposable materials contaminated with chemicals or particles.
- **Slurries and Abrasives**: Waste slurries and abrasives used in polishing and planarization processes contain contaminants and abrasives that are treated and responsibly managed.
- **Gas Emissions**: Semiconductor manufacturing equipment can emit various gases, including VOCs, ozone-depleting substances, and GHGs. The gases are treated using various abatement devices to control and minimize air emissions.

- **Silicon Wafer Scraps**: Defective or excess silicon wafers generated during the manufacturing process contribute to solid waste. Recycling or proper disposal methods to protect intellectual property are employed to manage this waste stream.
- **Packaging Waste**: Packaging materials used for transporting and storing semiconductor products, such as boxes, foam inserts, and plastic wraps, contribute to solid waste generation.

Efforts to minimize waste generation and maximize resource efficiency are used in Intel's manufacturing sites to help reduce environmental effects and comply with regulations.

2.3 Best Management Practices Included in Proposed Action

This section presents an overview of the best management practices (BMPs) that will be incorporated into the Proposed Project. BMPs are policies, practices, and measures that Intel OC will adopt or expand to reduce the environmental effects of various Facility activities, functions, or processes.

BMPs mitigate potential effects by avoiding, minimizing, or reducing or eliminating effects. BMPs may take the form of (1) committed measures or practices that Intel will use for the Proposed Project, or (2) ongoing, regularly occurring Intel practices. Table 2-2 includes a list of the BMPs that will be incorporated into the Proposed Project. BMPs and mitigation measures are discussed under specific resource areas, as relevant, in Section 3. Intel OC's implementation of BMPs and mitigation measures will be subject to CPO monitoring.

Table 2-2. Best Management Practices

Topic	BMP	Description	Benefits
Air Quality/ Climate Change/Greenhouse Gases (GHGs)	Electric vehicle (EV) chargers available for employees	Intel provides 18 EV charging stations with 35 total ports for use by employee vehicles.	Reduces vehicle emissions.
Climate Change/ GHGs	Abatement of fluorinated GHG and nitrous oxide (N_2O) emissions from Facility processes	Intel is optimizing and/or replacing point-of-use GHG abatement equipment to achieve higher Destruction or Removal Efficiencies (DRE) of fluorinated GHGs (F-GHGs) and nitrous oxide. The DRE for the abatement equipment would be 97 percent or greater and thus would satisfy the standards set forth in EPA's GHG reporting requirements). Point-of-use abatement with the new tools where necessary.	Reduces Scope 1 GHG emissions.[8]
Climate Change/ GHGs	Operation of on-site solar energy project, purchase of electricity from off-site renewable energy project, and purchases of RECs	Intel OC produces renewable electricity from on-site solar panels and purchases renewable electricity from Salt River Power's 100 MW East Line Solar project in Coolidge. In addition, Intel OC purchase RECs in an amount corresponding to remaining electricity needs for Fabs 52 and 62.	Reduces Scope 2 GHG emissions from electricity.

[8] 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 on-site fuel combustion units and process use of fluorinated GHGs). Scope 2 emissions are indirect emissions associated with the purchase of electricity, steam, heat, or cooling.

Topic	BMP	Description	Benefits
Climate Change/ GHGs	Implementation of energy efficiency projects	To conserve energy and reduce GHG emissions, Intel has completed one energy efficiency project and plans to complete a second in 2025: 1. Intel completed a chilled water optimization project for Fab 42 that reduces the kW/ton cost of chilled water by modifying the control logic for the cooling loop. The new controls will better switch the number of cooling towers, pumps, and chillers required to operate to meet factory needs. The project, completed May 2024, is expected to save 12.8 million kilowatt-hours (kWh)/year and roughly 2,600 metric tons (MT) per year CO_2e of Scope 2 GHG emissions. 2. Intel is in the process of removing overlap conditions across all Ocotillo fabs to reduce unnecessary heating, cooling, and humidification in the air handling systems. The project, slated for completion the first quarter of 2025, is expected to save 15.8M kWh/year and roughly 3,200 MT/year CO_2e (reducing Scope 1 GHG emissions).	Reduces Scope 1 and Scope 2 GHG emissions.
Climate Change, Disaster Resiliency, and Sustainability	LEED certifications across the Facility	The Intel OC Facility achieved LEED® Silver certification for the existing operations in 2011. Since then, the Intel OC Facility's Fab 42 was certified to LEED® Gold and three associated support buildings were certified to LEED® Silver. Intel aims to achieve LEED® certifications for its new buildings.	Reduces overall Facility GHG emissions and improves sustainability.
Water Resources	Operation of on-site Water Treatment and Reclaim (WaTR) plant	The WaTR is an advanced 12-acre on-site water treatment and reclaim plant that can treat industrial wastewater for reuse in operations, reducing the need for freshwater intake. The WaTR plant achieved an internal water reuse rate of approximately 39 percent (688 million gallons) in 2023. The WaTR plant was completed in July 2020 and receives wastewater from all its fabs, including Fab 42. Fab 52 flows were added in May 2024. The WaTR plant will be expanded to receive flows from Fab 62 in December 2026.	Water reclaim reduces Facility freshwater use by billions of gallons per year. It also supports wastewater discharge compliance and increases water quality in the watershed.

Topic	BMP	Description	Benefits
Water Resources	Operation of Ocotillo Brine Reduction Facility (OBRF)	The OBRF is an existing closed-loop water recycling facility that recycles reverse osmosis water from Intel OC's processes. The OBRF is operated by the City of Chandler and funded by Intel. Currently, the OBRF treats 1.9 MGD of Intel OC reverse osmosis reject water, where 1.1 MGD (58%) from the process is reused at Intel OC and 0.68 MGD (36%) is reused in OBRF operations. The OBRF's capacity (2.8 MGD) is sufficient to address the projected Facility-wide 2.4 MGD flow rate that would include Fabs 42, 52, and 62.	Increases the amount of water reused at the Facility and reduces its water demand.
Cultural Resources	Notification of discoveries of historic, cultural, or archaeological resources	In the event of an unanticipated discovery of historic, cultural, or archaeological resources during the undertaking, CPO and Intel will immediately notify the Gila River Indian Community (GRIC) Tribal Historic Preservation Office and other authorities as appropriate.	Supports protection of cultural resources.
Biological Resources	Eagle camera and 660-foot work control permitting	A bald eagle nest is located immediately adjacent to the Ocotillo site on GRIC land. To monitor potential for site-related construction and operations to disturb the eagles, in December 2021, Intel installed a closed-circuit camera on one of its buildings pointed at the bald eagle nest to provide real time monitoring. Information from this monitoring is shared with state, federal, and GRIC officials to inform conservation strategies. Intel also implemented a work control process involving reviewing any work activities being performed within the 330-foot to 660-foot boundary of the bald eagle nest with general contractor personnel, Intel construction management, Intel environmental health and safety staff, and on-site biologists. The overall review occurs annually in October, and training for new staff and contractors occurs as needed. The process is also included in mass safety meetings.	Access to camera video is provided to Intel personnel, the consulting biologist, and state, federal, and GRIC wildlife officials for transparency and observation. Ensures coordination between the construction team and the consulting biologist for nest monitoring activities. Buffer minimizes potential for disturbance of the eagle nest during construction activities.
Noise	Noise restrictions	During construction, any diesel-powered and other noise producing equipment are inspected when brought on-site to ensure that they are equipped with functional mufflers, and construction only occurs during the hours allowed in the local noise ordinance.	Ensures that noise effects are minimized during construction activities in accordance with local noise ordinance.

Topic	BMP	Description	Benefits
Noise	No construction within 1,000 feet of residential structures	Chandler noise ordinance requires that no construction occur within 500 feet of a residence; Intel has maintained a 1,000-foot residential buffer as a best practice. Sensitive receptors are located 2,000 feet or more from the Proposed Project.	Noise disturbance to the community is managed and reduced.
Air Quality; Climate Change; Transportation	Travel Reduction Program (TRP)	Intel follows Maricopa County's TRP, which asks employers to reduce single occupant vehicle (SOV) trips and/or miles traveled to the work site by 10% each year for a total of 5 years. The Facility's SOV rate for 2023 was 56 percent. Intel does this by incorporating hybrid work schedules, van pools, preferred parking, employee incentives including raffles and giveaways, and annual surveys. The TRP will apply to the Proposed Project, as it does for the overall Facility.	Reduces air pollution and GHGs by encouraging less commuter traffic to the Facility.
Transportation	Traffic congestion reduction	Intel manages staff trips to reduce traffic congestion by staggering employee start times and shuttling contractors to the Intel OC Facility from off-site parking.	Reduces potential for traffic congestion to and from the Facility.
Human Health and Safety	Apply most protective Occupational Exposure Limits (OELs) to facility operations	Intel applies the most protective OELs based on published industry standards for each chemical used across its Facility operations to promote worker health and safety. Intel establishes its own Intel Threshold Limits for occupational exposure defined as the lower of either the local regulatory limit or the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV). Intel may choose to establish a lower limit or its own limit where no standard exists.	Protects worker health and safety.
Human Health and Safety	Safety planning with local first responders	Intel holds meetings and drills with local first responders, as well as with internal safety teams. Intel will continue coordination with local first responders as the Facility grows.	Promotes safe and coordinated response to emergencies.
Human Health and Safety	SEMI S2	Intel requires that SME at its facilities, including Intel OC, conform with SEMI S2, the industry environmental, health, and safety (EHS) guideline that establishes performance-based EHS design criteria and safety considerations for SME.	Reduces health and safety risks.
Human Health and Safety	SEMI S12	For SME procured under SEMI S2, Intel requires equipment suppliers to meet the SEMI S12 requirements. Intel internal standards are also consistent with the intent of the SEMI S12 standard for removal of existing SME at the Facility.	Reduces health and safety risks.
Human Health and Safety	SEMI S8	Intel requires that SME at its facilities, including Intel OC, conform with SEMI S8, the industry safety guideline for SME ergonomics engineering, which provides design principles and considerations for SME.	Reduces ergonomic risks.

Topic	BMP	Description	Benefits
Human Health and Safety	Pre-task planning and environmental, health, and safety requirements for construction	Intel screens contractors for tool installation for health and safety performance prior to awarding contracts. Intel aligns with contractors on EHS procedures and requires contractors to understand and adhere to the Intel Construction EHS Manual, which identifies hazardous activities (e.g., high voltage, hot work, working from heights), pre-task planning procedures, field observations, and coaching, training, and emergency response procedures. Intel conducts rigorous design reviews to identify necessary safeguards to reduce risk during operation and maintenance.	Reduces health and safety risks.
Human Health and Safety	Engineering controls	Intel has a design standard to minimize potential for chemical releases and exposure to moving parts and hazardous energies. These include closed systems for chemical distribution systems, chemical detection systems tied to source shutoff in case of accidental release, barriers to SME to prevent accidental contact with moving parts or hazardous energies, and interlocks for process chambers and high hazard enclosures which might be accidentally opened or left open.	Reduces health and safety risks.
Human Health and Safety	Construction contractor walks	Intel OC construction project managers and construction contractors perform weekly behavioral safety observational walks. If there is a safety incident on-site, an incident review commences, including the development of information to prevent similar incidents from occurring. Using both safety observational data and incident lessons learned, toolbox topics are developed. These topics are shared with Intel's construction contractors during weekly safety meetings.	Reduces health and safety risks.
Human Health and Safety	Tool startup	Intel adheres to a rigorous safety procedure required for phased startup of SME to ensure safeguards are functional.	Reduces health and safety risks associated with tool startup, operation, and maintenance.
Hazardous Materials and Waste	Segregate per-and polyfluoroalkyl substances (PFAS)-containing wastewater	Intel's on-site WaTR plant has demonstrated the ability to remove more than 90 percent of residual detectable PFAS from wastewater discharges treated through its thermal and reverse osmosis systems. Other organic waste containing PFAS is segregated, collected, and containerized for off-site treatment at a permitted treatment and disposal facility. The WaTR plant currently treats wastewater from Intel OC's existing fabs. Fab 52 was connected to the plant in May 2024. The estimated completion date for the WaTR plant expansion to accommodate flows from Fab 62 is December 2026.	Reduces contamination of water supplies by PFAS.

Topic	BMP	Description	Benefits
Hazardous Materials and Waste	Waste recycling and minimization	Intel segregates waste streams that can be re-used as feedstocks or sold as byproducts. Intel works to identify reuse options for certain byproducts. These practices will be applied to the Proposed Project to the extent these reuse strategies continue to be viable based on market conditions.	Reduces waste and demand for new raw materials.
Socioeconomics	Job training programs	Employees have access to an internal training course system and Intel's "Gigs" (short-term job assignments).	Designed to introduce employees to new experiences and help develop new skills.
Stakeholder Inclusion/ Environmental Justice	Community Advisory Panel	Intel OC has an established Community Advisory Panel that provides a two-way vehicle for the community and Intel to review issues and create a positive, proactive dialogue between Intel and the surrounding community. The panel meets quarterly.	Facilitates transparency and builds relationships through community connection and participation.
Environmental, Health, and Safety (EHS) Management System	International Organization for Standardization (ISO) certifications	Intel will incorporate new operations from Fabs 42, 52, and 62 into its ISO 14001- and ISO 45001-certified integrated EHS management system.	Standardized processes for Facility EHS management.

3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section presents a description of the environmental resources and baseline conditions that could be affected from implementing the Proposed Project and includes an analysis of the potential direct and indirect effects.

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 Proposed Project. Additionally, the level of detail used in describing a resource is commensurate with the anticipated level of environmental effects.

Accordingly, this section includes subsections analyzing the effects of the Proposed Action and No Action Alternative on air quality, climate change, water resources, cultural resources, biological resources, noise, transportation, human health and safety, hazardous materials and wastes, socioeconomics, and environmental justice.

The following resources have not been analyzed further because effects are anticipated to be negligible or nonexistent:

- **Geological Resources**—Because there is no ground disturbance proposed under the No Action or Proposed Action alternatives, there would be no effects to geologic resources. There would be no effects on topography, geology, soils, bathymetry, or marine sediments.
- **Land Use**—The proposed installation of SME under the Proposed Action would occur inside already constructed buildings, resulting in no effects on land use or aesthetic or visual resources. Although the construction of Fabs 52 and 62 is outside the scope of the Proposed Project, the new fabs are being built on existing land within the Facility boundary and are in accordance with the City of Chandler's Planned Area Development zoning objectives and the City's General Plan (City of Chandler 2016, 2024a).

3.1 Air Quality

This discussion of air quality effects includes criteria pollutants, standards, sources, and permitting. Greenhouse gases are discussed in Section 3.2 (Climate Change, Disaster Resiliency, and Sustainability). Air quality in a specific location is defined by the concentration of various pollutants in the atmosphere. A region's air quality is influenced by many factors, including the type and magnitude of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. In general, the types and amount of air pollution include both human-made and natural sources, and the amount contributed by each varies based on the specific pollutant. Human-made sources of air pollution include mobile sources (e.g., cars, trucks, and buses) and stationary sources (e.g., factories, refineries, and power plants), as well as indoor sources (e.g., some building materials and cleaning solvents). Natural sources of air pollution include activities such as volcanic eruptions, forest fires, and wind-blown dust.

3.1.1 Regulatory Setting

3.1.1.1 Criteria Pollutants and National Ambient Air Quality Standards

The Clean Air Act (CAA), 42 U.S.C. § 7401 *et seq.*, is the primary federal statute governing the control of air quality. The CAA designates six pollutants as "criteria pollutants" for which the Environmental Protection Agency (EPA) has established NAAQS to protect health and welfare: carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone, suspended particulate matter equal to or less than 10 microns in diameter (PM_{10}), fine particulate matter equal to or less than 2.5 microns in diameter ($PM_{2.5}$), and lead. CO, SO_2, NO_2, lead, and some particulates are emitted directly into the atmosphere from emissions sources. Ozone, $PM_{2.5}$, and some NO_2 and particulates are formed through atmospheric chemical reactions from other pollutant emissions (called precursors, which include nitrogen oxides (NOx) and volatile organic compounds (VOCs)) that are influenced by weather, ultraviolet light, and other atmospheric processes.

NAAQS are classified as primary or secondary. Primary standards protect against adverse health effects; secondary standards are designed to protect public welfare, such as by preventing damage to farm crops, vegetation, and buildings. Some criteria pollutants have long-term and short-term standards. Short-term standards are designed to protect against acute, or short-term, health effects, whereas long-term standards are designed to protect against chronic health effects.

States can establish their own ambient air quality standards that are more stringent than those set by federal law. The Arizona Department of Environmental Quality (ADEQ) follows the federal NAAQS with some further protections and enhancements in consideration of public health, safety, and welfare in the state. Local air districts may be established in larger population areas to help administer the provisions of the CAA and state rules, and they may also have rules that further protect the region with lower emission limits. The Proposed Project is located in Maricopa County under Maricopa County Air Quality Department (MCAQD) jurisdiction. Title 18, Chapter 2 of the Arizona Administrative Code and Maricopa County Air Pollution Control regulations adopt the federal CAA standards and prescribe additional ambient air pollution standards in consideration of public health, safety, and welfare in the State of Arizona.

Areas in compliance with the NAAQS are designated as attainment areas. An area that does not meet the NAAQS for a given criteria pollutant is designated as a nonattainment area for that pollutant. A nonattainment area's classification is based on the severity of nonattainment (i.e., marginal, moderate, serious, severe, or extreme nonattainment). Areas that have transitioned from nonattainment to attainment are designated as maintenance areas and are also required to adhere to maintenance plans to ensure continued attainment. The CAA requires states to develop general plans to attain and maintain the NAAQS in all areas of the country and specific plans for each nonattainment or maintenance pollutant (including the pollutant's precursor) to achieve (nonattainment) or maintain (maintenance) compliance with the relevant NAAQS for that pollutant. These plans, known as State Implementation Plans (SIPs), are developed by state and local air quality management agencies, and submitted to EPA for approval. Maricopa County is currently in nonattainment for ozone (moderate) and PM_{10} (serious) and is in maintenance for all other pollutants. Based on the recent years' ambient air measurements, it is anticipated that Maricopa County will be redesignated to serious nonattainment for ozone in the near future, which would lower the VOC and NOx thresholds for purposes of general conformity (see Section 3.1.1.2) from 100 tons per year (tpy) to 50 tpy (Maricopa County 2024a).

In addition to the NAAQS for criteria pollutants, the Clean Air Act establishes National Emission Standards for Hazardous Air Pollutants (NESHAP) under Section 112(b) of the CAA. The NESHAP regulate hazardous air pollutant (HAP) emissions from stationary sources, 40 C.F.R. Part 61, including from specific stationary source categories, 40 C.F.R. Part 63. Subpart BBBBB of 40 C.F.R. Part 63 establishes NESHAP for the Semiconductor Manufacturing source category. The Semiconductor Manufacturing NESHAPs regulate major semiconductor manufacturing sources with a potential to emit any HAP at a rate of 10 tpy or more, or any combination of HAPs at a rate of 25 tpy or more.

The State of Arizona began a Travel Reduction Program (TRP) in 1989 to reduce air pollution in response to Maricopa County's nonattainment designation in 1988. Under the program, major employers and schools must reduce single occupant vehicle (SOV) trips and/or miles traveled to work sites by certain increments each year until a 60 percent rate of SOV travel is reached. In Maricopa County, the TRP program is administered by the MCAQD.

3.1.1.2 General Conformity

The EPA General Conformity Rule, 40 C.F.R. Parts 6, 51, and 93, applies to federal actions occurring in nonattainment or maintenance areas when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds. The emissions thresholds that trigger requirements for a conformity analysis (i.e., an analysis by the agency to ensure that its action will be in conformity with the relevant SIP) are called de minimis levels. De minimis levels in tpy vary by pollutant and depend on the severity of the nonattainment status for the air quality management area in question.

A conformity applicability analysis is the first step of a conformity evaluation and assesses whether a federal action must be supported by a conformity determination. This is typically done by quantifying applicable direct and indirect emissions projected to result due to implementation of the federal action. Here, direct emissions relate to the operation of the Facility equipment itself, primarily through point or fugitive air emission sources as a result of the federal action; these are typically covered through the air permitting process with the controlling agency (e.g., MCAQD). Indirect emissions are those emissions caused by the federal action and originating in the region of interest, but which can occur later or in a different location from the action itself and are reasonably foreseeable. If the results of the applicability analysis indicate that the total emissions would not exceed the de minimis emissions thresholds, then the conformity evaluation process is completed.

Table 3-1 shows the de minimis thresholds for the various pollutants in nonattainment areas generally, and Table 3-2 shows the attainment status for air pollutants in Maricopa County.

Table 3-1. De Minimis Thresholds for Nonattainment Areas

Per 40 C.F.R. § 93.153(b)(1)—the following rates apply in nonattainment areas.

Emissions	Tons per year (tpy)
Ozone (VOCs or NOx):	
Serious nonattainment areas	50
Severe nonattainment areas	25
Extreme nonattainment areas	10
Other ozone nonattainment areas outside an ozone transport region	100

Emissions	Tons per year (tpy)
Other ozone nonattainment areas inside an ozone transport region:	
VOC	50
NOx	100
Carbon monoxide: all maintenance areas	100
SO_2 or NO_2: all nonattainment areas	100
PM_{10}:	
Moderate nonattainment areas	100
Serious nonattainment areas	70
$PM_{2.5}$ (direct emissions and emissions generated from, SO_2, NOx, VOCs, and ammonia):	
Moderate nonattainment areas	100
Serious nonattainment areas	70
Lead: all nonattainment areas	25

Table 3-2. Pollutant Attainment Status Maricopa County

Pollutant	Ambient Air Quality Standard	Attainment Status
CO	1971 Primary	Attainment/Unclassifiable
NO_2	1971 Annual Primary & Secondary	Attainment/Unclassifiable
	2010 1-Hour Primary	Attainment/Unclassifiable
Ozone	1979 1-Hour Ozone (Revoked)	Attainment/Unclassifiable
	1997 8-Hour Primary & Secondary	Attainment/Unclassifiable
	2008 8-Hour Primary & Secondary	Moderate Nonattainment
	2015 8-Hour Primary & Secondary	Moderate Nonattainment (Pending Reclassification as Serious Nonattainment)
PM_{10}	1987/2006 Primary & Secondary (24-hour)*	Serious Nonattainment
$PM_{2.5}$	1997 24-Hour/Annual Primary & Secondary	Attainment/Unclassifiable
	2006 24-Hour Primary & Secondary and Annual Secondary (15.0 µg/m^3)	Attainment/Unclassifiable
	2012 Annual Primary (12.0 µg/m^3)	Attainment/Unclassifiable
SO_2	2024 Annual Primary (9.0 µg/m^3)***	Moderate Nonattainment
	1971 Primary (24-hour and Annual)**	Attainment/Unclassifiable
	1971 3-Hour Secondary	Attainment/Unclassifiable
	2010 Primary (1-hour)	Attainment/Unclassifiable
Lead	2008 Primary & Secondary (3-month)	Attainment/Unclassifiable

Data sources: 40 C.F.R. § 81.303 (07/01/2018 Edition) and EPA Air Data.
µg/m^3 = microgram per cubic meter.
*1997 24-hour/annual PM_{10} standards revoked. 1987 annual PM_{10} standard rescinded in 2006.

**1971 secondary annual SO_2 standard revoked in 1973. 1971 primary SO_2 standards (24-hour/annual) revoked in 2010, but 1971 primary SO_2 standards and attainment status may be retained until 2010 designations are completed.

***Anticipated reclassification based on new lower standard.

Arizona's SIP is the cumulative record of all air pollution strategies, state statutes, state rules, and local ordinances implemented under Title I of the CAA by government agencies within Arizona.

Arizona's SIP applies to all geographic areas within the state. For Maricopa County, the Maricopa Association of Governments completes its respective SIP revisions and ADEQ submits them to EPA. De minimis levels in tpy by pollutant depend on the severity of the nonattainment status as presented in Tables 3-1 and 3-2 above.

3.1.1.3 Permitting

New Source Review (Preconstruction Permit)

New major stationary sources and major modifications at existing major stationary sources are required by the CAA to obtain an air permit before commencing construction. This permitting process for major stationary sources is called New Source Review (NSR) and is required whether the major source or major modification is planned for nonattainment areas, attainment, or unclassifiable areas. In general, permits for sources in attainment areas and for other pollutants regulated under the major source program are referred to as Prevention of Significant Deterioration (PSD) permits, whereas permits for major sources in nonattainment areas are referred to as nonattainment NSR permits.

In addition, a proposed project may need to meet the requirements of nonattainment NSR for the pollutants for which the area is designated as nonattainment and PSD for the pollutants for which the area is attainment. Additional PSD permitting thresholds apply to increases in stationary source greenhouse gas (GHG) emissions. PSD permitting also applies to a new major stationary source (or any net emissions increase associated with a modification to an existing major stationary source) that is constructed within 62 miles (100 kilometers) of a Class I area, and which would increase the 24-hour average concentration of any regulated pollutant in the Class I area by 1 microgram per cubic meter ($\mu g/m^3$) or more. Class I areas include international parks, national wilderness areas and national memorial parks that exceed 5,000 acres, and national parks that exceed 6,000 acres.

PSD is regulated under Part C of Title I of the CAA. NSR for nonattainment areas is regulated under Part D of Title I. Minor source NSR is regulated by Section 110(a)(2)(c) of Part A of Title I.

NSR Best Available Control Technology (BACT) requirements apply to major new and modified sources in attainment areas. Under NSR, for any pollutant for which an area is designated as in nonattainment, and for which new or modified source emissions of that pollutant are at or above the applicable major source threshold (Table 3-3), operators must achieve the Lowest Achievable Emission Rate (LAER) for that pollutant and obtain offsets (emission reductions from other sources that impact the same area) for the proposed emissions of the nonattainment pollutant. Existing sources located in nonattainment areas are subject to Reasonably Available Control Technology requirements. All nonattainment NSR programs require an opportunity for public involvement in the permitting process.

Title V (Operating Permit)

The Title V Operating Permit Program consolidates all CAA requirements applicable to the operation of a source, including requirements from the SIP, preconstruction permits, and the air

toxics program. It applies to stationary sources of air pollution that exceed the major stationary source emission thresholds, as well as other non-major sources specified in a particular regulation. Major source thresholds are defined in Table 3-3, by area attainment status (MCAQD 2024). In Arizona, the permitting authority is delegated to the state, under a combined permitting process. In Maricopa County, MCAQD is responsible for issuing all air construction and operating permits.

Table 3-3. Major Source Thresholds

Pollutant	Attainment Status	Threshold (tpy)
Any regulated NSR pollutant	Attainment/Unclassifiable Marginal or Moderate Ozone Nonattainment	100
NO_x	Serious Ozone Nonattainment	50
NO_x	Severe Ozone Nonattainment	25
NO_x	Extreme Ozone Nonattainment	10
VOC	Serious Ozone Nonattainment	50
VOC	Severe Ozone Nonattainment	25
VOC	Extreme Ozone Nonattainment	10
CO	Serious CO Nonattainment	50
PM_{10}	Serious PM_{10} Nonattainment	70
$PM_{2.5}$	Serious $PM_{2.5}$ Nonattainment	70
HAPs—single	Any	10
HAPs—combination	Any	25

Note: The term major source is defined in Maricopa County Air Pollution Control Regulations Rule 240, which incorporates 40 C.F.R. § 51.165(a)(1).

3.1.2 Affected Environment

The Proposed Project is permitted under Permit Number P0006742 (the Title V operating permit) issued by MCAQD on August 25, 2021, and revised on August 30, 2023. Intel submitted an application for renewal of the Title V permit in July 2020; the existing permit remains valid until the re-issuance of the permit. The equipment permitted has the potential to generate the following regulated air pollutants:

- Carbon monoxide (CO)
- Nitrogen oxides (NOx)
- Total particulate matter (PM)
- Particulate matter with an aerodynamic diameter equal to or less than 2.5 microns ($PM_{2.5}$)
- Particulate matter with an aerodynamic diameter equal to or less than 10 microns (PM_{10})
- Volatile organic compounds (VOCs)
- Sulfur dioxide (SO_2)
- Hazardous air pollutants (HAPs)
- Fluorides

- Greenhouse gases (GHGs), including carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O).

As part of its air permit application, Intel proposed GHG BACT for small industrial boilers, emergency diesel generators, and VOC abatement systems. Intel would be installing point-of-use (POU) devices to control fluorinated GHGs (F-GHGs) as specified in the proposed BACT. Consistent with the proposed BACT, measures to reduce GHG emissions include the following:

Industrial boilers:

- Electronic ignition
- Use of natural gas fuel only
- Optimization of excess air using an integrated burner management control system
- Heat recovery for chiller operations support

Diesel-fired internal combustion engines:

- Use of ultra-low sulfur diesel fuel only
- Turbocharged and after/inter-cooled
- Tier 4 certified engines
- Use of digital engine control and monitoring systems

VOC abatement systems:

- Use of natural gas fuel only
- Use of recuperative primary and secondary heat exchangers

Additional discussion of GHG emissions is provided in Section 3.2 (Climate Change, Disaster Resiliency, and Sustainability).

The Facility's existing Title V operating permit imposes a Plantwide Applicability Limitation (PAL) on the Facility's current semiconductor operations. The PAL allows for changes to site operations without triggering NSR if the change remains below the existing PAL limits.

For the modernization of Fab 42, Intel is not seeking additional permit increases beyond the existing PAL. The air emissions for modernizing Fab 42 will not change significantly despite the change in process technology.

In August 2021, the Facility's Title V permit established new PALs to account for the emissions of the two new fabs under construction (Fabs 52 and Fab 62). Intel obtained a major source nonattainment NSR approval for NOx and VOC (nonattainment pollutants) and a PSD permit for CO and NO_2 (attainment pollutants). As required by the Title V permit processes for PSD and nonattainment NSR, Intel OC operations are subject to control technology requirements for the proposed new emission units (Fabs 52 and 62) to satisfy the requirements of BACT and LAER. Intel also was required to obtain substantial emission reduction credits for NOx and VOCs

(189.5 tons/year and 204.3 tons/year, respectively) (Intel 2021b).[9] Additionally, to conform to PSD requirements, Intel performed a Class I significant impact level (SIL) and Level 1 plume blithe analysis for the Class I area located within 50 kilometers of the project site. These analyses showed no effects or exceedances within the Class I area.

The permit establishes new PALs following the operation startup of Fabs 52 and 62, which would increase the permitted air pollutant limits as shown in Table 3-4.

Table 3-4. Intel OC Plantwide Applicability Limitations (PALs)

Air Pollutant	Existing Site PAL 12-Month Rolling Total (tons)	Post-Startup Fabs 52/62 PAL 12-Month Rolling Total (tons)
VOC	175	335
NO_x	198	352
CO	388	507
PM_{10}	125	125
$PM_{2.5}$	119	119
PM	159	159
SO_2	61	61
Fluorides	24	24
GHGs	N/A	1,403,587 (metric tons)

Note: Changes to the PALs for PM_{10}, $PM_{2.5}$, PM, SO_2, and fluorides were not requested as part of the Proposed Project. GHGs are listed in metric tons of CO_2e.

3.1.3 Environmental Consequences

Effects on air quality are based on estimated direct and indirect emissions of air pollutants associated with the Proposed Project (i.e., emissions resulting from the purchase and installation of SME in Fabs 42, 52, and 62) and the No Action Alternative. Estimated emissions from a proposed federal action are typically compared with the relevant national and state standards to assess the potential for increases in pollutant concentrations. GHG emissions are discussed separately under Section 3.2.

Intel OC's Title V permit addresses emissions from both construction activities and operations of the Proposed Project to retrofit Fab 42 and construct and operate Fabs 52 and 62. Construction and operational emissions already addressed through completed permits are deemed to conform with the SIP and are not subject to General Conformity Rule determination calculations. However, direct and indirect emissions of the Proposed Project not covered by a permit (such as emissions associated with truck deliveries and daily employee travel necessary to install the SME) were evaluated for conformity under the Proposed Action.

3.1.3.1 Proposed Action

Under the Proposed Action, CPO would provide federal financial assistance to support the purchase and installation of SME for Fabs 42, 52 and 62. As mentioned previously, construction and operation of Fabs 42, 52, and 62 is authorized under the Facility's current air permit. Under the Proposed Action, the Fabs would comply with the permit's requirements, including demonstrating

[9] Emission reduction credits are required to be calculated using a 1:1.15 offset ratio multiplied by the emission increases from a project (here, 164.8 tons NOx and 177.6 tons VOCs). The new PALs for NOx and VOCs in Table 3-4 were based on NOx and VOC increases from a different baseline period.

use of BACT and LAER to reduce emissions and demonstrating that the Facility obtained sufficient numbers of emission reduction credits (ERCs).

After reviewing the analyses and air dispersion modeling conducted as part of Intel OC's planned expansion, MCAQD concluded that the permit limits are consistent with federal, state, and county regulations and rules, would not cause or contribute to a violation of any federal ambient air quality standard, would not cause any Arizona Ambient Air Quality Guidelines to be exceeded, and would not cause additional adverse air quality effects.

It is anticipated that the County will be redesignated by the EPA within the next few years as Serious Nonattainment for the 8-hour ozone standard. After the anticipated redesignation and implementation into MCAQD regulations, all facilities with a Title V permit having potential and/or actual emissions above 50 tpy for NOx or VOCs may be required to reopen the Title V permit to ensure appropriate controls and ERCs are applied to comply with the new requirements. As required by the Facility's Title V permit, Intel has already obtained emission reduction credits in the amounts necessary to off-set the required pollutants (VOCs and NOx) for the Proposed Project and to meet the SIP requirements. With the use of emission controls and use of emission reduction credits, the Proposed Project would not result in significant adverse effects to air quality from direct emissions of criteria pollutants.

Indirect project emissions that are not subject to the Facility's Title V permit were also analyzed. As discussed in Section 3.2.1, the Proposed Action must meet the thresholds of General Conformity. Under General Conformity guidelines, emissions subject to existing operating permits are considered to already conform to the state's SIP and would not cause a violation of the NAAQS. However, activities not addressed in the Title V permit, such as indirect emissions associated with deliveries (e.g., transportation of the equipment to the site, additional deliveries related to operations of the equipment), installation emissions above and beyond the building emissions already accounted for in the Title V permit, daily worker travel (for additional workers required specifically for the installation and operation of the equipment), and any other indirect emissions must be evaluated for conformity. These criteria were used as inputs for modeling indirect emissions using the California Emissions Estimator Model (CalEEMod, v2022.1.1.22). The modeling results show that the indirect emissions of criteria pollutants associated with the Proposed Project would be below the applicable de minimis thresholds (Appendix A) and a General Conformity Determination would not be required. Therefore, indirect emissions of the Proposed Project would not result in significant adverse effects on air quality.

Overall, with Intel OC's implementation of BACT and LAER and use of ERCs, the Proposed Project would result in minor to moderate effects on air quality.

3.1.3.2 No Action Alternative

As discussed in Section 2.2.1, for the purposes of comparative analysis, the No Action Alternative assumes Fab 42 would operate with its existing SME and Fabs 52 and 62 would not have SME installed and would not become operational fabs. Therefore, under this alternative, air emissions would remain essentially the same from Fab 42, and the overall Facility emissions would be unchanged. Potential direct air emissions from the Facility will be managed within the current permitted limits. These emission levels would fall well below the Facility's permitted emission levels for each air pollutant. In accordance with the existing air permit, Intel OC would implement BACT and LAER, as applicable, to reduce operational emissions from Facility operations.

Emissions under the No Action Alternative would not cause a significant degradation of regional air quality or violate the Arizona SIP. A General Conformity Rule Applicability Analysis was not completed for the No Action Alternative, as this alternative would not involve federal financial assistance.

3.1.4 BMPs and Mitigation

As discussed above, Intel OC is required by law to implement control technologies and obtain ERCs to mitigate effects to air quality. To further reduce indirect effects of mobile source criteria pollutants on air quality, Intel OC will continue participation in the mandatory Travel Reduction Program (further discussed in Section 3.2 and 3.7). Intel OC will also implement BMPs for the use of renewable energy as discussed in Section 3.2.

3.2 Climate Change, Disaster Resiliency, and Sustainability

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 Intel's Proposed Project are evaluated in this section for climate change effects, disaster resiliency, and sustainability.

Climate refers to the predictable, average weather, temperature, and precipitation patterns that characterize a region, while 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, and other fluorinated gases, 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:

1. 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).
2. Scope 2 GHG emissions are indirect emissions associated with the use of electricity, steam, heat, or cooling.
3. 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 to mitigate vulnerability to climate-related shocks such as floods or droughts. Climate resilience is one feature of sustainable development.

Sustainable development, as defined in 1987 by the World Commission on Environment and Development, is that which meets the needs of the present without compromising the ability of future generations to meet their own needs.

3.2.1 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 the Obama Administration's Climate Change EO 13653, Preparing the United States for the Impacts of Climate Change, and the White House 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 and request for comments in the Federal Register on consideration of GHG emissions and climate change in NEPA documents (CEQ 2023b). The notice 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.

In 2021, Congress passed the American Innovation and Manufacturing Act. It directs the 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 degrees Celsius of global warming by 2100 (USEPA 2023a). In September 2021, EPA issued a final rule to implement these requirements, codified at 40 C.F.R. Part 84. EPA issued hydrofluorocarbon production and consumption allowances in accordance with the final rule for the 2024 calendar year. From 2024-2028, these allowances will be capped at 40 percent below their baseline historic levels (40 C.F.R. Part 84 and USEPA 2023a).

EPA's GHG Reporting Program (GHGRP), codified at 40 C.F.R. Part 98, requires reporting of GHG data and other relevant information from large GHG emission sources in the United States. Subparts C and I include reporting requirements for the Electronics Manufacturing Sector, which encompasses Semiconductors and Related Devices. Facilities emitting more than 25,000 metric tons (MTs) of CO_2 equivalent (CO_2e) annually are required to report emissions of fluorinated GHGs and

fluorinated heat transfer fluids, as well as CO_2, methane (CH_4), and nitrous oxide (N_2O) combustion emissions from each stationary combustion unit. Semiconductors and Related Devices, North American Industry Classification System Code 334413, is a free-standing reporting category under the GHGRP. Although the GHGRP allows a facility to factor emission reductions from abatement equipment into its total reported emissions, the facility may do so only if it demonstrates that such abatement equipment has a certain Destruction or Removal Efficiency (DRE). In this context, DRE refers to the percentage of F-GHG molecules destroyed or removed by a piece of abatement equipment. Pursuant to 40 C.F.R. Part 98, Subpart I, Table I-16 (Default Emission Destruction or Removal Efficiency (DRE) Factors for Electronics Manufacturing), an electronics manufacturing facility may factor emission reductions from abatement equipment into reported F-GHG emissions data only if that equipment has a DRE of at least 97 percent.

EPA makes facility reported information publicly available through the GHGRP and associated databases.

As described in Section 3.1.1.3, under the CAA Title V permit program, additional PSD permitting thresholds apply to increases in stationary source GHG emissions. Under current EPA PSD regulations, only stationary sources that already constitute major sources of criteria pollutants are also subject to Title V permit GHG emissions limits and the requirement to use BACT to reduce GHG emissions.

3.2.2 Affected Environment

Maricopa County estimated its 2020 annual GHG emissions at 46.8 million MT (measured in CO_2e), where nearly 46 percent were attributed to mobile sources and 41 percent were attributed to electricity use (Maricopa County 2024b).

The primary sources of Intel OC's Scope 1 GHG emissions are: chemical usage and wafer processing in the fabs; on-site combustion sources (natural gas fired boilers and emergency diesel engine generators); use of fluorinated heat transfer fluids; emission abatement systems (thermal oxidizer systems that use natural gas for VOC emission abatement); and wastewater systems (ammonia removal and treatment that uses a natural gas catalytic oxidizer).

As described in Section 3.1.2 and Table 3-4, the Title V permit for Intel OC issued by MCAQD imposes a PAL for GHG emissions on the Facility once either Fab 52 or 62 come online (MCAQD 2021). Intel's plans to construct Fabs 52 and 62 required modifications to the Facility's Title V permit. In August 2021, MCAQD added a Facility-wide GHG PAL of 1.4 million MT/year for the 2023 Title V permit modification that becomes effective when either Fab 52 or 62 become operational. The baseline emissions from the existing facility were 459,742 MT CO_2e /year was used to establish the new GHG PAL. Pursuant to the Title V permit, Intel OC also has incorporated GHG BACT for the Facility's small industrial boilers, emergency diesel generators, and VOC abatement systems (see Section 3.1.2).

Intel OC's primary methods for abating F-GHG emissions from the semiconductor manufacturing process include POU control devices and remote plasma clean technology, along with process optimization measures and chemical substitution. The Facility uses a novel F-GHG abatement method whereby manufacturing process F-GHG emissions are captured by POU devices and wet scrubbers and are destroyed in burners. Intel installs, operates, and maintains these devices in accordance with manufacturer and Intel specifications. In particular, the Facility's plan to use remote plasma clean in its deposition chambers (instead of in-situ clean) will greatly reduce GHG

emissions by increasing the chemical breakdown (dissociation) of NF_3, a potent F-GHG with a global warming potential 17,200 times greater than CO_2. Because Intel's POU control devices achieve an average DRE of 97 percent, Intel factors emission reductions from these control devices into the data that it reports to EPA pursuant to the GHGRP.

Semiconductor facilities consume large amounts of electricity from the grid that can contribute to Scope 2 (indirect) GHG emissions. Although Intel OC's Scope 2 GHG emissions are not subject to air permitting, Intel has taken several steps to reduce Scope 2 GHG emissions from electricity consumption. The Facility uses on-site solar panels (a 7.7 MW carport structure covering more than 3,000 employee parking spaces) and purchases renewable electricity directly from Salt River Power's (SRP's) 100 MW East Line Solar project in Coolidge, which started supplying solar energy to the Facility in December 2020. In addition, Intel offsets Scope 2 GHG emissions by purchasing renewable energy certificates (RECs) for its remaining electricity needs at the Facility.

The Facility also has incorporated several environmental sustainability measures into its plant design and achieved U.S. Green Building Council® Leadership in Energy and Environmental Design (LEED)® Silver certification for the operations in existence in 2011. Since then, the Facility added Fab 42, which achieved LEED® Gold certification, and three associated support buildings, which were certified to LEED® Silver certification. Fabs 52 and 62 are also being built to achieve LEED® certification.

In terms of disaster resiliency, Intel implements a Climate Risk Management process to mitigate climate-related risks and identify opportunities that may impact the Company's overall value chain. Natural disasters, extreme weather, and other climate events that may directly impact the Intel OC Facility are included in this assessment (Intel 2023b).

To support water sustainability, Intel has implemented several programs to conserve and protect water sources. The Intel OC Facility earned Platinum level certification from the Alliance for Water Stewardship (AWS) in 2023, the program's highest certification level.

As part of its 2030 goals, Intel has committed to achieving zero waste-to-landfill. Most of the waste Intel generates is from construction and manufacturing activities. Since the mid-1990s, Intel has increased its global recycling rate of non-hazardous waste from 25 percent to 87 percent. Over the past 12 months, only 5 to 10 percent of all Intel OC waste was sent to landfills each quarter.

3.2.3 Environmental Consequences

3.2.3.1 Proposed Action

Under the Proposed Action, the modernization of Fab 42 would not result in a material increase of GHG emissions from Fab 42 relative to Fab 42's existing operation. However, operation of Fabs 52 and 62, once constructed, would be permitted to increase the Facility's annual GHG emissions by up to 943,842 MT of CO_2e (based on the Facility's GHG PAL of approximately 1.4 million MT/year), even after the Facility's implementation of POU abatement of F-GHGs and application of BACT to its small industrial boilers, emergency diesel generators, and VOC abatement systems.[10]

Therefore, the Proposed Project (purchase and installation of SME for Fabs 42, 52, and 62), would result in indirect effects through the increased Scope 1 GHG emissions from the operation of Fabs

[10] As stated in Section 2.2.2.1, natural gas use would be approximately 71 percent higher when compared to the No Action Alternative. This higher natural gas use is reflected in the total increase of GHGs under the Proposed Action.

52 and 62. A total permitted increase of up to 943,842 MT/year of CO_2e from the operation of Fabs 52 and 62 would represent approximately 2 percent of Maricopa County's total reported GHG emissions for 2020, which would result, at most, in moderate effects on GHG emissions at the local level. However, that percentage is a conservative estimate, because the actual increase of GHG emissions from the Proposed Project likely would fall below the PAL limit.

To address Scope 2 GHG emissions, the Facility would increase electricity supply from renewable sources to meet the needs of the Proposed Project (Section 2.2.2.1). The Facility operates a 7.7 MW solar carport structure and is now purchasing electricity from SRP's 100 MW East Line Solar project. In addition, Intel has maintained purchases of RECs since 2013. Under the Proposed Action, Intel OC would purchase additional RECs corresponding to its electricity needs for the Proposed Project.

In terms of sustainability, green design has been incorporated into the new construction and renovation of Facility buildings, enabling efficiencies in energy consumption, water use, and recycling to mitigate effects from droughts and power shortages. The Facility is currently certified under LEED® for Existing Buildings: Operations & Maintenance. These energy efficiency and resiliency standards would also be used in the construction of building Fabs 52 and 62 and modernization of Fab 42. Therefore, modernized Facility operations would have negligible effects on disaster resiliency.

As discussed in Section 3.3, the Proposed Project would utilize existing water resource infrastructure and operate under the appropriate permits issued by the Arizona Department of Environmental Quality and the City of Chandler. The Intel OC Facility currently operates a Water Treatment and Reclaim (WaTR) system to treat and reclaim wastewater and uses treated wastewater from the City-operated Ocotillo Brine Reduction Facility (OBRF). Further, the City has committed to providing sufficient potable water for Intel OC operations. As part of its sustainability initiatives and in collaboration with Intel, the City has invested in water reclamation infrastructure to serve the Intel OC Facility (see Sections 3.2.2, 3.3.2.5, and 3.3.2.6). The City aims to complete an off-site water reclamation plant (Reclaim Water Interconnect Facility, or RWIF) by October 2024. Once complete, this reclamation plant will draw water from the SRP canal to recharge aquifers and thereby free up reclaimed water to be used by Intel OC in cooling towers. Based on the higher degree of water reclamation Intel OC would apply to support its increased fab operations and the City's 100-year water supply, the Proposed Action would result in only minor effects on water sustainability.

Overall, the Proposed Action (federal financial assistance for the purchase and installation of SME at Intel OC) would result in at most moderate effects on climate change through increased contributions of GHG emissions in Maricopa County, negligible effects on disaster resiliency, and minor effects on sustainability related to increased water use.

3.2.3.2 No Action Alternative

Under the No Action Alternative, the Facility would follow the same resiliency and sustainability practices as under the Proposed Action, but with fewer operating fabs. The Facility would continue to emit GHGs at approximately its current rate (approximately 459,742 MT CO_2e/year) and the Facility's Title V permit GHG PAL would not become effective. The Facility would implement POU abatement of F-GHGs and apply BACT to reduce GHGs from its small industrial boilers, emergency diesel generators, and VOC abatement systems. The Facility would continue using electricity and natural gas in approximately the same quantities. Use of green building design and

water reclamation would be applied as described under the Proposed Action (Section 3.2.3.1). As a result, when compared to the increased contributions of GHG emissions from the Proposed Action, the No Action Alternative would result in minor effects on climate change at the local level, negligible effects on disaster resiliency, and minor effects on sustainability.

3.2.4 BMPs and Mitigation

As part of an overall effort to reduce its Scope 1 GHG emissions, Intel is implementing novel abatement equipment that satisfies the requirements set forth in EPA's GHGRP. To reduce Scope 2 GHG emissions, the Facility is using on-site solar energy generation and purchasing electricity from SRP's solar project. To offset remaining Scope 2 GHG emissions, the Facility is purchasing RECs.

3.3 Water Resources

This discussion of water resources includes groundwater, surface water, and floodplains. There are no shorelines, wetlands, lakes, rivers, or streams present on the project site. Off-site surface water resources potentially affected by water use are addressed. Water supplies, stormwater, and wastewater are also discussed. Wildlife and vegetation related to water resources are addressed in Section 3.5.

Groundwater is water that flows or seeps downward and saturates soil or rock, supplying springs and wells. Groundwater is used for water consumption, agricultural irrigation, and industrial applications. Groundwater properties are often described in terms of depth to aquifer, aquifer or well capacity, water quality, and surrounding geologic composition. Sole source aquifer designation provides limited protection of groundwater resources that serve as drinking water supplies.

Floodplains are areas of low-level ground present along rivers, stream channels, large wetlands, or coastal waters. Floodplain ecosystems functions support natural moderation of floods, flood storage and conveyance, groundwater recharge, and nutrient cycling. Floodplains also help with maintenance of water quality and are often home to a diverse array of plants and animals. In their natural vegetated state, floodplains slow the rate at which the incoming overland flow reaches the main water body. Floodplain boundaries are most often defined in terms of frequency of inundation, that is, the 100-year and 500-year flood. Floodplain delineation maps are produced by the Federal Emergency Management Agency (FEMA) and provide a basis for comparing the locale of the Proposed Action to the floodplains.

3.3.1 Regulatory Setting

3.3.1.1 Groundwater

Groundwater is protected through many federal laws that control and limit pollution into groundwater. These include but are not limited to: 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*.; and Clean Water Act (CWA),33 U.S.C. § 1251 *et seq*. Groundwater is also regulated by a combination of appropriation systems, pollution statutes, and land ownership rights that vary by state. Though groundwater is often connected to surface water, most states regulate surface water and groundwater separately.

3.3.1.2 Surface Water

Through the National Pollutant Discharge Elimination System (NPDES) program, the CWA establishes federal limits on the amounts of specific pollutants that can be discharged into surface waters. The NPDES program regulates the discharge of water pollutants from point sources (i.e., end of pipe) and nonpoint sources (i.e., stormwater). Most states are authorized to administer NPDES permit programs. Individual NPDES permits are specifically tailored to an individual facility based on the type of discharge activity, nature of the discharge, and receiving water quality.

3.3.1.3 Water Supply

Under the SDWA, EPA sets standards for drinking water quality and quantity to protect the safety and availability of public drinking water supplies, including from groundwater sources.

The State of Arizona also regulates water supply under its Assured Water Supply Program and Adequate Water Supply Program, both implemented under Arizona Administrative Code Title 12, Chapter 15, and Arizona Revised Statutes (A.R.S.) § 45-101 *et seq*. The Assured Water Supply Program operates within Arizona's five Active Management Areas (AMAs) and is designed to sustain the state's economic health by regulating preservation of groundwater resources and promoting long-term water supply planning. AMAs are those areas of the state where significant groundwater depletion has occurred historically and include portions of Maricopa, Pinal, Pima, Santa Cruz, and Yavapai counties. The Adequate Water Supply Program operates outside of the AMAs and requires disclosure of water adequacy or inadequacy or other water supply limitations in any public reports provided to potential first purchasers and in any promotional or advertising material.

3.3.1.4 Stormwater and Wastewater

As discussed above, the NPDES program also regulates nonpoint sources of water pollution (e.g., stormwater and wastewater).

Construction site operators engaged in clearing, grading, and excavating activities that disturb one acre or more must obtain a NPDES 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 known as effluent limitation guidelines (ELGs), which impose pretreatment standards on facilities for treating effluent (e.g., wastewater flows) from their operations. The ELGs are uniform national standards developed by EPA for specific industrial and commercial categories. EPA promulgated the Electrical and Electronic Components ELGs at 40 C.F.R. Part 469 in 1983. This category 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.

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 publicly owned treatment works (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.

3.3.1.5 Floodplains

EO 11988, Floodplain Management, requires federal agencies to avoid to the extent possible the long- and short-term adverse effects associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development unless it is the only practicable alternative. The flood potential of a site is usually determined by the 100-year floodplain, which is defined as the area that has a one percent chance of inundation by a flood event in a given year.

EO 13690, Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input, amends EO 11988 and establishes the Federal Flood Risk Management Standard to improve the nation's resilience to current and future flood risks, which are anticipated to increase over time due to the effects of climate change and other threats.

3.3.2 Affected Environment

The following discussions provide a description of the existing conditions at the Facility for each of the water resource categories.

3.3.2.1 Groundwater

The Facility is in the eastern portion of the Phoenix AMA and the East Salt River Valley Sub-Basin (Arizona Department of Water Resources (ADWR) 2024a). The Sub-Basin area is subject to state regulations regarding the withdrawal and use of groundwater. Information obtained by ADWR indicates that groundwater belonging to the East Salt River Valley Sub-Basin is located approximately 80 to 120 feet below grade (ADWR 2024b).

3.3.2.2 Surface Water

A desktop review of the National Wetland Inventory and National Hydrography Dataset shows there are no wetlands, streams, rivers, lakes, or other potentially navigable waters mapped within the Facility boundary.

3.3.2.3 Water Supply

The City of Chandler's drinking water supplies come from both surface water and groundwater. The City also utilizes reclaimed water supplies for the purpose of irrigation and industrial demands. Chandler has surface water rights in both the Colorado River watershed and the Salt and Verde watershed. The Salt River Project (SRP) delivers water from the Salt and Verde watershed using an extensive system of dams, reservoirs, and canals. The Central Arizona Project delivers water from the Colorado River over 336 miles from the western Arizona border into Central Arizona. Chandler has 32 active groundwater wells used to supplement its drinking water supplies when needed. In normal years, approximately 6 to 10 percent of Chandler's annual water use comes from groundwater. The City also stores water supplies underground sufficient for several decades of anticipated demand, which can be drawn upon during surface water shortages. Additionally, the City operates three water reclamation facilities that treat wastewater to Class A standards.

The City of Chandler lies within the Phoenix AMA and is subject to the Assured Water Supply Program. The Intel OC Facility's water historically has been supplied primarily by the City of Chandler's potable water system. In 2021, Intel and the City executed a Development Agreement in which the City committed to supplying the additional water needed for the Proposed Project from several existing sources (City of Chandler 2021).

As described in Section 2.2.2.1, and pursuant to the Development Agreement, the City is partnering with Intel to supply the Facility with external reclaimed water (treated wastewater) from City systems, while Intel OC is using internal reclaimed water treated through on-site systems to further reduce its overall water demand. Specifically, in addition to supplying Intel OC with freshwater from its potable water system, the City is supplying Intel OC with reclaimed water from its Ocotillo Water Reclamation Facility (OWRF) and Airport Water Reclamation Facility (AWRF) and plans to supply additional reclaimed water from a planned Reclaim Water Interconnect Facility (RWIF). In addition to these municipal sources, Intel OC is generating reclaimed water from the on-site Ocotillo Brine Reduction Facility (OBRF) operated by the City and funded by Intel, and from Intel OC's on-site WaTR plant.

Taken together, this mix of Intel and City systems is designed to provide sources of UPW and cooling tower water for Intel OC operations and reduce the Facility's overall demand for potable water from the City. A diagram of the Facility's various on-site water treatment and reclamation systems discussed in this section and in Section 3.3.2.4 is shown in Figure 3-1.

- The OWRF, AWRF, and WaTR treatment systems are described further in Section 3.3.2.4 (Stormwater and Wastewater).
- The City operates the OBRF on land donated by Intel to the City through a public-private partnership, under which Intel funded a significant portion of its construction and funds the plant's ongoing operation and capital improvements. The OBRF treats Intel's reverse osmosis reject water to drinking water quality standards (up to 2.8 MGD). Treated water from the OBRF is then reused by Intel OC for UPW and its cooling towers, reducing the need for additional freshwater withdrawals from the City.
- The City aims to complete the RWIF, an off-site water reclamation plant by October 2024. The RWIF is a cooperative effort between Intel and the City, and the City received $3 million from EPA's Clean Water State Revolving Fund Program to support its construction. Once complete, the RWIF will pull water from the SRP canal to recharge aquifers and thereby free up additional reclaimed water for use in Intel OC's cooling towers, further reducing the need for freshwater withdrawals.

As of June 2023, groundwater modeling for this management area led the State to issue a determination requiring new development activities to demonstrate an assured water supply that is not local groundwater. This determination found that planned water use, including Intel's water use under the development agreement, would meet the Chandler service area's 100-year assured water supply under the Phoenix AMA.

The federal government has declared a Tier 1 water shortage on the Colorado River, which reduces the amount of water that Arizona can claim from the Colorado River. The probability of remaining in a Tier 1 shortage (in which the City of Chandler is not likely to experience any increased supply from the Colorado River) is almost 100 percent. However, the Lower Colorado River Basin users (Arizona, California, and Nevada) have implemented conservation agreements to keep 1.5 million acre-feet of water in Lake Mead from 2023–2025, and based on the City's most current demand projections (which include Intel OC's projected demand), it is not anticipated that any gap in supply and demand in 2026 will occur (S. Kjolsrud, 2024).

Further, through water reclamation and investments in water restoration projects, Intel earned an Alliance for Water Stewardship (AWS) Platinum Certification in 2023, the program's highest level. In 2021 Intel achieved net positive water in Arizona, and maintained that status in 2022 and 2023.

3.3.2.4 Stormwater and Wastewater

Intel's Facility-wide rainwater management approach utilizes several large retention basins with drywells to naturally infiltrate rainwater back into the ecosystem. These on-site stormwater retention areas allow for natural infiltration that meet environmental regulations for zero discharge under NPDES.

Wastewater discharges from the Facility are subject to an Industrial Wastewater Permit issued by the City of Chandler, which requires the Facility to pre-treat the discharges before sending them to the City's sanitary sewer. Intel provides on-site wastewater treatment to meet permit pre-treatment requirements for hydrogen peroxide, total dissolved solids, total nitrogen, and chemical oxygen demand prior to discharge to the City's OWRF and AWRF. The OWRF has capacity to treat 18 MGD of wastewater to meet the highest (A+) reuse standards, and the AWRF has the capacity to treat 27 MGD of wastewater. Treated effluent from the OWRF and AWRF is reused by Intel, delivered to City reservoirs, or delivered to injection wells to recharge the aquifer (Kennis 2024).

Semiconductor fab operations produce PFAS from use of certain chemicals in manufacturing. The Intel OC Facility has extensive PFAS treatment measures in place and is seeking to reduce use of PFAS in its processes. Specifically, to limit discharges of PFAS to wastewater, the Facility segregates manufacturing process chemicals known to contain PFAS from other waste streams, directs the waste that contains PFAS to a closed bulk system, and arranges for it to be shipped to an off-site permitted treatment and disposal facility. Further, as discussed in Section 3.9, Intel has worked to voluntarily eliminate uses of long-chain PFAS in its manufacturing processes. It is Intel's policy to no longer use, buy, or conduct research with long-chain PFAS materials. In 2022, Intel established a PFAS policy to further restrict use of certain PFAS materials in its fabs and to limit uses to those where no viable non-PFAS alternatives are available.

For any residual PFAS in Facility wastewater, Intel's WaTR plant (implemented to help meet Intel's commitment to treat and reuse more water on-site) has been demonstrated as an effective treatment system for PFAS estimated to remove more than 90 percent of residual detectable PFAS treated through thermal and reverse osmosis systems, leaving only low parts per trillion to low parts per billion remaining in Facility wastewater discharges. These estimated residual PFAS concentrations in wastewater discharges from the Facility are based on sampling data for a comparable water treatment system at another Intel facility in the United States. Although there are no current regulations on testing or pre-treatment for PFAS in wastewater or disposal of PFAS waste, EPA is in the process of developing such regulations for PFAS.

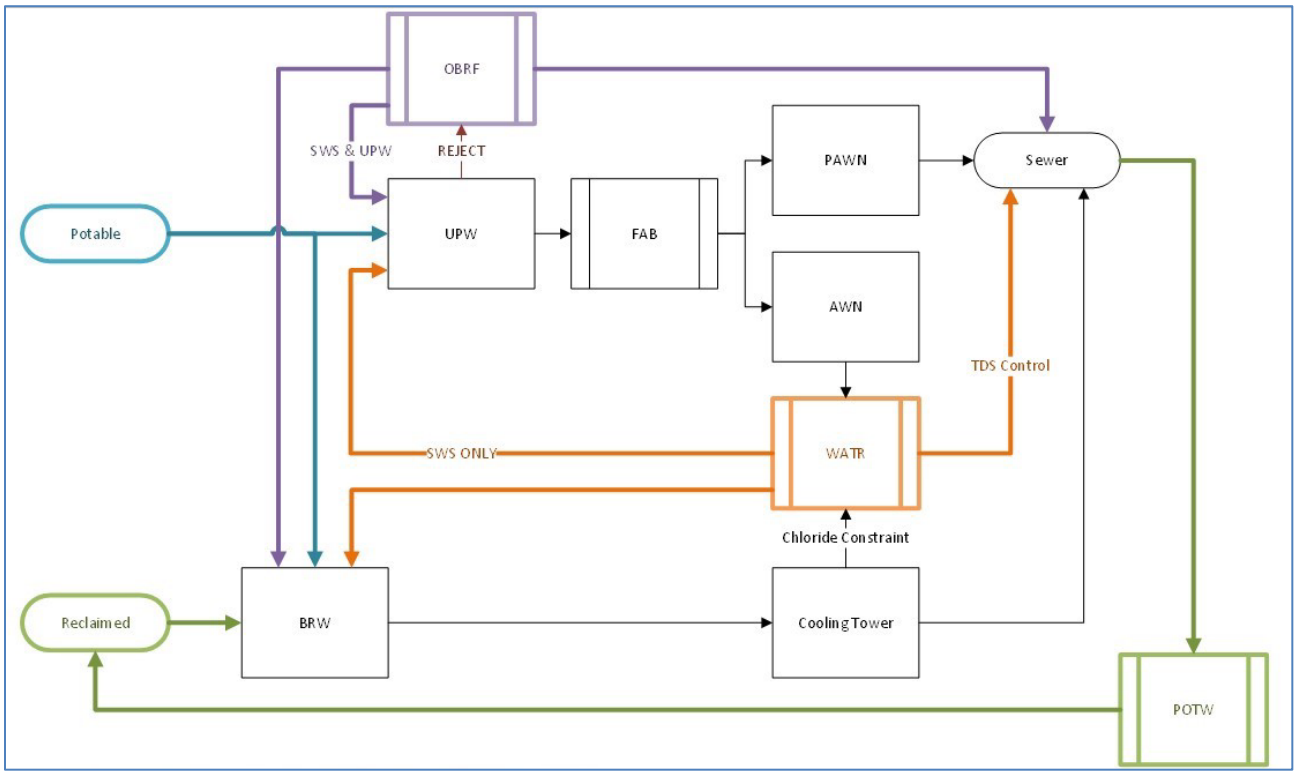
The WaTR plant is the primary wastewater reclamation and sanitary sewer pre-treatment system at the Facility and operates under the Facility's Type 2 Reclaimed Water General Permit, issued by ADEQ, effective June 18, 2019 (No. R105568), which allows direct reuse of reclaimed water for beneficial purposes (but not for potable water). The Facility has had no compliance issues under this permit to date. The WaTR plant occupies 12 acres at the Facility and has a capacity to treat 9.1 MGD of wastewater derived from manufacturing process and from the Facility's cooling towers. Treated water from the WaTR plant is either sent back into the Facility (with additional treatments) or enters the sanitary sewer system in compliance with the Facility's industrial user permit requirements. In 2023, the WaTR plant reclaimed approximately 688 million gallons of water

(approximately 1.9 MGD), accounting for approximately 39 percent of water entering the reclamation plant that year (including from existing Fab 42). In this way, the WaTR plant reduces the Facility's demand for additional potable water from the City. Intel OC expanded the WaTR plant's capacity to accommodate wastewater flows from Fab 52 in May 2024 and plans to further expand its capacity to accommodate wastewater flows from Fab 62 by December 2026.

In addition, separate on-site pre-treatment systems, called Acid Waste Neutralization systems (AWNs), receive corrosive wastewaters from all existing Intel OC Facility fabs and neutralize these wastewater flows prior to discharge to the WaTR plant. Wastewater discharges from all of Intel's pretreatment systems to the City sanitary sewer are subject to the limitations of the Electrical and Electronic Components ELGs (40 C.F.R. Part 469.18).

The Facility also operates an on-site pre-treatment system, called PAWN (plated acid waste neutralization), to treat electroplating wastewaters and azoles. Prior to PAWN, some wastewater streams are segregated to pre-treatment technologies that remove copper and cobalt. All wastewaters from PAWN are directly discharged into the City's sanitary sewer.

Figure 3-1. Intel Ocotillo Water Treatment Flow Diagram



Note: SWS = soft water system; UPW = ultrapure water; PAWN = plated acid waste neutralization; AWN = acid waste neutralization; BRW = blended reclaim water; TDS Control = total dissolved solids control; OBRF = Ocotillo Brine Reduction Facility; POTW = publicly owned treatment works; WaTR = Water Treatment and Reclaim plant.

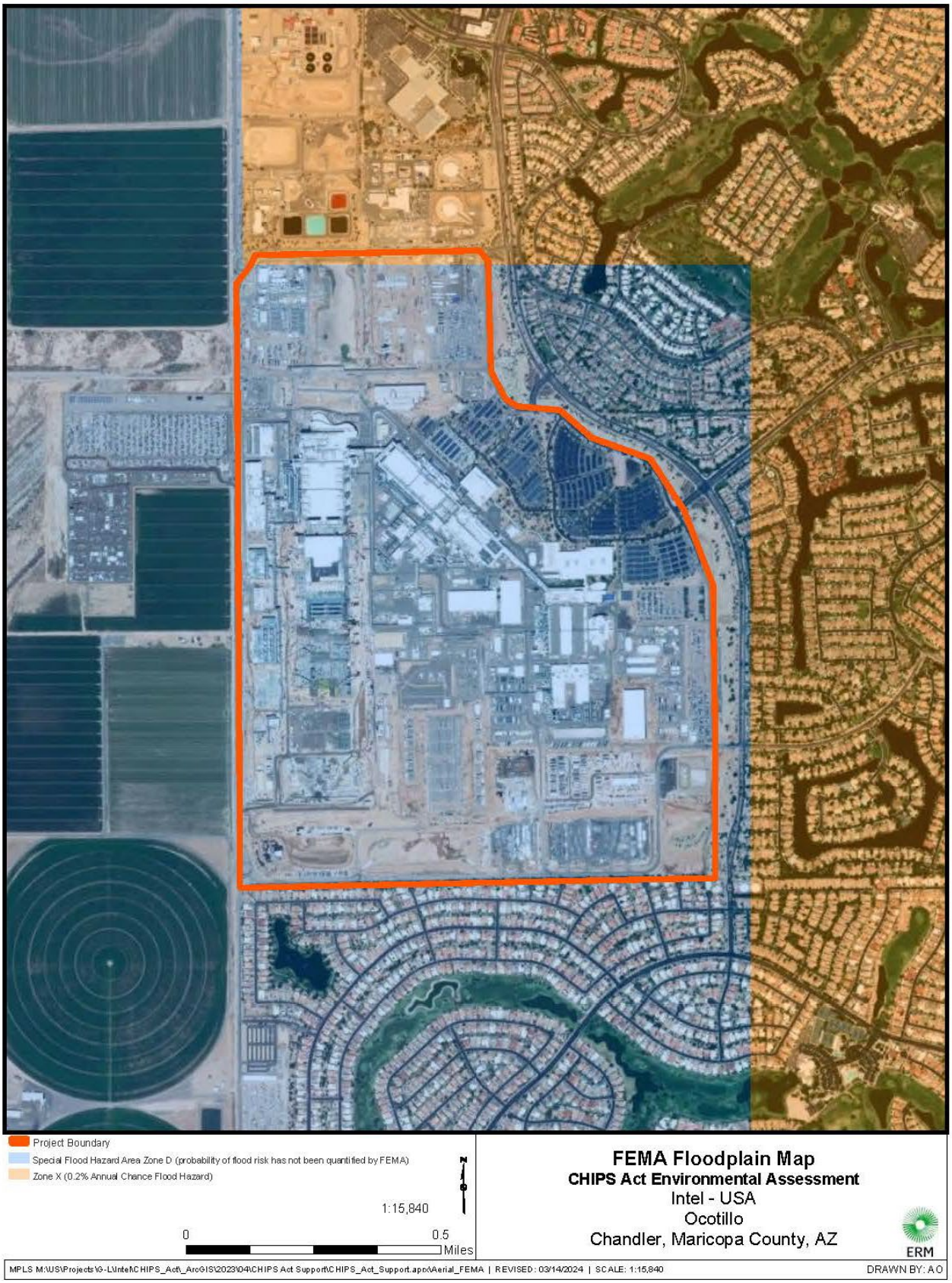
Figure 3-1 shows the flow of city water (potable water) to the Intel OC Facility, where it is first treated within Intel's ultrapure water (UPW) plant. Any water not meeting UPW standards is rejected and sent to the OBRF where it can be treated again for either potential reuse in the UPW system or blended in the BRW for use in the cooling towers or sent to the City sewer system. Water leaving the fabs undergoes acid waste neutralization by either the PAWN or AWN. Water treated by the PAWN is sent to the sewer system. Water treated by the AWN is sent to Intel's WaTR system

where it pre-treated for either reuse in the Intel UPW system or sent to the sewer. Similarly, spent cooling water from Intel's cooling towers is treated in the WaTR system or undergoes further TDS treatment before being sent to the sewer. All water from the sewer then heads to the POTW where the City reclaims the water for Intel OC use or for other beneficial uses.

3.3.2.5 Floodplains

Based on the FEMA floodplain map for the project area (Figure 3-2), the Facility is entirely within Special Flood Hazard Area Zone D, indicating the area has potentially moderate to high risk of flooding, but the probability of flood risk has not been quantified. Since Intel began occupying this property in the mid-1990s, there has not been any observed flooding at the Facility.

Figure 3-2. FEMA Floodplain Map



3.3.3 Environmental Consequences

In this EA, the analysis of water resources presents the potential effects on groundwater, surface water, water supply, stormwater, wastewater, and floodplains. There are no wetlands present on the Facility.

3.3.3.1 Proposed Action

As described below, based on the Facility's coordination of water supply and wastewater treatment and reclamation with the City of Chandler, as well as compliance with applicable permit conditions, the Proposed Action would result in less than significant effects on water resources.

Groundwater

Under the Proposed Action, the Facility would not draw groundwater directly, although it may indirectly use some regional groundwater through water supplied from the City of Chandler. No direct effects to groundwater would occur from the purchase and installation of SME. Indirect effects to groundwater supply and discharges to groundwater from Facility operations are described under the Water Supply and Stormwater and Wastewater subsections below.

Surface Water

Under the Proposed Action, the Facility would not discharge directly to surface water bodies, although it may indirectly use some regional surface water through water supplied from the City. No direct effects to surface water would occur from the purchase and installation of SME. Indirect effects to surface water supply and discharges to surface water from Facility operations are described under the Water Supply and Stormwater and Wastewater subsections below.

Water Supply

Water demand from the operation of SME for wafer production in Fabs 42, 52, and 62 would indirectly affect water resources. Water would be obtained from the City in accordance with the 2021 Development Agreement. The operation of the three modernized fabs is expected to use up to 14 MGD of water in total: up to 6.1 MGD of potable water from the City and up to 7.9 MGD of reclaimed water from a combination of internal (Intel OC) and external (City) sources, resulting in indirect, minor effects on regional surface and groundwater supplies.

As noted above, the City has committed to providing the potable water required for the Proposed Project from its existing sources and to provide reclaimed water from the OWRF and AWRF. The City will provide additional reclaimed water from the RWIF scheduled to be completed by October 2024. Although the RWIF is not essential to Proposed Project operations, it will provide a backup if Intel OC's on-site WaTR plant is unavailable.

In addition to these municipal sources of potable and reclaimed water, Intel OC is generating reclaimed water from the on-site OBRF and the WaTR plant. Use of water reclamation systems supports wastewater discharge compliance, increases water quality in the watershed, and helps the City maintain its Assured Water Supply through replenishment of groundwater supplies. Overall, the City has budgeted adequate water to support the Proposed Project while maintaining its Assured Water Supply. Under the Proposed Action, indirect effects on water supply would be minor.

Stormwater and Wastewater

The Intel OC Facility's existing stormwater storage system and retention basins are adequately sized to meet the infiltration requirements to support the two new fabs. The Facility is not expected to discharge stormwater in all but the most extreme events (exceeding the 100-year storm event).

Effluent from the Facility's WaTR plant, PAWN treatment system, and cooling towers is discharged to the City's OWRF and AWRF, which have sufficient capacity to treat the flows expected under the Proposed Project. Total toxic organics discharge limits and monitoring requirements have been updated for the Facility's Industrial Wastewater Permit to include wastewater anticipated from the Proposed Project. Intel also has implemented pre-treatment systems and disposal management options to minimize any downstream effects to water supplies that meet the ELGs for semiconductor manufacturing. Overall, the Proposed Project would utilize these improvements to the existing infrastructure, including the expansion of the WaTR plant, improvements to sewage conveyances, and modification of the existing wastewater discharge permit to accommodate the new operations. Effects on water resources from wastewater discharges anticipated from the Project would be minor.

Because there are no current regulations for testing or ELGs for PFAS in wastewater, the Facility's current wastewater pretreatment permit does not require sampling or treatment for PFAS. As discussed above, Intel OC segregates manufacturing process chemicals known to contain PFAS from other waste streams, directs the waste that contains PFAS to a closed bulk system, and arranges for it to be shipped to an off-site permitted treatment and disposal facility. For any residual PFAS in Facility wastewater, the WaTR plant is an effective treatment system for PFAS, estimated to remove more than 90 percent of residual detectable PFAS treated through the plant's thermal and reverse osmosis systems. Levels of any remaining detectable PFAS in wastewater discharged off-site would fall within the low parts per trillion to low parts per billion range. Wastewater leaving the Facility is routed to the City's OWRF and AWRF, where it is combined with other wastewater sources and again treated to Class A+ standards before it is used for irrigation, discharged to City injection wells to recharge the aquifer, diverted to supply the City's reservoirs, or returned to Intel OC for reuse as reclaimed water. Based on the locations of the City injection wells, no drinking water supplies are expected to be adversely affected by City wastewater discharge (Kennis, 2024). While drinking water supplies would not be affected, the Proposed Project would cause minor indirect effects to groundwater quality through recurring yet very small amounts of residual PFAS discharged to the City's OWRF and AWRF that are combined with other wastewaters, treated, and used to recharge the local aquifer. The use of PFAS-containing chemicals on-site is described in Section 3.9.2.2 (Hazardous Materials).

Floodplains

No new effects to floodplains are expected under the Proposed Action, as no new ground disturbance would occur, and there has been no past flooding documented at the Facility.

Overall

Overall, effects on water resources as a result of the Proposed Action would be negligible to minor.

3.3.3.2 No Action Alternative

Under the No Action Alternative, effects on water consumption and wastewater discharge (which could indirectly affect groundwater and surface water supplies) would remain consistent with current Facility operations and existing equipment. Stormwater would continue to be managed with the Facility's existing stormwater storage system and retention basins, subject to the Facility's

current stormwater permit conditions. The Intel OC Facility is not expected to discharge stormwater in all but the most extreme events. Similarly, no new effects to floodplains are expected, as no new ground disturbance would occur, and there has been no past flooding documented at the Facility. Effects on stormwater and floodplains would be negligible.

3.3.4 BMPs and Mitigation

The Facility's existing wastewater discharge permit has been modified to apply to the operations from the modernization of Fabs 42, 52, and 62. In addition to the applicable requirements imposed by that permit, Intel will follow BMPs to reduce effects on water supply and water recharge on-site. Intel expanded its on-site WaTR plant to accommodate wastewater flows from Fab 52 in May 2024 and plans to further expand the WaTR plant's capacity to accommodate wastewater from Fab 62 by December 2026. Intel OC also will continue to utilize reclaimed water from the WaTR plant, the OBRF, and the OWRF and AWRF to reduce the Facility's demand for freshwater from the City. Finally, although there are no current regulations for testing or ELGs for PFAS in wastewater, the Facility segregates PFAS-containing waste for off-site treatment and disposal, and the WaTR plant is estimated to remove more than 90 percent of any residual detectable PFAS from Facility wastewater.

3.4 Cultural Resources

This discussion of cultural resources includes historic properties, architectural resources, archaeological resources, cultural items subject to the Native American Graves Protection and Repatriation Act, Indian sacred sites, and other properties of cultural significance.

3.4.1 Regulatory Setting

Cultural resources are governed by federal laws and EOs, including but not limited to the National Historic Preservation Act (NHPA), 54 U.S.C. § 300101 *et seq*. and the Archeological and Historic Preservation Act (AHPA), 54 U.S.C. §§ 312501-312508. For purposes of this analysis, the term "cultural resources" refers to all resources of historic, cultural, or archaeological importance protected by any federal, state, or local laws applicable to projects and sites evaluated under the CHIPS Incentives Program.

The NHPA is the nation's primary historic preservation law and defines the legal responsibilities of federal agencies for the identification, management, and stewardship of historic properties. Section 106 requires federal agencies to consider the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. Through consultation with interested parties, the federal agency identifies historic properties potentially affected by the undertaking, assesses effects, and seeks ways to avoid, minimize, or mitigate any adverse effects. 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). In addition, the NHPA requires federal agencies to assess all effects of the undertaking within the area of potential effects (APE), which 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.

The NHPA also requires that federal agencies provide for the preservation of historical and archaeological data (including relics and specimens) which might otherwise be irreparably lost or destroyed due to any alteration of the terrain as a result of any federal undertaking.

Arizona Revised Statute (A.R.S.) §41-865 regulates the protection of funerary objects and human remains that exceed 50 years of age and reside on private lands. As directed by the Arizona State Historic Preservation Office (SHPO), Maricopa County Environment Policy #5 supports cultural resources surveys and any needed mitigation measures established prior to new development (Maricopa County 2016). Accordingly, Maricopa County and state permitting authorities may require review of potential cultural resource effects of undertakings in the County.

3.4.2 Affected Environment

Pursuant to the NHPA, CPO consulted with the SHPO, Indian tribes, and other interested parties to identify historic properties and other cultural resources that may be affected by the Proposed Project.

For the purposes of NHPA Section 106 review of the Proposed Project, the direct APE consists of the three fab buildings in which SME would be installed, and the indirect APE consists of the immediately adjacent areas within the Facility. The indirect APE consists of the entire Intel Ocotillo site boundary. CPO's APE map for the Proposed Project is included in Appendix B. For purposes of this analysis, cultural resources in the APE can be divided into three major 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 (a) rooted in the community's history and (b) important to maintaining the continuing cultural identity of the community.

3.4.2.1 Archaeological Resources

A review of the Arizona State Museum's secure online database, AZSITE, on April 24, 2023, showed no previously recorded precontact period or historic period archaeological sites within the Facility boundary. No cultural resource studies have been conducted within the Facility boundary.

3.4.2.2 Architectural Resources

A review of AZSITE on February 15, 2024, showed no previously recorded architectural resources within the Facility boundary. No cultural resource studies have been conducted within the Facility boundary.

Per the review of historical aerial photographs, the three buildings included in the Proposed Project are less than 45 years of age. Construction of Fab 42 was substantially completed in 2013 (with SME installation completed in 2018). Construction of Fab 52 was completed in 2023. Construction of Fab 62 began in 2021 and is currently ongoing.

The criteria for evaluation of NRHP eligibility are outlined at 36 C.F.R. Part 60.4. A district, site, building, structure, or object must generally be at least 50 years old to be eligible for consideration

as an historic property. That district, site, building, structure, or object must retain integrity of location, design, setting, materials, workmanship, feelings, and association, as well as meet one of the following criteria to demonstrate its significance in American history, architecture, archeology, engineering, and culture. A district, site, building, structure, or object must:

- Be associated with events that have made a significant contribution to the broad patterns of history;
- Be associated with the lives of people significant in our past;
- Embody the distinct characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction; or
- Have yielded, or may be likely to yield, information important in prehistory or history.

3.4.2.3 Resources of Importance to Tribes

A Tribal and Federal Land maps review revealed that the Intel OC Facility is not on federally owned or managed lands or tribal lands. The western edge of the Facility is located adjacent to the exterior boundary of a reservation belonging to the Gila River Indian Community (GRIC).

Archival research was conducted to identify known cultural resources in or near the Facility. Bureau of Land Management General Land Office mapping was consulted. Plat maps dating to a survey conducted in 1892 show no development in the area. Historic topographic maps and aerials show roads adjacent to the Facility as early as 1914 but also indicate a lack of commercial or residential development in the area. Through the mid-twentieth century, the area was utilized for agricultural purposes. Developed land began to appear in the mid-1980s around the Facility., which was developed for industrial use in approximately 1995. From the earliest aerials through the late 1980s, a wash can be seen bisecting the Facility, suggesting a higher potential for cultural activity in the area of the Proposed Project. No listed or eligible cultural resources have been recorded within 0.5 mile of the facility boundary.

Intel OC hosts a Community Advisory Panel (CAP) that has been meeting for more than 30 years. The CAP serves as a forum for community leaders and Intel subject matter experts and leadership to meet quarterly for updates on Intel's business and local operations, as well as to discuss community-related issues and opportunities to work together. The CAP is currently chartered for 30 representatives from government, K-12 and higher education, local utilities, suppliers, chambers, small and large businesses, nonprofits, and neighboring homeowner associations (Intel 2022c). The GRIC participates on the CAP, and receives information on Intel OC's proposed expansion activities through the CAP.

3.4.2.4 Government-to-Government Consultation

CPO consulted with other federally recognized Indian tribes on actions with the potential to significantly affect protected tribal resources, tribal treaty rights, or Indian lands. CPO sent letters to 12 Tribes (listed in Section 8) on March 26, 2024, describing the proposed undertaking and its potential effects on cultural resources and requesting comments from the Tribes on the proposed undertaking.

The GRIC Tribal Historic Preservation Office (THPO) responded to this consultation letter, stating that not enough information was provided to adequately evaluate project effects on cultural

resources within the APE. The THPO requested that CPO conduct a Class I Archeological Assessment Records Review for the APE. CPO conducted the requested Class I assessment and provided the results to the THPO on May 31, 2024. On June 3, 2024, the THPO responded, stating that it identified no religious or culturally significant sites within the APE and that it would concur with a finding of no potential effects on historic properties. The THPO requested that CPO contact the GRIC in the event of any unanticipated discoveries.

3.4.3 Environmental Consequences

Analysis of potential effects on cultural resources considers both direct and indirect effects. Direct effects may be the result of physically altering, damaging, or destroying all or part of a resource, altering characteristics of the surrounding environment that contribute to the importance of the resource, introducing visual, atmospheric, or audible elements that are out of character for the period the resource represents (thereby altering the setting), or neglecting the resource to the extent that it deteriorates or is destroyed. Indirect effects are those caused by the undertaking that are later in time or farther removed in distance but are still reasonably foreseeable.

3.4.3.1 Proposed Action

The Facility and its surrounding area were evaluated for the potential presence of NHRP-listed or eligible cultural resources and no archaeological sites nor historic structures were identified. Fab 42 is less than 50 years of age and does not meet the standards for eligibility for listing on the NRHP.

CPO initiated Section 106 consultation with the AZ SHPO on March 26, 2024, to present the proposed undertaking. On April 19, 2024, the SHPO responded with a finding of No Historic Properties Affected as appropriate for the undertaking. As stated above, no known NHRP-listed or eligible cultural resources are present on or near the Facility and no previously undisturbed areas would be affected by the Proposed Project or the Intel OC Facility expansion. In addition, after review of a Class I assessment, the GRIC THPO did not identify any religious or culturally significant sites in the project area. CPO and Intel will notify the GRIC in the event of any unanticipated discoveries. In sum, effects on resources of tribal cultural significance are not anticipated.

The GRIC's water supply and agricultural operations would not be adversely affected, and the GRIC has not expressed concerns with those resources as a result of the expansion. Due to the agricultural use of the GRIC land to the west of the Intel OC Facility, the potential for effects of "salt drift" from the Facility's cooling towers was assessed. A small quantity of water can be carried from the cooling towers as mist or small droplets known as "drift." Drift water has the same chemical composition as the circulating water in the cooling tower, and therefore typically has high salt concentrations. This salt drift could cause effects on surrounding areas and agriculture if the concentration is high. However, drift is controlled on-site with drift eliminators on the cooling towers. The eliminators prevent the water droplets and mist from escaping the cooling towers by causing the droplets to change direction and lose velocity at impact on the eliminator blade walls and fall back into the cooling towers. Additionally, some water that is used in the cooling towers has been desalinated through the WaTR plant described in Section 3.3.2.4. The drift eliminators, combined with the high efficiency of the cooling towers and the desalination of the water used in the cooling towers, substantially reduce the risk for effects related to salt drift on GRIC agricultural operations.

There are no NRHP-listed or eligible archaeological sites, historic structures, or resources of tribal religious or cultural significance identified in the APE, and the Proposed Project would not involve

new ground disturbance or a significant visual change to the area; therefore, the Proposed Action is not anticipated to cause direct or indirect effects on cultural resources.

3.4.3.2 No Action Alternative

The same conditions and findings relating to cultural resources under the Proposed Action discussed in Section 3.4.3.1 above would apply to the No Action Alternative. Therefore, the No Action Alternative would not result in direct or indirect effects on cultural resources.

3.4.4 BMPs and Mitigation

The Proposed Action is not anticipated to result in any direct or indirect effects on cultural resources, and no mitigation measures are required. In the event of an unanticipated discovery of cultural resources during the undertaking, CPO and Intel will immediately notify the GRIC THPO and other authorities as appropriate.

3.5 Biological Resources

Biological resources include living, native, or naturalized plants and animal species and the habitats within which they occur. Habitat can be defined as the resources and conditions present in an area that support a plant or animal. For purposes of this analysis, biological resources are divided into four major categories: (1) federal and state protected species; (2) wildlife; (3) terrestrial vegetation; and (4) invasive species. Marine species are not located within the project's region of influence (ROI).

3.5.1 Regulatory Setting

Special-status species, for the purposes of this assessment, are those species listed as threatened or endangered under the Endangered Species Act (ESA), 16 U.S.C. § 1531 *et seq*., the Migratory Bird Treaty Act (MBTA), 16 U.S.C. § 703 *et seq*., or the Bald and Golden Eagle Protection Act (BGEPA), 16 U.S.C. § 668 *et seq*.

The purpose of the ESA is to conserve the ecosystems upon which threatened and endangered species depend and to conserve and recover listed species. Section 7 of the ESA requires federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) to ensure that their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species or result in the destruction or adverse modification of designated critical habitat. Under the ESA, it is unlawful to "take" (e.g., harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect) a listed species without a permit.

Birds, both migratory and most native-resident bird species, are protected under the MBTA, and their conservation by federal agencies is mandated by EO 13186 (Migratory Bird Conservation). Under the MBTA, it is unlawful to "take" or possess listed bird species or their nests or eggs without a permit. Bald and golden eagles are protected by the BGEPA. Under the BGPEA it is unlawful to "take" bald or golden eagles or their nests or eggs without a permit.

The Arizona Game and Fish Department (AZGFD) conserves diverse wildlife resources and manages them for safe, compatible outdoor recreation opportunities for current and future generations. AZGFD publishes the Arizona Wildlife Conservation Strategy, which includes a list of Species of Greatest Conservation Need with their vulnerability scores. The Strategy identifies key conservation species, sensitive plant species, and additional influential species (species that can

affect Species of Greatest Conservation Need and their habitats directly or indirectly through overgrazing, outcompeting native species, or altering predator-prey interactions) (AZGFD 2022).

3.5.2 Affected Environment

The following discussions provide a description of the existing conditions for each of the categories under biological resources at the Facility. Threatened and endangered species are discussed in each respective section below with a composite list applicable to the Proposed Action provided in Table 3-5.

3.5.2.1 Federal and State Protected Species

Endangered Species Act

A desktop review of the USFWS Information for Planning and Consultation database shows the Facility is not within mapped critical habitat for federally listed species, with the exception of critical habitat for the cactus ferruginous pygmy-owl, which USFWS lists as threatened wherever found (USFWS 2024a). A review of AZGFD data shows that the Facility is located within the Mexican Wolf Experimental Population Area. However, neither the cactus ferruginous pygmy-owl nor the Mexican wolf have ever been observed at the Facility.

Migratory Bird Treaty Act

The most recent bird nesting survey was completed in August 2023 prior to removing trees along the Facility boundary to accommodate a new wall along the southern property line to reduce noise and light effects. There were nine nests observed that were occupied by mourning doves and white-winged doves. These nests were either active or the birds were brooding at the time of the survey. Intel waited until the chicks had fledged prior to removing any trees or active nests, consistent with the MBTA. The Facility is completely developed and heavily industrial; therefore, there is limited appropriate habitat for migratory birds within the boundaries of the Facility.

Bald and Golden Eagle Protection Act

Some nesting habitat is present within the Facility for the bald eagle (*Haliaeetus leucocephallus*); however, the lack of on-site perennial water sources results in marginal conditions for the species. No suitable nesting habitat is present within the Facility regarding the golden eagle (*Aquila chrysaetos*) and the species has moderate potential for forage in the Facility (USFWS 2024b). No bald or golden eagle nests were identified during the 2020 October field surveys within the Facility boundary, although a single bald eagle nest is located in a tree just outside the fence line, approximately 400 feet away from new Facility infrastructure. The BGEPA prohibits the take of bald or golden eagles without a USFWS permit.

A temporary incidental take permit (ITP) was issued to Intel OC on March 3, 2022, to authorize the disturbance to the bald eagle nest. The ITP is valid from April 1, 2022, to December 31, 2024 (USFWS 2022). A 330-foot buffer was implemented around the nest during the species' breeding season in this region (November to May). The ITP also requires Intel OC to ensure bald eagle sensitivity training for construction personnel and invasive weed removal to conserve and protect the bald eagle nest. A recent review of the nest status found that the bald eagle had successful 2022 and 2023 nesting seasons, and in April 2024 two eaglets hatched, indicating that the ongoing construction has not disturbed the eagles' nesting or breeding behavior. Intel voluntarily worked with the GRIC, the AZGFD, and USFWS to eagle-proof the conductors on a pump station located approximately 150 feet from the bald eagle nest tree.

State Protected Species

There have been no state protected species observed within the Facility boundaries, though some state protected species have been known to potentially occur in the Facility's ROI (Table 3-5). As stated above, the Facility is within critical habitat for the cactus ferruginous pygmy-owl, which is both a state and federally threatened species; however, members of this species have never been observed within the Facility boundary.

Table 3-5. Threatened and Endangered Species Known to Occur or Potentially Occurring in the ROI and Critical Habitat Present in ROI

Common Name	Scientific Name	Federal Listing Status	State Listing Status	Critical Habitat Present?
Cactus ferruginous pygmy-owl	*Glaucidium brasilianum cactorum*	FT	ST	Y
California least tern	*Sternula antillarum browni*	FE	SE	N/A
Yellow-billed cuckoo	*Coccyzus americanus*	FT	ST	N
Gila topminnow	*Poeciliopsis occidentalis*	FE	SE	N/A
Monarch butterfly	*Danaus plexippus*	C	N/A	N/A

C = candidate species for federal ESA listing; FE = federal endangered; FT = federal threatened; N/A = not applicable; SE = state endangered; ST = state threatened.

3.5.2.2 Wildlife

Other non-protected wildlife species have been observed within the Facility boundary, including a fox, skunks, rattlesnakes, mice, and bats. However, due to the industrial nature of the Facility, adequate habitat for these species is limited.

3.5.2.3 Terrestrial Vegetation

There are no vegetation types present on the Intel OC Facility that are state or federally classified as endangered or threatened.

3.5.2.4 Invasive Species

There are no invasive species present at the Intel OC Facility. During vegetation removal and construction, Intel implemented a BMP to prevent the spread of invasive plant species by washing equipment prior to leaving the Facility (Section 2, Table 2-2).

3.5.3 Environmental Consequences

This analysis focuses on wildlife or vegetation types that are important to the function of the ecosystem or are protected under federal or state law.

3.5.3.1 Proposed Action

Because of the Facility's industrial setting and land use, its lack of suitable natural habitat, and resultant low potential for wildlife use, and based on the results of informal consultation with USFWS and the AZGFD, the Proposed Action is not anticipated to have any direct, significant adverse effects on biological resources.

Delivery, staging, and installation activities of the SME associated with the Proposed Action would be short-term and occur on either paved surfaces or inside buildings. No new ground disturbance or erection of buildings would be required. There are no federal or state protected species known to reside or breed within the Facility boundary that could be affected by the Proposed Action. The SME delivery, staging, and installation would not occur within the 330-foot buffer for the bald eagle nest at the Facility's western border. The Proposed Action therefore would be unlikely to cause disturbance of bald eagles. Vehicle traffic and heavy equipment use, such as cranes during the delivery and installation process, could result in temporary minor noise disturbance and the potential (although low) for unintentional collision, injury, or death to birds and transient species. However, due to the highly industrial nature of the Facility, overall effects on biological resources are anticipated to be minor.

Although the Facility is within critical habitat for the cactus ferruginous pygmy-owl, there have been no observations of the owl within the Facility, and the industrial setting of the Facility constrains suitable habitat. Therefore, the Proposed Project is not anticipated to affect federal- or state-listed threatened or endangered species.

Although ongoing Intel OC construction is not within the scope of the Proposed Project, the construction may result in indirect effects on biological resources. Noise and lighting levels during ongoing construction of Fabs 52 and 62 likely would cause temporary disturbance to species within the Facility boundary. During future operation of the modernized fabs, noise and lighting effects on biological resources would be negligible to minor. Similarly, temporary increases in existing vehicular traffic volumes during construction of the fabs likely would result in minor disturbances to species within the Facility boundary. Dust and emissions during Facility construction are expected to increase over current levels; however, due to the implementation of BMPs and the temporary nature of the construction phase, effects on biological resources are expected to be minor and temporary.

During construction to date, vegetation removal has not been necessary. Other potential effects on biological resources during construction would be managed to the extent practicable and are expected to be minor and temporary.

Overall, the Proposed Action would result in negligible to minor direct and indirect effects on federal and state protected species and critical habitat.

3.5.3.2 No Action Alternative

Under the No Action Alternative, limited activities to make Fabs 52 and 62 weather-tight could include temporary minor noise disturbance and potential (though low) for unintentional collision injury or death to birds and transient species from material deliveries, worker traffic, and heavy construction activities. As Fabs 52 and 62 could remain vacant for several months or years under the No Action Alternative, animals and birds could infiltrate the structures for temporary or long-term habitation. Intel would potentially need to routinely inspect the buildings, trap or harass wildlife to remove them in accordance with applicable local, state, and federal laws, and patch up openings to Fabs 52 and 62. Removal of wildlife from vacant buildings, while likely infrequent, could result in minor adverse effects, such as unintentional injury and mortality of the removed individual animal. Overall, the No Action Alternative would result in negligible to minor direct and indirect effects on federal and state protected species and critical habitat.

3.5.4 BMPs and Mitigation

No significant effects on biological resources are anticipated, and no mitigation is required. During construction activities and operation of the Proposed Project, Intel will continue to implement BMPs for the protection of the bald eagles and their nest located at the Facility's western boundary.

3.6 Noise

This discussion of noise includes the types or sources of noise and the associated sensitive receptors in the human environment. Noise in relation to biological resources and wildlife species is discussed in Section 3.5.

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air or water, and are sensed by the human ear. The perception and evaluation of sound involves three basic physical characteristics:

- **Intensity**—the acoustic energy, expressed in terms of sound pressure, in a logarithmic unit known as the decibel (dB).
- **Frequency**—the number of cycles per second the air vibrates, expressed in hertz (Hz).
- **Duration**—the length of time the sound can be detected.

Noise is defined as unwanted or annoying sound that interferes with or disrupts normal human activities. Although continuous and extended exposure to high noise levels (e.g., through occupational exposure) can cause hearing loss, the principal human response to noise is annoyance. The response of different individuals to similar noise events is diverse and is influenced by the type of noise, perceived importance of the noise, its appropriateness in the setting, time of day, type of activity during which the noise occurs, and sensitivity of the individual. An extensive amount of research has been conducted regarding noise effects, including annoyance, speech interference, classroom/learning interference, sleep disturbance, effects on recreation, potential hearing loss, and nonauditory health effects.

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 (USEPA 2015).

The loudest sounds that can be comfortably heard by the human ear have intensities a trillion times higher than those of sounds barely heard. Because of this vast range, it is unwieldy to use a linear scale to represent the intensity of sound. As a result, noise intensity is represented using the logarithmic unit of dB, also referred to as the sound level. Normal speech has a sound level of approximately 60 dB. To mimic the human ear's non-linear sensitivity and perception of different frequencies of sound, the spectral content is weighted. For example, environmental noise measurements are usually on an "A-weighted" scale, which places less weight on very low and very high frequencies to replicate human hearing sensitivity. A-weighting is a frequency-dependent adjustment of sound level used to approximate the natural range and sensitivity of the human auditory system.

Noise generally attenuates with distance with an inverse square relationship. For example, a noise source reading 95 dB (equivalent to a motorcycle) at 3 feet from that source would normally attenuate to approximately 39 dB (less than the hum of a refrigerator) at 2,000 feet (WKC Group 2024).

3.6.1 Regulatory Setting

Primary responsibility for control of noise rests with state and local governments. State, county and city regulations and ordinances are described below.

3.6.1.1 City of Chandler Noise Ordinance

The City of Chandler has a noise ordinance that is applicable to the Facility. The ordinance (Part III, Chapter 11-10.2 of the City code) (City of Chandler 1999) allows construction between the hours of 5 a.m. and 10 p.m. on weekdays and 7 a.m. to 7 p.m. on weekends and holidays. The hourly limits apply when construction will occur within 500 feet of any residence. The ordinance does not contain any noise limits for operations.

3.6.1.2 Maricopa County Noise Ordinance

The Maricopa County Hours of Construction Ordinance (Maricopa County 2004) limits the allowable hours of construction for commercial and industrial projects when construction will occur within 1,500 feet of an occupied residence. These allowable hours of construction are between the hours of 5 a.m. and 10 p.m. on weekdays, and 6 a.m. to 7 p.m. on weekends and holidays. Figure 3-3 shows the 1,500-foot buffer surrounding Fabs 42, 52, and 62, where the Proposed Project activities would occur.

3.6.1.3 State of Arizona Noise Regulations

No State of Arizona noise standards applicable to the Facility were identified.

3.6.2 Affected Environment

Many components may generate noise and warrant analysis as contributors to overall noise effects. Response to noise varies depending on the type and characteristics of the noise, the distance between the noise source and whoever hears it (the receptor), receptor sensitivity, and time of day. A noise sensitive receptor is defined as a land use where people involved in indoor or outdoor activities may be subject to stress or considerable interference from noise. Sensitive receptors often include residential dwellings, hospitals, nursing homes, educational facilities, and libraries. Sensitive receptors may also include noise-sensitive cultural practices, some domestic animals, or certain wildlife species. Potentially noise-sensitive wildlife species are discussed in Section 3.5.

The nearest sensitive receptors to the Intel OC Facility are residences, which are located approximately 2,000 feet to the south of Fab 62 (the Sun Lake residential community), and approximately 2,400 feet to the east of Fab 42, where Proposed Project activities will occur (Figure 3-3). The closest school is Tarwater Elementary School, approximately 2.3 miles northeast from the Facility.

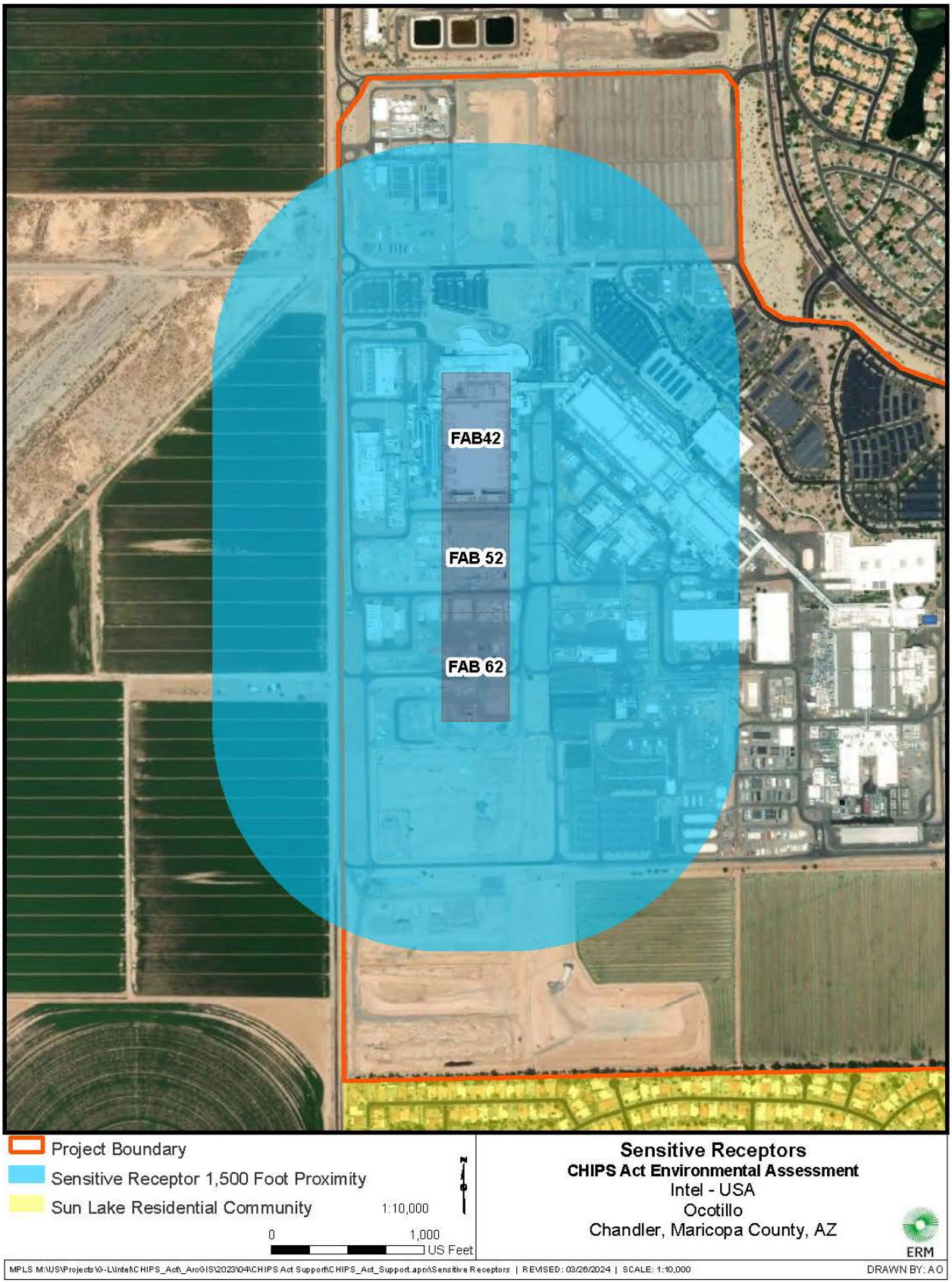
To decrease disturbance and accommodate concerns from the Sun Lake residents immediately south of the Intel OC Facility, Intel erected a sixteen-foot wall and planted trees along that wall to decrease noise and visual effects on those residents. The planning process for this wall and landscaping included community open house meetings, an online survey, and distributing flyers to assess the

residents' concerns and preferences on how best to alleviate those concerns. Prior to constructing the wall, Intel received one noise complaint. Once construction began, Intel received several noise complaints related to the construction. However, once the wall was constructed, the noise complaints reduced considerably. Construction of the wall was completed in the Fall of 2022, while the landscaping portion of the project is scheduled to be completed in 2024.

The Facility is industrial and there are no noise sensitive receptors inside the Facility boundary. The Facility implements hearing conservation programs to protect workers in compliance with applicable Occupational Safety and Health Administration (OSHA) Standards (see also Section 4.8.1.1 for the relevant OSHA standard for protection from excessive noise). In addition, cleanroom air systems are housed on separate floors from employee workspaces, protecting workers and vibration-sensitive manufacturing processes.

Noise abatement is also a critical component of design and building layout due to the sensitive nature of the manufacturing process, and Intel includes noise abatement as part of its Good Neighbor Policy. The Facility has a number of concentrated noise sources associated with high volumes of intake and circulation air required to maintain cleanrooms and the complex exhaust and pollution-control systems. Noise sources include air units, exhaust fans, cooling towers, boilers, compressed air vents, emergency generators, pumps, valves, piping, and delivery traffic.

Figure 3-3. Sensitive Receptors



The facility produces continuous noise, as it operates on a 24-hour a day schedule. Engineering controls to reduce noise include silencers, enclosures and barriers, air flow straighteners, and reduced fan speeds. The Facility incorporates a voluntary 1,000-foot setback for manufacturing buildings on boundaries along neighborhoods and utilizes site sound studies and modeling and incorporates results into design of equipment and buildings to ensure noise levels at the Facility's boundaries remain at low levels.

3.6.3 Environmental Consequences

3.6.3.1 Proposed Action

Installation

Construction noise associated with the ongoing construction of Fabs 52 and 62 is typical of general construction activities and will be a short term and intermittent feature of construction carried out in compliance with the County and City noise ordinances. As a BMP, any diesel-powered equipment is inspected to ensure it is equipped with functional mufflers. Additionally, the previously constructed sound wall near the Sun Lake residents will continue to reduce noise effects from construction on that community. Construction and installation noise effects associated with ongoing Facility construction are therefore expected to be negligible. Construction noise is not anticipated to interfere with speech, impair learning, or cause adverse health effects in children or adults residing near the Facility.

Noise volumes associated with the Proposed Project (retrofitting Fab 42 and equipping Fabs 52 and 62) would largely be confined within the fab buildings. SME installation would occur at distances of greater than 2,000 feet from any residential areas or sensitive receptors, attenuating noise levels at those locations to be less than discernable compared to background noise levels. The installation of SME under the Proposed Action would result in negligible noise effects.

Operations

The operation of the SME once installed would occur within the fab buildings, which would buffer operational noise levels. No significant noise generating equipment would be installed as part of the Proposed Action. Operation of the SME would require associated functions of air handling and cooling systems, exhaust and pollution abatement systems, emergency generators, and would require routine traffic for material deliveries and shipments, which would contribute indirect noise effects to the environment. All of these elements except for vehicle traffic would abate noise through engineering controls and enclosures to ensure compliance with local noise ordinances. Additionally, the noise sensitive receptors are located approximately 2,000 feet away from the equipment locations, attenuating noise levels at those locations to be less than discernable compared to background noise levels. The operation of SME under the Proposed Action would result in negligible noise effects.

Vehicle traffic increases associated with project operations would be negligible compared to the existing traffic volume on adjacent roadways. As such, increases in traffic-related noise would be negligible.

3.6.3.2 No Action Alternative

Under the No Action Alternative, Intel OC would end construction when the shells of Fabs 52 and 62 are weather-proofed. Construction noise would be typical of general construction activities and would be a short term and intermittent feature of construction carried out in compliance with

applicable construction permits and the County and City noise ordinances, including daytime hours restrictions.

As a BMP, any diesel-powered equipment would be inspected to ensure that they are equipped with functional mufflers, and construction would only occur during the hours allowed under the local noise ordinances. Additionally, the previously constructed sound wall near the Sun Lake residents would continue to reduce noise effects from construction on that community. Construction noise effects therefore would be negligible. Under the No Action Alternative, there would be no operational sources of noise associated with Fabs 52 and 62. Noise levels associated with operation of Fab 42 using its existing equipment would be well below ambient conditions for sensitive noise receptors, resulting in negligible effects.

3.6.4 BMPs and Mitigation

No significant noise effects are anticipated, and no mitigation measures are required. In addition to complying with local noise ordinances during construction, Intel will continue to inspect construction-related equipment to ensure mufflers are operating properly.

3.7 Transportation

This discussion of transportation includes land-based movement of passengers and goods. A transportation system can consist of any or all of the following: roadways, bus routes, railways, subways, bikeways, trails, waterways, airports, and taxis, and can be assessed on a local or regional scale.

Traffic is commonly measured through average daily traffic and roadway design capacity. These two measures are used to assign a roadway with a corresponding level of service (LOS). The LOS designation is a professional industry standard used to describe the operating conditions of a roadway segment or intersection. The LOS is defined on a scale of A to F that describes the range of operating conditions on a particular type of roadway facility. LOS A through LOS B indicates free flow travel. LOS C indicates stable traffic flow. LOS D indicates the beginning of traffic congestion. LOS E indicates the nearing of traffic breakdown conditions. LOS F indicates unacceptable congestion and delay and thus represents the threshold for potentially significant effects on vehicle transportation.

Volume-to-capacity (V/C) compares the volume of traffic to the theoretical capacity of the intersection to accommodate traffic. A V/C ratio of 1.0 indicates an intersection is operating at capacity. A V/C ratio over 1.0 indicates the intersection's capacity is exceeded and high delay and/or long queues can occur.

3.7.1 Regulatory Setting

Transportation is regulated by laws and provisions at the federal, state, and local level. The state routes and highways in the vicinity of the project are under the jurisdiction of the Arizona Department of Transportation (ADOT). Any proposed changes to roadways or traffic patterns would be subject to ADOT standards and regulations, including the Roadway Engineering Group Roadway Design guidelines (ADOT 2022). Local roadways are under the jurisdiction of the City of Chandler Department of Transportation. Any proposed changes to roadways or traffic patterns in the vicinity of the project would be subject to City standards and regulations (City of Chandler

2020a, 2023a, 2023b). Interstate highways are subject to Federal Highway Administration and ADOT authority.

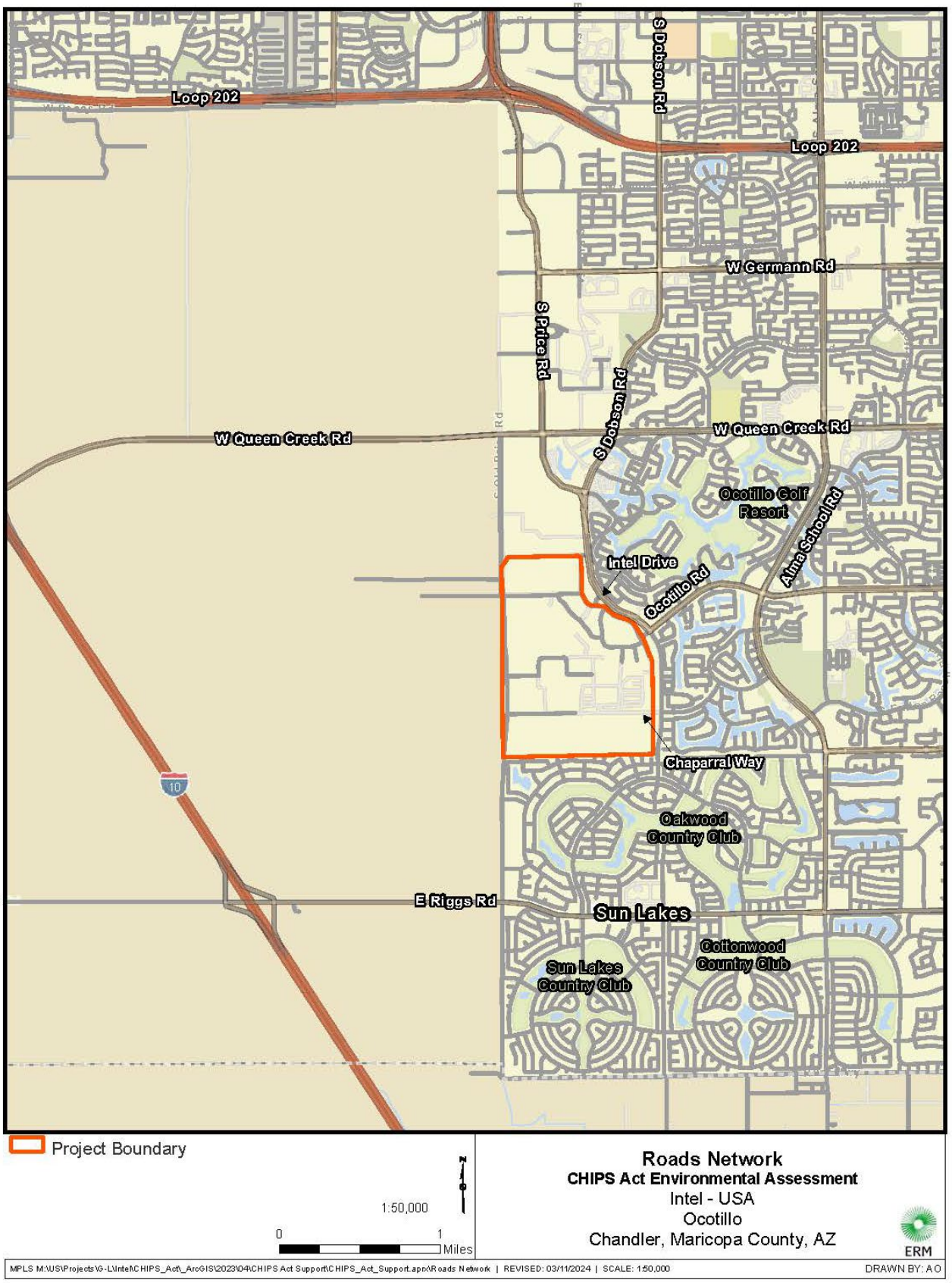
The City of Chandler has adopted LOS D as the standard for signalized intersection operations (intersections with traffic lights). Although the City has not adopted a standard LOS for unsignalized intersections, a critical movement V/C ratio of 0.90 and LOS E are typically considered acceptable (Kittelson & Associates 2021).

3.7.2 Affected Environment

The Facility is accessible from Dobson Road from the north and Ocotillo Road from the east. Interstate 10 is approximately 4 miles due west of the Facility with exits at Queen Creek Road to the north and Riggs Road to the south of the Facility. Arizona State Highway 87 is approximately 2.5 miles due east and Arizona State Highway 202 is approximately 3 miles due north of the Facility. The roads in the vicinity of the Facility that could be affected by traffic increases associated with the Proposed Project are depicted in Figure 3-4.

Intel OC currently employs approximately 6,000 employees and 4,300 contractors. Intel implements a hybrid system that allows full-time employees to work from home and encourages all employees to carpool and take public transportation. This system results in approximately 9,600 trips per day, 3,600 of which occur at peak morning and evening hours.

Figure 3-4. Roads Network



While the MCAQD's TRP is primarily an air quality requirement of major employers, its implementation (which is mandatory) also reduces vehicle trips, which can further reduce congestion on nearby roads. In 2023, Intel OC's single occupant vehicle (SOV) rate was 56 percent, indicating that 44 percent of employees carpool or use mass transit for commuting. Under the TRP, Intel offers hybrid work schedules, van pools, preferred parking, and employee incentives (including raffles and giveaways) to reduce SOV use. Intel also conducts annual surveys to track progress.

3.7.2.1 Existing Roads and Traffic

Features of the existing roads that access the Facility are listed in Table 3-6.

Table 3-6. Existing Roadway Facilities that Access the Project Area

Roadway	Functional Classification	Lanes	Posted Speed (mph)	Median	Sidewalk	Bicycle Lanes	On-Street Parking
Dobson Road	Major Arterial	4	45	Raised	Yes	Yes	No
Ocotillo Road	Major Arterial	4	45	Raised	Yes	Yes	No

Table 3-7 presents the traffic LOS for all roads in the vicinity of the Facility (Kittelson & Associates 2021).

Table 3-7. 2020 Existing Morning and Evening Peak Hour LOS

Intersection	Morning LOS	Evening LOS
San Tan (SR 202) WB Ramps/Price Road	C	C
San Tan (SR 202) EB Ramps/Price Road	B	D
Germann Road/Price Road	B	C
Queen Creek Road/Old Price Road	B	B
Queen Creek Road/Price Road	C	D
Queen Creek Road/Dobson Road	C	C
Price Road/Dobson Road	C	A
Intel Driveway 1/Dobson Road	A	A
Wafer Way (Intel Driveway 2)/Dobson Road	A	B
Ocotillo Road (Intel Driveway 3)/Dobson Rd	C	B
Ocotillo Road/Alma School Road	C	E
Chaparral Way (Intel Driveway 4)/Dobson	B	B
Riggs Road/Old Price Road	A	A
Lake Drive/Alma School Road	A	A

3.7.3 Environmental Consequences

Effects on traffic and transportation are analyzed by considering the likely changes to existing traffic conditions due to the Proposed Project to the capacity of an area to accommodate those changes.

3.7.3.1 Proposed Action

Operation of the SME funded under the Proposed Project would require an additional 2,150 staff at the Facility, resulting in a total number of 8,400 trips daily for the entire Facility, with 5,060 during morning and evening peak hours.

This analysis relies on the data, calculations, and projections provided in the Intel Ocotillo Campus Master Plan Update with Revisions Traffic Impact Study (Kittelson & Associates 2021). The Traffic Impact Study assessed the effects of the planned expansion of manufacturing facilities at the Facility on traffic operations at Facility access points and the surrounding roadway network. Projections for future traffic and levels of service were also included.

The Traffic Impact Study concluded that acceptable levels of service and road safety on the surrounding transportation system can be maintained in light of the planned expansion of manufacturing at the Intel OC Facility through several improvements, which are now completed or underway. All study intersections are expected to operate at acceptable operating standards during the weekday peak hours, except for Ocotillo Road/Alma School Road, which operates at LOS E during the evening peak hour. This intersection is approximately 0.9 miles from the Facility.

Of the four key improvements to accommodate the increased traffic identified in the Traffic Impact Study, three have been completed:

- Construction Traffic Effects: The Traffic Impact Study concluded that construction traffic has the potential to overwhelm the traffic network surrounding the Facility at peak periods. Intel committed to implementing several BMPs to minimize the impact of the construction traffic, all now in place, including staggering employee start times, changing primary parking lot access to Old Price Road (versus Dobson Road, as previously accessed), and shuttling contractors to the workplace from off-site parking areas.
- Extension of Old Price Road: There was a potential need for a permanent traffic signal at the New Riggs Road/Old Price Road intersection, due to traffic load. Maricopa County decided to add the traffic signal with the extension of Old Price Road. This was completed in the second half of 2022.
- Improvements at Dobson Road/Intel Driveway 1 and Dobson Road/Intel Driveway 4: At Driveway 1, southbound dual right-turn lanes have been added, with one lane extending approximately 1,500 feet. At Driveway 4, dual southbound right-turn lanes and dual eastbound left-turn lanes have been added, along with a permanent traffic signal. Eastbound and westbound through movements have been prohibited to reduce Intel generated traffic that uses Chaparral Way to connect with Alma School Road. Improvements implemented by the City on Intel driveways at Dobson Road and Chaparral Road have brought traffic levels at those intersections to LOS A for morning and evening peak hours.

The fourth recommended improvement has not yet been implemented. The Traffic Impact Study determined that the intersection at Ocotillo Road and Alma School Road was operating over capacity in afternoon peak periods (evening LOS E). Recommendations to reduce traffic congestion included restriping the northbound and southbound approaches to this intersection, in order to provide dual left-turn lanes. This would increase capacity to serve the heavy northbound left-turn movement, which would improve movement at this location from LOS E to LOS C. The City of Chandler has decided to implement the recommendation to add dual left-turn lanes in both northbound and southbound directions. These changes are scheduled to be implemented by the City

of Chandler by July 15, 2024, and are anticipated to be in place by the time Fabs 52 and 62 begin operations. With these improvements, traffic effects associated with the Proposed Project would be minor.

As a BMP, new employees expected in connection with the Proposed Project would also participate in Intel's TRP to reduce SOV use by taking advantage of offered incentives such as hybrid work schedules and van pools.

With the completion of key road and traffic improvements and Intel's implementation of the BMPs mentioned above, traffic related effects of the Proposed Project would not be expected to be significant.

3.7.3.2 No Action Alternative

Under the No Action Alternative, effects on transportation and traffic congestion are expected to be the same as current levels. The Intel OC Facility would continue construction of Fabs 52 and 62 until they are weather-proofed, maintaining current traffic effects. Intel would continue implementing its BMPs to minimize Facility traffic. Therefore, implementation of the No Action Alternative would not be expected to cause significant effects on transportation.

3.7.4 BMPs and Mitigation

No significant transportation effects are anticipated, and no mitigation measures are required. Intel will continue to implement its BMPs to reduce SOV use, change access to primary parking lots to Old Price Road (versus Dobson Road), and shuttle contractors to the workplace from off-site parking areas.

3.8 Human Health and Safety

This section addresses human health and safety. Specifically, it discusses chemical hazards, occupational safety and health, emergency response, community safety, and construction safety, with a focus on identifying human health and safety effects that may result from Intel OC construction activities and operations on workers and the general public.

3.8.1 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. In the semiconductor industry, the highest safety concerns center on potentially unsafe occupational chemical exposures or inadvertent releases of hazardous materials that could harm the community. The storage and management of hazardous materials and wastes are discussed in Section 3.9.

OSHA has promulgated health and safety regulations for general industry at 29 C.F.R. Part 1910, prescribing requirements for workplace safety, including hazard communication, electrical safety, machinery and equipment safety, personal protective equipment (PPE), and training. EPA regulates hazardous materials, chemical emergencies, and chemical reporting.

3.8.1.1 OSHA

OSHA mandates safety requirements to protect workers and the public. The Intel OC Facility and its operations, including activities that would be associated with the Proposed Project, are subject

to 29 C.F.R. Parts 1910 (general industry) and 1926 (construction industry). Accordingly, the Facility must:

- Provide proper personal protective equipment to all employees;
- Post warning signage or labels using proper color codes;
- Establish and update operating procedures;
- Provide safety training;
- Develop and implement a written hazard communication program; and
- Maintain records of serious workplace injuries and illnesses.

OSHA general industry standards relevant to the semiconductor manufacturing sector include:

- 29 C.F.R. § 1910.95, which establishes occupational noise exposure guidelines and standards to protect workers from excessive noise in the workplace.
- § 1910.119, which contains process safety management requirements for hazards associated with industry processes using highly hazardous chemicals, including requirements for preventing or minimizing the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals.
- § 1910.124, which establishes general requirements for dipping and coating operations covering: 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.
- § 1910.132, which 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.
- § 1910.1000, which establishes requirements relating to employee exposures to toxic and hazardous substances, including air contaminants, inorganic arsenic, and lead.

3.8.1.2 EPA

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, and testing requirements and restrictions relating to chemical substances and/or mixtures, including the use and disposal of specific chemicals. 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 workers and communities plan for potential environmental and safety hazards of accidents resulting from storage and handling of toxic chemicals. It includes requirements for emergency planning (Sections 301-303), emergency release notification (Section 304), hazardous chemical inventory reporting (Sections 311-312), and Toxics Release Inventory

reporting (Section 313) for chemicals that may pose a threat to human health and the environment.

In addition, CAA Section 112(r), 42 U.S.C. § 7412(r), and 40 C.F.R. Part 68 require facilities that use more than threshold quantities of HAPs to develop and implement a risk management program and submit a risk management plan (RMP) to EPA. The RMP must: identify the potential effects of a chemical accident at the facility; identify steps the facility is taking to prevent an accident; and establish emergency response procedures. The RMP provides valuable information to local fire, police, and emergency response personnel.

3.8.1.3 Executive Order 13045

EO 13045, Protection of Children from Environmental Health Risks and Safety Risks, requires 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.

3.8.1.4 Chandler Fire Prevention Division

The Chandler Fire Prevention Division investigates the cause and origin of fires and is responsible for enforcing City Council-adopted codes and ordinances, issuing various permits, following up on citizen complaints about possible hazards, and maintaining records for businesses in the City. Members of the division assist other departments throughout the region through mutual aid agreements.

Intel OC hosts the Chandler Fire Department for site familiarization walks, with a particular focus on the Facility bulk gas storage areas. Intel also holds emergency and preparedness drills with the Chandler Fire Department for confined space rescue.

3.8.2 Affected Environment

This section describes Intel's overarching safety practices and systems, a description of potential chemical hazards and hazard management approaches for semiconductor manufacturing, relevant industry health and safety standards aimed at reducing hazards to workers, and potential community safety and construction safety hazards.

3.8.2.1 Intel's Safety Practices and Processes

Intel's EHS Management System is a system that combines various EHS standards, procedures, management tools, assessment tools, training, communication, and self-assessments and audits to continually develop and implement responsible and safe company practices. Intel maintains ISO 14001 and 45000 certifications to ensure manufacturing sites maintain a comprehensive environmental, health and safety management system that clearly defines and tracks global performance to environmental, health and safety goals and initiatives.

Intel conducts several processes to identify risks to employees and develops methods to eliminate risks or implement proper controls to reduce them. These processes include facility design, new

equipment procurement specifications, chemical use evaluation, equipment sign-off, job hazard analysis, industrial hygiene assessments, ergonomic engineering assessments, and personal protective equipment (PPE) assessments. Relevant chemical exposure standards and Intel's safety practices are further described in Section 3.8.2.3. Discussions of Intel's safety practices relative to community safety and construction safety are discussed in Sections 3.8.2.4 and 3.8.2.5 respectively.

As shown in Table 1-1, Intel OC operations are subject to several environmental permits, including permits related to human health and safety:

- EPA Hazardous Waste ID (#AZR000001107).
- ADEQ Type 2 Reclaimed Water General Permit No. R105568.
- City of Chandler Wastewater Industrial Discharge Permit No. 9 Revision 6 (Updated in July 2023 to include Fabs 52 and 62). This permit imposes wastewater discharge limits on the Facility and governs Facility discharges to the City sanitary sewer system and POTW.
- Title V operating permit No. P0010018 (issued by MCAQD and reviewed by EPA)—The Facility's Title V permit imposes limitations on Facility airborne chemical emissions, including HAPs (see Section 3.1.2).

Intel tracks permit compliance and implements improvements to safety through its EHS Management System.

3.8.2.2 Chemical Hazards and Management

Chemical hazards include potential direct and indirect occupational exposures to hazardous materials generated, used, or stored at the Intel OC Facility. Intel complies with the following hazardous material reporting and planning requirements:

- Hazardous Chemical Inventory Reporting—EPCRA Sections 311–312 require the Facility to maintain safety data sheets (SDSs) for any hazardous chemicals stored in the workplace and to submit the SDSs or a list of hazardous chemicals to the relevant State and/or Tribal Emergency Response Commission (SERC or TERC), Local and/or Tribal Emergency Planning Committee (LEPC or TEPC), and local fire department, using a Tier II reporting form, which lists basic Facility information, emergency contacts, and, and additional data useful to local planners and responders.
- Toxics Release Inventory Reporting—EPCRA Section 313 established this inventory reporting, which is managed by EPA. Separate from Tier II reporting, Section 313 requires the Facility to submit annual data to EPA covering waste management activities that occurred during the previous calendar year.
- Risk Management Plan—As noted above, CAA Section 112(r) requires the Facility to establish an RMP to manage potential chemical accidents at the Facility and outline emergency response procedures.
- Process Safety Plan—OSHA's process safety management program at 29 C.F.R. § 1910.119, noted above, requires the Facility to maintain a Process Safety Plan to manage potential hazards from the Facility's generation and use of highly hazardous chemicals.

3.8.2.3 Occupational Health and Safety Standards

Industry standards and other sources of recommended practices are often used to supplement government regulations (see Section 3.8.1), to modernize safety approaches, to provide more protective provisions for worker health and safety, or to address specific technical aspects of a manufacturing sector.

For semiconductor manufacturing, respiratory safety for workers exposed to chemicals is a primary health concern. 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 enforceable OSHA PELs were issued shortly after the adoption of the Occupational Safety and Health Act in 1970 and have not been updated since (OSHA, No Date). Based on the experiences of industrial professionals, new technological developments, and scientific data, many PELs are found to be outdated and inadequate for protecting worker health, which has led many technical, professional, industrial, and governmental organizations in the U.S. and abroad to identify alternative exposure limits.

The American Conference of Governmental Industrial Hygienists (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 Recommended Exposure Limits are Federal agency recommendations established according to the legislative mandate for National Institute for Occupational Safety and Health to recommend standards to OSHA. Recommended Exposure Limits are recommended exposure limits for hazardous substances in the workplace to protect worker health.

Intel applies protective Occupational Exposure Limits based on published industry standards for each chemical use across its Facility operations to promote worker health and safety. Intel establishes Intel Threshold Limits for occupational exposure defined as the lower of either the local regulatory limit or the American Conference of Governmental Industrial Hygienists Threshold Limit Value (TLV). Intel may choose to establish a lower limit or its own limit where no standard exists.

SEMI is an international association with more than 3,000 member companies that develops voluntary technical agreements in the form of standards aimed at improving product quality, reliability, and compatibility of goods and services within the semiconductor and other electronics industries. Notably, Semiconductor Equipment and Materials International (SEMI) standard S2, *Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment*, is one of the primary industry guidelines for designing and embedding safety features into semiconductor manufacturing systems and equipment. The S2 standard addresses environmental, health, and safety

practices, and incorporates several other standards[11], addressing: equipment installation, gas effluent handling, exhaust ventilation, ergonomics, risk assessment, equipment decontamination, fire risk mitigation, and electrical design. (SEMI 2024a). Further, the SEMI S2 guidelines specify that chemical emission to the workplace environment during normal equipment operation must result in ambient air concentrations that are less than 1 percent of the American Conference of Governmental Industrial Hygienists (ACGIH) threshold limit value (TLV) or permissible exposure limit (PEL) during normal equipment operation.

Intel equipment suppliers are expected to comply with minimum performance requirements in compliance with industry standards and Intel expectations (Intel 2024).

Other relevant SEMI standards to the Facility include:

- S21—Safety Guideline for Worker Protection describes methods for protection against hazards that workers may encounter as they work on or around equipment used for semiconductor manufacturing. SEMI S2—Environmental, Health and Safety Guideline for Semiconductor Manufacturing Equipment, guides the manufacture and installation of tools for semiconductor fabrication facilities.
- SEMI S12—Environmental, Health and Safety Guideline for Manufacturing Equipment Decontamination addresses decontaminating manufacturing equipment and parts that were or may have been exposed to hazardous materials and which are intended for further productive use.
- SEMI S16—Guide for Semiconductor Manufacturing Equipment Design for Reduction of Environmental Impact at End of Life, provides design guides to minimize environmental effects in consideration of end of life of semiconductor manufacturing equipment or its components (SEMI 2024b).

Risk Management Measures (RMMs) are practices based on SEMI standards designed to address chemical assessment, selection and control procedures, hazardous gas management systems, segregated exhaust systems, safety interlocks, and spill control and prevention (ISMI 2006).

3.8.2.4 Community Safety

During construction and operational activities, community safety can be affected by inadvertent releases of toxic materials and hazardous waste releases into the environment. Community safety effects may also occur from traffic-related accidents and noise. This section discusses these aspects of community safety including current Intel OC practices to avoid or minimize potential harm or effects to the community.

[11] SEMI S2 references other industry standards 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; US 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.

Spills and Emergency Response

Mishandling of toxic materials can lead to accidental spills, leaching, and releases into the environment and may have short term and long-term detrimental effects on groundwater and soil. Use of engineering controls, secondary containment, and automated material delivery systems (with sensors and alarms), plus adherence to permit requirements, use of BMPs, worker training, and routine inspections, reduce the probability of any releases. A written Emergency Response Contingency Plan is maintained at the Facility and is enacted whenever a reportable event or spill occurs.

Intel maintains a dedicated emergency response team (ERT) at the Facility who are on-site and available to respond 24 hours a day, seven days a week. Intel trains its emergency response team members to the requirements in 29 C.F.R. §1910.120(q) as it applies to Hazardous Materials Response teams. To initiate the emergency response team, Intel maintains a security command center, available 24 hours a day, which is the central hub for Facility personnel to contact to report a spill or any other emergency. Once initiated, the ERT responds to the location of the emergency and is responsible for implementing the Incident Command System.

As part of the response procedures, the ERT will notify all personnel in the immediate area or downwind and instruct them to evacuate. If necessary, the ERT will initiate procedures to clear the area, and implement control measures to keep unauthorized personnel out of the area. Depending on the issue, the ERT will implement countermeasures to control or terminate the issue if it is safe to do so. Emergency responders are also equipped with equipment to assess the area for possible hazards to human health and the environment. If the evaluation determines that there is an immediate threat to life or safety to on-site personnel, the ERT may initiate an evacuation for portions of the Facility. If the ERT determines the potential for an off-site consequence, notifications will be made to emergency services including fire, medical, or hazardous materials teams depending on the nature of the emergency.

Traffic

Intel has collaborated with the ADOT, Maricopa County Department of Transportation, and the City to enact road improvements near the Facility to provide ease of access, intersection safety, and overall safety of drivers, passengers, and pedestrians. Section 3.7 describes Intel OC's best management practices to reduce Facility-related traffic and the transportation and traffic improvements completed and soon to be completed to reduce traffic effects of the Proposed Action.

Noise

Noise evaluation and management is important, as hearing loss is the third most common chronic health condition in the US. 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 (USEPA 2009).

Intel OC has implemented projects and best management practices to reduce or avoid noise effects on the community as described in Section 3.6.2.

3.8.2.5 Construction Safety

The Proposed Project includes installation of equipment within newly constructed and existing buildings. While the construction of the new buildings is not included in the Proposed Project, it is discussed here to address potential indirect effects. Equipment movement and installation also include light construction activities. Typical health and safety hazards associated with construction and SME installation include, but are not limited to, falling, slipping and tripping, noise, heavy machinery, being struck by moving construction equipment, and electrocutions. BMPs and regulatory requirements to manage construction-related hazards include but are not limited to:

- Ensure all safety equipment, guardrails, and controls align with OSHA standards.
- Have employees fill out checklists to confirm they have proper PPE.
- Develop job hazard analysis to identify job-related hazards.
- Certify all project employees and contractors are up to date in health and safety training.
- Actively provide safety information to employees, daily construction safety inspections,
- Hold safety meetings to discuss hazards associated with specific tasks.
- Appoint on-site health and safety professional(s) to identify and execute precautionary measures and prevention strategies for workplace accidents.
- All construction contractors are vetted for safety records which must meet industry standards and norms.

Intel construction contractors are required to comply with minimum performance requirements for EHS. Specific details regarding these expectations are provided including minimum performance expectations.

Intel developed its Construction EHS Processes and Procedures Manual (Intel 2019), which establishes safety standards for contractors working on Intel sites worldwide. Intel provides the Manual to all firms who receive a bid award, and the Manual is expected to be understood and complied with prior and during work on Intel project sites. This manual serves to provide expectations for all areas of construction, including but not limited to general construction rules, construction safety, emergency response procedures, fire prevention, industrial hygiene management, and environmental control and response plans.

During construction activities, Intel requires third-party contractors engaging in these activities to observe work and behavioral practices, to identify unsafe working practices, and develop a "Toolbox Talk." Toolbox Talks are informal group discussions focusing on a particular safety issue, such as working at heights or proper hydration during warmer months.

Intel also requires all construction work to have a "Pre-Task Plan" that identifies all potential health and safety risks of before commencing work and mitigation measures to be used to ensure complete safety. If construction work begins to move outside of the scope of planned work, stop-work authority may be used to stop and re-evaluate safe and proper actions forward. This re-evaluation and planning are reviewed with the entire crew before restarting the job.

3.8.3 Environmental Consequences

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

3.8.3.1 Proposed Action

Human health and safety for the Proposed Project of removing old equipment and installing SME, and their associated operation, would be managed under the existing comprehensive safety program.

Occupational Safety

Intel works to review, assess, and improve current EHS programs and trainings to focus on prevention, early intervention, and safety culture (Intel 2021). Under the Proposed Action, workplace safety practices would continue to follow the company's EHS Management System consisting of EHS standards, procedures, management tools, assessment tools, training, communication, and self-assessments and audits.

Intel will also use BMPs for design of engineering controls of fab facilities and SME to prevent chemical releases and avoid worker exposures to moving parts and hazardous energies (see Table 2-2).

While no major changes are anticipated in the basic process chemistries and chemicals used with the addition of the "new tools," Intel has a mature process for screening and approving any new chemicals. This process is designed to:

- Eliminate or substitute hazardous chemicals wherever possible; and
- Provide conservative safeguards designed to achieve zero exposure for particular chemicals of concern, including for example known or suspected carcinogens or reproductive hazards, also aligned with the supplier safeguards documented in their SEMI S2 report.

Intel recognizes that the OSHA PELs are not adequately protective and thus, as a BMP, Intel applies the most protective Occupational Exposure Limits based on published industry standards for each chemical use across its Facility operations to promote worker health and safety. Intel establishes Intel Threshold Limits for occupational exposure defined as the lower of either the local regulatory limit or the American Conference of Governmental Industrial Hygienists Threshold Limit Value (TLV). Intel may choose to establish a lower limit or its own limit where no standard exists.

As a BMP to ensure the SME purchased and installed under the Proposed Action meets all appropriate safety and health standards, Intel will require a SEMI S2 compliance report before purchasing equipment from the manufacturer. Similarly, Intel will follow SEMI S12 as a BMP to decontaminate tools removed from Fab 42 and follow SEMI S8 for ergonomics of SME in all fabs. As another BMP, during tool startup, Intel uses a rigorous phased approach to ensure all safeguards are functional.

In summary, Intel has implemented controls beyond those required by regulation to safeguard the health and safety of personnel who operate and who maintain the facilities and equipment. These controls constitute best industry practices. In summary, no adverse health or safety outcomes, or increased risk are anticipated from any of the proposed addition of SME.

Community Safety and Emergency Response

The Facility is a large quantity generator of hazardous waste and under the Proposed Action, CHIPS financial assistance would result in changes to the types and volumes of hazardous materials used and stored at the facility to support increased semiconductor wafer manufacturing.

Intel will continue to implement all required programs such as emergency response plans, container/tank inspections, annual training, waste tracking, and reporting to relevant authorities. Intel requires third-party contractors who are transporting and disposing of waste to comply with all applicable legal requirements.

As a BMP, Intel OC will continue coordination with, and conduct exercises with, the local fire department and emergency services to ensure accidents and emergencies would be responded to quickly, efficiently, and safely. In the event of an emergency, Intel OC has an Emergency Response Team on-site and available 24 hours a day. As a result, potential impacts related to emergency response, inspections, and waste tracking and reporting would be negligible.

The added volume of waste generated, stored, and transported from the Intel OC Facility would not increase risks to the community. Controls and contingency plans have been identified and will be fully implemented to detect and contain any accidental release of hazardous waste. As required by law, secondary containment is currently in place for existing facilities for all stored chemicals and wastes and will be in place for all new chemical and waste storage areas.

Construction activities and increasing operational activities would cause effects to traffic, both directly on the Facility and to surrounding roadways. This would increase risks of traffic incidents to employees and the local communities. Effects to ground traffic and transportation are analyzed by considering the possible changes to existing traffic conditions and the capacity of area roadways from proposed increases in commuter and construction traffic. The City has implemented measures to alleviate traffic congestion near Intel driveways at Dobson Road and Chaparral Road to bring morning and evening traffic levels to LOS A. Intel would continue to work with the City to identify infrastructure improvements that would absorb the added traffic, and plans are in place for improvements that would facilitate the added trips without increasing traffic congestion. Therefore, with the implementation of the BMPs such as staggering start times and shuttling contractors from the Facility to off-site parking, traffic related to the Proposed Project is not expected to have a significant impact on traffic safety.

The Proposed Action is unlikely to affect children's health and safety in accordance with EO 13045. The property is bounded by roads and fencing, is industrial in nature, and children would not access the Facility. Indirectly, project related vehicle deliveries would not be routed through residential neighborhoods limiting potential harm from traffic accidents. The Facility's air emissions are permitted to comply with applicable air quality standards and are unlikely to disproportionately affect children. As a result, potential impacts related to children's health are not expected to be significant.

Health effects of noise to the community would not be significant under the Proposed Action as described in Section 3.6.

Construction Safety

The Proposed Project would include installation of SME that necessitates utility connections which can include high hazard activities (potential accidental exposure to energized systems and gases) and movement of very heavy equipment that increases potential for accidents and physical injuries.

Under the Proposed Action, Intel would ensure its standard minimum requirements are followed, such as the company-wide construction EHS manual. This manual meets and, in some cases, exceeds applicable requirements. As a BMP, on-site contractor companies are required to review the construction EHS manual to ensure their workers have good working knowledge of EHS rules and procedures. For non-standard or non-documented construction activities such as delivery, staging, and installation of equipment, Contractors are required to complete a Pre-Task Plan Worksheet. The worksheet includes a planning checklist to identify and mitigate potential safety hazards before engaging in work (Intel 2019). Intel OC construction project managers and construction contractors perform weekly safety walks to review use of safe practices. If an incident occurs, an incident review convenes to identify lessons learned which are incorporated into construction practices and shared during weekly safety meetings. By following established safety rules and procedures, the installation of SME under the Proposed Action would pose negligible to minor effects to human health and safety.

Overall

Accidents and emergencies would be minimized through BMPs, internal site safety procedures, ongoing collaboration and coordination with community emergency response agencies, and safe hazardous material handling and storage processes. No significant effects on human health and safety of workers or the public are anticipated from the Proposed Project during construction or under normal operating conditions.

3.8.3.2 No Action Alternative

As a result of the No Action Alternative, Intel's EHS program would remain in place and efforts to reduce incidents would continue. Intel would continue to have the same commitment to human health and safety throughout construction and operation. The same BMPs for protection of occupational safety and health, community safety and emergency response and construction safety would be implemented under the No Action Alternative. The No Action Alternative would produce wafers at a lower rate than under the Proposed Action and would therefore involve less storage, use and transportation of hazardous materials and waste, resulting in lower potential for vehicle accidents and inadvertent releases. With continuation of Intel's existing health and safety systems and practices, no significant effects to human health and safety are anticipated from the No Action Alternative.

3.8.4 BMPs and Mitigation

Intel will continue implementation of BMPs to: design engineering controls into its manufacturing systems to prevent worker accidents and chemical exposures; apply the most protective worker chemical exposure limits based on published industry standards (on a chemical-by-chemical basis) to its manufacturing operations; purchase, install and decontaminate SME in accordance with SEMI safety standards; coordinate and train with local fire and emergency services on emergency management procedures; and ensure construction personnel are well versed in the Facility's EHS Manual and use Pre-Task Plan Worksheets to identify and mitigate hazards.

3.9 Hazardous Materials and Wastes

This section discusses hazardous materials, hazardous waste, toxic substances, and contaminated sites.

3.9.1 Regulatory Setting

Hazardous materials are defined by the Department of Transportation and the Pipeline and Hazardous Materials Safety Administration 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 C.F.R. § 173." The Department of Transportation regulates transportation and labeling of hazardous materials.

Hazardous wastes are defined under RCRA Section 1004(5) 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)).

Universal wastes and their associated regulatory requirements are specified under 40 C.F.R. § 273. Five types of waste are currently covered under the universal waste regulations: hazardous waste batteries, hazardous waste pesticides that are either recalled or collected in waste pesticide collection programs, mercury containing equipment, aerosol cans, and hazardous waste lamps, such as fluorescent light bulbs.

Special hazards are those substances that might pose a risk to human health such as asbestos-containing material, polychlorinated biphenyls, and lead-based paint. As the Proposed Project involves no special hazards, special hazard regulations are not applicable.

RCRA Subtitle C authorizes the EPA to regulate hazardous waste. This includes all stages of the waste's life cycle: generation, transportation, treatment, storage, and disposal. It requires tracking hazardous waste (manifests) from generation to disposal, and it requires permitting of hazardous waste management facilities. Treatment, storage, and disposal (TSD) 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, recycled waste may be re-used in other manufacturing processes. Storage facilities temporarily hold quantities of hazardous waste, produced on or off-site until they are treated or disposed 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 (USEPA 2023b).

Some chemicals used in the manufacturing of semiconductors are classified as extremely hazardous substances that meet or exceed the threshold planning quantities as defined and listed by Appendices A and B in 40 C.F.R. § 355 that are subject to the Emergency Planning and Community Right-to-Know Act (EPCRA) (described in Section 3.8.1.2).

Per- and polyfluoroalkyl substances (PFAS) are used in photolithography, plasma etch, wet etching, chamber clean and deposition processes, as well as a use for lubrication of equipment, and in heating and cooling systems in semiconductor manufacturing. EPA released a final rule under EPCRA and the Pollution Prevention Act pursuant to the National Defense Authorization Act for Fiscal Year 2020 that added certain PFAS to the list of Lower Thresholds for Chemicals of Special Concern (USEPA 2021) (Section 3.3.1.4).

This rule, effective on November 30, 2023, increased reporting of PFAS to the Toxics Release Inventory by eliminating an exemption (de minimis) that allowed facilities to bypass reporting requirements when those chemicals were used in small concentrations. Under this new rule, certain PFAS will be subject to the same reporting requirements as other chemicals of special concern and EPA will receive more comprehensive data on PFAS. On May 17, 2024, EPA issued a final rule to identify seven PFAS added to the EPCRA 313 list of reportable chemicals (Toxics Release Inventory) that must be reported. The effective date of this rule was June 17, 2024.

The State of Arizona has adopted the Hazardous Waste Generator Improvement Rule as of February 2019. Large Quantity Generators of hazardous waste are required to obtain an EPA ID number and register annually with ADEQ. Bi-annual reports or Pollution Prevention Plans may be required depending on the types and amount of hazardous waste generated at the Facility. Weekly inspections of containment buildings, container storage areas, drip pads, and tanks are required, and records must be maintained for at least 3 years.

Local requirements for solid waste generators are outlined in City of Chandler's Code of Ordinances Chapter 44. Businesses within Chandler are required to contract with a permitted waste hauler to transport solid waste. Containers must also be labeled in accordance with state and federal requirements and have lids.

3.9.2 Affected Environment

Manufacturing chemicals are segregated into three general categories: corrosives, solvents, and gases. There are separate storage areas for each category of chemical. Secondary containment is used to ensure segregation and prevent release. The Proposed Project would include activities that may generate hazardous waste which would result in handling, transportation, and disposal of hazardous materials and waste.

3.9.2.1 Hazardous Materials

The Facility has a pre-existing hazardous materials management plan used to manage all hazardous products used by the Proposed Project.

The hazardous material storage and distribution systems are located in separate rooms at ground level. Chemicals are moved from storage areas to use locations by bulk chemical delivery. A very small amount of chemical is moved inside the buildings in specially designed carts. Spent chemicals drain by gravity and/or are pumped to collection or treatment areas. Diesel fuel tanks and emergency generators are used to support emergency power and firefighting pumps. Bulk chemical storage tanks are provided with secondary containment and spray protection for Facility personnel. Information regarding chemical storage on-site, including volume, container types, and the associated hazards are provided to local emergency response/planning agencies on a regular basis in accordance with applicable regulations.

3.9.2.2 Hazardous Waste

The semiconductor manufacturing process generates hazardous waste including but limited to heavy metals, solvents, and corrosive compounds in both solid and liquid forms. The Facility is a large quantity generator of hazardous waste and implements all required programs such as emergency response plans, container/tank inspections, annual training, waste tracking and reporting to relevant authorities. Hazardous waste generated by the Facility is transported using properly registered

transporters to transportation, disposal and storage facilities permitted to receive the generated hazardous waste stream.

In 2023 the Facility generated 20,850 tons of hazardous/chemical waste. Eighty-five percent of the chemical waste was recycled. No hazardous/chemical waste was landfilled. Intel has a mature hazardous materials management plan for the Facility which will be used to appropriately manage all materials generated by the Proposed Project, as appropriate, with the goal of maximizing recycling and minimizing landfill and other disposal.

The production of semiconductors requires the use of PFAS and other hazardous substances. The photolithographic processes in fabrication, chemical processing, packaging, and assembly system lubricants use PFAS (SIA 2023). PFAS are a group of manufactured fluorinated chemicals that are long lasting and break down very slowly over time. The most commonly studied PFAS are perfluorooctanoic acid (PFOA) and PFOS. PFOA and PFOS have been phased out of production and use in the US. PFAS compounds are linked to health effects including fertility issues, liver disease and cancer. PFAS is used in the photolithography, plasma etch, wet etching, chamber clean and deposition processes, as well as a use for lubrication of equipment, and in heating and cooling systems in semiconductor manufacturing. Although the semiconductor industry has worked to eliminate and replace some of these compounds, in some cases, substitute materials have not yet been identified that can achieve the same performance.

Since 2002, Intel has worked to voluntarily eliminate uses of long-chain PFAS (PFOS and PFOA) and it is Intel's policy to no longer use, buy, or conduct research with long-chain PFAS materials. In 2022, Intel established a PFAS policy to further restrict fab material use of certain PFAS materials and to limit uses to those where no viable non-PFAS alternatives are available. Intel has also completed a characterization of the chemical lifecycle of PFAS materials in its manufacturing processes to better understand the presence, concentration and potential sources. Intel is a founding member and active leader in both the Semiconductor Climate Consortium and the Semiconductor Industry Association (SIA) Semiconductor PFAS Consortium seeking to reduce or eliminate PFAS use within the industry. In many of the process chemical applications, there are no readily available substitutes. Where there are potential substitutes, Intel is working with industry associations and its supply chain to assess the feasibility of their uses in high-volume manufacturing. In addition, Intel supports research to address the challenges and ensure adequate controls. For more detailed information on PFAS in wastewater, see section 3.3.2.4 Stormwater and Wastewater.

3.9.2.3 Solid Waste

The Facility has a solid waste recycling and management plan which will be applied to the resulting waste associated with the Proposed Project to maximize recycling, recovery, or reuse, and to minimize solid (non-hazardous) waste going to landfill. No waste will be disposed of at the Facility.

In 2023 the Facility generated 35,042 tons of solid waste, of which 86 percent was recycled. Solid waste is disposed of at three landfills in the region: Republic Services' Apache Junction and Beatty, Nevada locations, and at Waste Management's Butterfield facility. The landfills operated by Republic Services likely have the potential to expand disposal capacity beyond their permitted acreage, whereas the Waste Management landfill has capacity to operate for over 100 years (Republic Services 2021, and Waste Management 2016).

As part of its 2030 goals, Intel has committed to achieving zero waste to landfill and to implementing circular economy strategies for their manufacturing waste streams. Most of the waste

Intel generates is from construction and manufacturing activities. Since the mid-1990s, Intel has increased its global recycling rate of non-hazardous waste from 25 percent to 87 percent.

3.9.3 Environmental Consequences

3.9.3.1 Proposed Action

Waste generation associated with the delivery and installation of SME would be minor. Operations associated with the Proposed Project would increase hazardous waste generated at the Facility from activities such as wafer and tank cleaning, ion exchange bed treatment systems, and discard or chemicals from general operations.

Intel's existing hazardous materials management plan for the Facility would be applied to appropriately manage all materials generated by the Proposed Project, as appropriate, with the goals of maximizing recycling, recovery, and reuse while minimizing landfill and other disposal. The Intel OC Facility is expected to have an increase of approximately 50 percent on-site hazardous material storage under the Proposed Action. The Ocotillo Site has achieved an average of 86 percent recycling rate for solid and hazardous wastes over the past four years. For wastes expected to be generated from the proposed Project, Intel has performed engineering evaluations of these process waste streams. In partnership with its waste vendors, Intel primarily focuses on re-use and recycle options in accordance with its waste disposal hierarchy and waste upcycling policy. The current engineering evaluations and projections indicate a likely re-use recycling rate greater than 80 percent from the project for these waste streams.

Safety effects of storing, using and disposing of hazardous substances is discussed in Section 3.8.3. All bulk waste storage tanks are situated within secondary containment designed for sufficient containment volume for the largest tank. Piping that carries liquid chemical wastes from the fabs to the waste collection system runs within enclosed structures and has secondary containment and leak detection within the pipes. All hazardous waste storage tanks and containers are managed according to hazardous characteristics and separated in accordance with compatibility requirements.

Utilizing the engineering evaluations for each waste stream, Intel has partnered with its waste disposal vendors to identify appropriate disposal methods. This also includes working with these vendors to ensure adequate capacity for transportation and recycling, treatment, or disposal capacity to handle the additional volume of waste. Contracts with these waste vendors have been finalized to ensure proper transportation and capacity to recycle, treat or dispose of these waste streams from the Intel OC Facility. Each of these companies ensures compliance with federal, state, and local laws surrounding waste treatment and disposal.

SME installed at the Facility to produce semiconductors may come into contact with hazardous materials. During the removal of existing SME that would be replaced under the Proposed Action at Fab 42, Intel OC would ensure proper handling, transportation, and disposal. Contractors, in cooperation with Intel, would ensure any oil-filled operating equipment or machinery does not leak or spill hazardous contents.

Intel is working internally and with industry partners to eliminate PFAS and to identify alternatives for PFAS chemicals (section 3.9.2). Intel has implemented systems and disposal management options to minimize any effects to water supplies. Intel's WaTR plant would remove at least 90 percent of residual PFAS that is detectable from process wastewater streams that discharged for treatment at the City's POTW (see Section 3.3.3.1).

As a BMP, Intel would segregate known process PFAS-containing organic wastes from other waste streams (photoresist chemistries), such that this waste would be directed to a closed bulk storage system. This waste is then managed at an off-site permitted treatment and disposal facility.

The Proposed Project would require larger quantities of hazardous materials and wastes to be transported to and from the Facility. Under normal conditions and by following transportation regulations, accidents and spills are anticipated to be rare.

The Facility utilizes properly permitted and registered waste transporters to meet current solid waste generation operations. As needed, the Facility would contract with additional vendors to properly transport and dispose of new waste streams. However, Intel is currently under contract with a solid waste disposal vendor that would include solid waste management generated from Fabs 42, 52, and 62. Regional landfills and local recycling facilities would have long-term capacity to handle the waste from the three fabs and no adverse effects to waste-handling infrastructure from increased waste under the Proposed Action are anticipated.

All hazardous materials and wastes related to the Proposed Action would be managed, recycled, and disposed of appropriately and in accordance with applicable law and the company's EHS procedures. Therefore, no significant effects from hazardous materials and waste are anticipated.

3.9.3.2 No Action Alternative

All hazardous materials related to the operation of partial SME installed in Phase 1 would be managed and disposed of appropriately and in accordance with law and BMPs as described above for the Proposed Action. Under the No Action Alternative, effects to solid waste management and energy consumption are expected to be the same as current levels. The Intel OC Facility would continue producing solid waste, but would also recycle, recover, and reuse most of that waste, minimizing waste that is disposed of in landfills; therefore, no significant effects from hazardous materials and waste are anticipated.

3.9.4 BMPs and Mitigation

As a BMP, Intel will segregate known process PFAS-containing organic waste from other waste streams to a closed bulk storage system and remove more than 90 percent of residual PFAS in wastewater discharges through its WaTR plant. Segregated organic waste will be managed at an off-site permitted treatment and disposal facility. Intel will also optimize recycling at the Facility to reduce landfill waste and ensure appropriate handling and disposal of waste. Through ongoing implementation of rigorous EHS procedures as BMPs, no impacts to solid waste management are anticipated and no mitigation is required.

3.10 Socioeconomics

This section discusses population demographics, employment characteristics, schools, housing occupancy status, economic activity, tax revenue, and related data providing key insights into the socioeconomic conditions that might be affected by the alternatives.

3.10.1 Regulatory Setting

Socioeconomic data shown in this section are presented at the U.S. Census Bureau Tract, Metropolitan Statistical Area, state, and national levels to characterize baseline socioeconomic conditions in the context of regional, state, and national trends. A Metropolitan Statistical Area is a

geographic entity defined for use by federal statistical agencies based on the concept of a core urban area with a high degree of economic and social integration with surrounding communities. Data have been collected from previously published documents issued by federal, state, and local agencies and from state and national databases (e.g., the U.S. Bureau of Economic Analysis Regional Economic Information System).

3.10.2 Affected Environment

The semiconductor industry is a major driver of economic development. Semiconductors are a critical input for more than 300 downstream economic sectors, accounting for more than 26 million U.S. workers. The semiconductor industry's jobs multiplier is 6.7, meaning that for each U.S. worker directly employed by the semiconductor industry, an additional 5.7 jobs are supported in the wider U.S. economy (U.S. Semiconductor Industry Workforce 2022). In 2022, Intel and Maricopa Community College District launched a new workforce development initiative, Quick Start, to support the growing technology industry's employment needs and welcome diverse talent into the technical workforce. Additionally, Intel and YWCA Metropolitan Phoenix were joined by the Salt River Project (SRP) for the second year of the Equity in STEAM (Science, Technology, Engineering, Arts, Mathematics) initiative, designed to address the systemic barriers preventing some women and people of color from pursuing and growing within careers in STEAM. In January 2023, Intel announced grants and a leadership cohort for 21 Arizona schools and nonprofit organizations.

The City of Chandler, where the project is located, serves as the immediate area of impact for socioeconomics. However, as some workers are likely to commute from broader Maricopa County, county data has also been included where pertinent. Maricopa County is the nation's fourth largest county in terms of population with approximately 4.5 million residents. The City of Chandler has a population of approximately 280,000. Within Maricopa County, approximately 7.6 percent of the population is employed in construction and 7.7 percent of the population in manufacturing (U.S. Census Bureau 2022a). Intel OC currently operates with approximately 6,000 employees and 4,300 contractors.

Housing within Maricopa County is occupied at 91.4 percent, leaving the housing vacancy rate at approximately 8.6 percent (U.S. Census Bureau 2022b). A Maricopa Association of Governments analysis of U.S. Census data shows that apartment rent has increased about 38 percent in the past four years in metro Phoenix (Phoenix New Times 2024, Hoodline 2024). Tenants in Maricopa County are facing an increase in eviction filings, with reports indicating a 21 percent rise over the past four years. More than 83,000 cases were filed in 2023 alone, marking the second-highest tally on record since 2005. According to data from the Maricopa County Justice Courts, the spike is attributed to both a burgeoning population in the Valley and an acute shortage of affordable housing units.

The housing vacancy rate in Chandler is approximately 5 percent, with roughly 5,500 vacant housing units (U.S. Census Bureau 2022b). Chandler established a general plan in 2016 to address housing diversification on remaining land (City of Chandler 2016). Chandler also developed the Five-Year Consolidated Plan and Annual Action Plan for 2020–2025 (City of Chandler 2020b). This Five-Year Consolidated Plan identifies providing affordable rental housing and affordable owner-occupied housing as top priorities. This includes preservation of the City of Chandler's public housing, which provides affordable housing options for persons with low to moderate income, persons who are experiencing homelessness, and persons at risk of homelessness or who have special needs. Additionally, addressing the need for more affordable housing, providing funds

for various housing options for homeowners who are cost burdened and at-risk of homelessness, and for individuals priced out of the current housing market are high priorities. The City plans to address these priorities by acquisition and rehabilitation of existing housing units to expand affordable housing options and improve living conditions for low- and moderate-income households through emergency repairs, minor repairs, ADA modifications, and exterior improvements to housing units (City of Chandler 2020b). The General Plan is scheduled to be updated in 2024, and the Five-Year Consolidated Plan is scheduled to be updated in 2025.

Most of the population within 1 mile of the Facility is college educated, with only 1 percent of residents over 25 having less than a high school education and 54 percent having a bachelor's degree or more. In that vein, 54 percent of households in the radius earn more than $75,000 a year and 15 percent earn less than $25,000. Roughly half of the population within the radius are not in the labor force, likely because they are older and retired, as six census block groups (CBGs) were in the upper percentiles for the state for population over 64. Of those in the workforce, roughly 2 percent are currently unemployed. The area surrounding the Facility is urban and suburban to the east and north and includes GRIC land to the west and south.

Maricopa County includes 58 different school districts, including the Chandler Unified School District, and serves over 750,000 students (Maricopa County School Superintendent n.d.). There are 162 schools within 10 miles of the Facility (USEPA 2022). The Chandler Unified School District serves approximately 43,000 students with 32 elementary schools, nine middle schools, six high schools, and four alternative schools. The District's 2023–2024 enrollment numbers show that the District has lost approximately 830 students in the last year, compared to 2022–2023 school year enrollment numbers. The drop in enrollment is attributed to an increase in students enrolling in private and charter schools in the area, as well as the high cost of home ownership in the area (The Chandler Arizonan 2024).

3.10.3 Environmental Consequences

3.10.3.1 Proposed Action

Indirectly, during the construction phase of the two new fabs, Intel OC would provide approximately 6,000 short-term construction jobs.

Installation of SME under the Proposed Project would require approximately up to 1,950 workers for several months during periods of install. The direct effect on socioeconomics from SME delivery and installation would be short term, although many of these workers, other than those in specialty trades, may be hired as full-time direct employees to support the operations phase of the SME.

Indirectly, the operations phase of the Proposed Project would provide an additional approximately 3,000 permanent positions to the current Intel OC workforce. These positions would be provided competitive compensation and benefit packages, adding to local spending and tax revenues (SIA 2021). Intel prefers to source employees locally when possible, which could create jobs that would employ many local residents (Intel 2022c). To foster the available local and diverse talent pool, Intel has developed a partnership with the Maricopa Community College in 2022, provided grants to 21 Arizona schools and nonprofits, and joined the Equity in STEAM (Science, Technology, Engineering, Arts and Mathematics) initiative. Intel also has an internship and graduate programs, designed for early career individuals to learn skills on the job. Intel employees have access to Intel's internal training course system and Intel's "Gigs" (short-term job assignments designed to introduce employees to new experiences and help develop new skills) (Intel 2022c).

While Chandler has approximately 5,500 unoccupied housing units, during the initial hiring phase for the new fabs, workers relocating to the area may face difficulties finding affordable or local housing and may have to commute further or put a higher percentage of their income on housing. Workers relocating to the area that can afford higher housing prices could potentially displace lower income residents, causing some to move to more affordable areas. Additionally, the Proposed Project would create an estimated 17,100 indirect jobs (SIA 2021), which would generate additional tax revenue, yet potentially strain housing availability close to the Facility. Under the initiatives outlined in the City's General Plan (City of Chandler 2016) and the Five-Year Consolidated Plan and Annual Action Plan for 2020-2025 (City of Chandler 2020b), new employment associated with the Proposed Project is not expected to stress the local housing market or local school systems. Additionally, the Chandler Unified School District and broader Maricopa County School Districts would be able to accommodate an increase in school enrollment because of families moving to the area for employment, due to their declining enrollment numbers in the past year.

Under the Proposed Action, the Proposed Project is anticipated to have direct and indirect beneficial effects on socioeconomics by stimulating the local, regional, and state economy through the creation of construction and operations jobs and subsequent generation of local and state tax revenue.

3.10.3.2 No Action Alternative

Under the No Action Alternative, Fab 42 would continue to operate with its existing equipment and the shells of Fabs 52 and 62 would be completed to a state of weather-tightness but would not become functioning fabs. Temporary socioeconomic effects from currently ongoing construction would still occur. Under the No Action Alternative, the current operational workforce of approximately 6,000 employees would not be expected to change. However, the long-term beneficial socioeconomic effects in terms of direct and indirect jobs would be less than under the Proposed Action.

3.10.4 BMPs and Mitigation

The Proposed Action would positively affect socioeconomic conditions in the area. No BMPs or mitigation are required.

3.11 Environmental Justice

EPA defines environmental justice (EJ) as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies (USEPA 2016).

3.11.1 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:

- (i) 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
- (ii) 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.

3.11.2 Affected Environment

Demographic and socioeconomic data, including U.S. Census Bureau data and EPA's Environmental Justice Screening and Mapping (EJScreen) tool (CEQ 2023a), can help identify communities with EJ concerns, in line with EO 12898's directive to address environmental and human health conditions in minority and low-income communities. DOC and the State of Arizona do not use a single established radius for EJ analysis. For purposes of this EA, a 1-mile radius around the Facility was selected as a sufficiently broad initial EJ screening value and study area based on the likely concentration and extent of construction activities, noise, and visual, economic, and traffic effects associated with the Facility.

Appendix C contains EPA's EJScreen reports for the 15 CBGs within the 1-mile radius (Figure 3-5). The Intel OC Facility is located in census tract (CT) 9805 block group (BG) 1, which contains no permanent population, as the Facility occupies the vast majority of CT 9805 BG 1's landmass. Pockets of linguistic isolation may exist within the 1-mile radius study area. Spanish is the next most frequently spoken language in the study area CBGs after English. CPO has mailed notices of the availability of this EA for public comment in both English and Spanish to ensure greater participation.

Generally, the population within a 1-mile radius of the Facility is less diverse than Arizona and Maricopa County as a whole and has a higher income than those comparative populations (USEPA 2022; U.S. Census Bureau 2022c). However, there are two CBGs that are more than 50 percent minority: CT 8130 BG 4; and CT 9411 BG 1:

- In CT 8130 BG 4, approximately 59 percent of the 814-person population are minority [Black (14 percent), Asian (33 percent), Hispanic (3 percent), or two or more races (9 percent)]. Only 2 percent of the population in this block group are considered low income.
- CT 9411 BG 1 is within the GRIC, where the area is primarily devoted to agriculture and consists of mostly open land or agricultural fields, with very few residential structures (USEPA 2022b). According to CEQ's Climate and Economic Justice Screening Tool (CEJST), CT 9411 is the only community within the study area that is identified as "disadvantaged," meaning that it meets more than one burden threshold (energy costs) and an associated socioeconomic threshold (low income) (CEQ 2022). The entire population of this BG (approximately 20–

30 people) are minority (Asian), and 52 percent are considered low income (a greater proportion than the state or county average).

All but one of the CBGs immediately surrounding the Facility are in the 80th percentile or higher for Risk Management Plan Facility Proximity (e.g., facilities with potential chemical accident management plans). Selected CBGs are in the 80th percentile and above for other pollution and source indicators, including $PM_{2.5}$ and the Air Toxics Respiratory Hazard Index (USEPA 2022). Overall, the area within the 1-mile radius study area of the Facility is not significantly overburdened by existing pollution and sources factors.

Figure 3-5. Environmental Justice Communities

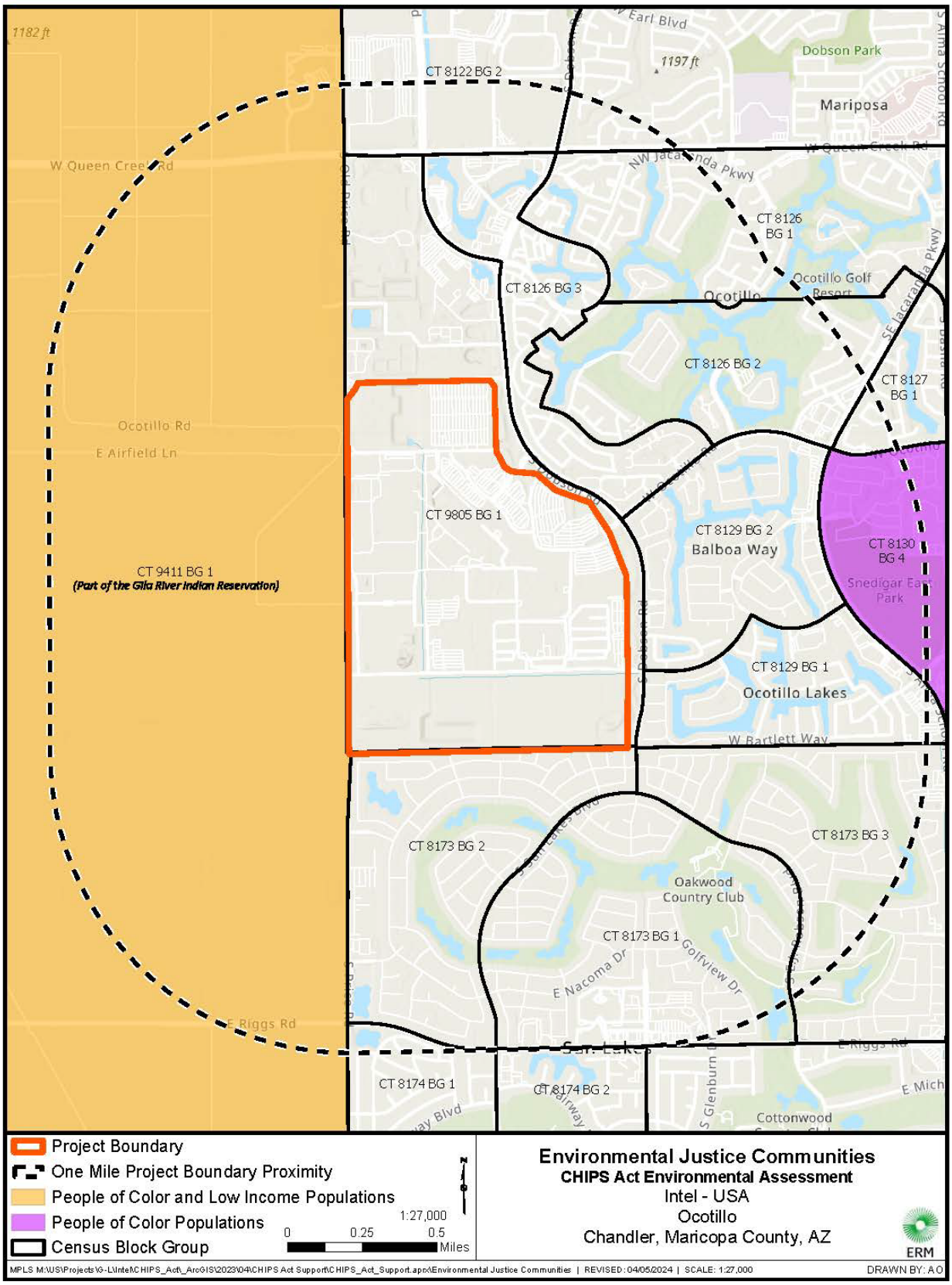


Table 3-8. Ethnicity, Race, and Low-Income Population

Location	White alone (%)	Black or African American alone (%)	American Indian and Alaska Native alone (%)	Asian alone (%)	Native Hawaiian and Other Pacific Islander alone (%)	Some other race alone (%)	Two or more races (%)	Hispanic or Latino (%)	Total Minority (%)	Low-Income Population (%)
Arizona	53.4	4.2	3.6	3.2	0.2	0.3	3.2	31.9	46.6	32
Maricopa County	53.8	5.3	1.4	4.1	0.2	0.3	3.3	31.5	46.2	29
CT 8122 BG 2	75.1	1.9	0.0	10.2	0.4	0.0	0.0	12.4	24.9	14
CT 8126 BG 1	70.6	8.0	0.0	4.0	0.0	0.0	3.3	14.0	29.4	18
CT 8126 BG 2	72.0	0.0	0.0	7.5	0.0	0.0	1.1	19.4	28.0	2
CT 8126 BG 3	66.9	15.4	0.2	8.3	0.0	0.6	5.6	3.1	33.1	13
CT 8127 BG 1	71.1	2.3	0.0	25.2	0.0	0.0	0.0	1.4	28.9	8
CT 8129 BG 1	57.9	0.0	0.0	28.5	0.0	0.0	1.9	11.6	42.1	9
CT 8129 BG 2	64.7	3.1	0.0	17.3	0.0	0.0	3.9	11.0	35.3	15
CT 8130 BG 4	40.7	14.3	0.0	33.2	0.0	0.0	9.1	2.8	59.3	2
CT 8173 BG 1	96.1	0.0	0.0	1.8	0.0	0.0	0.0	2.1	3.9	27
CT 8173 BG 2	93.9	1.2	0.0	1.3	0.0	0.0	0.0	3.6	6.1	14
CT 8173 BG 3	95.5	0.0	0.0	0.0	0.0	0.0	0.0	4.5	4.5	16
CT 8174 BG 1	94.6	2.4	2.2	0.0	0.0	0.0	0.7	0.0	5.4	22

Location	White alone (%)	Black or African American alone (%)	American Indian and Alaska Native alone (%)	Asian alone (%)	Native Hawaiian and Other Pacific Islander alone (%)	Some other race alone (%)	Two or more races (%)	Hispanic or Latino (%)	Total Minority (%)	Low-Income Population (%)
CT 8174 BG 2	95.1	0.8	1.5	0.8	0.0	0.0	0.6	1.3	4.9	22
CT 9411 BG 1	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0	52
CT 9805 BG 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: U.S. Census Bureau 2022c; USEPA 2022.

3.11.3 Environmental Consequences

This analysis focuses on the potential for disproportionate and adverse effects on communities with EJ concerns.

3.11.3.1 Proposed Action

Most communities within the 1-mile radius do not meet the definitions of communities with EJ concerns under CEQ and EPA guidance, or as disadvantaged communities under CEQ's CEJST guidelines. The two block groups that meet the definitions are:

- CT 8130 BG 4, which has a minority population of 59 percent and a low-income population of 2 percent; and
- CT 9411 BG 1, which is within the GRIC, where the small population within the large 35-square-mile BG resides over a mile from the Facility.

As discussed, the Proposed Project may result in effects on off-site populations, such as through increased air emissions, water use, wastewater, local traffic, and waste generation. Based on the review of these resource areas, adverse environmental and safety effects on off-site populations, including communities with EJ concerns, are expected to be less than significant, as described below:

- The Proposed Project would increase emissions of air pollutants, but where any emissions might exceed the NAAQS (air quality standards), they would be offset through emission reduction credits within the same airshed, resulting in less than significant effects (Section 3.1.3.1).
- Water use would also increase under the Proposed Action, but with reclamation measures by the City and Intel, availability of water to the community would not be affected significantly and the City would maintain its Assured Water Supply (Section 3.3.3.1).
- Under the Proposed Action, the increase in wastewater from the Facility would be handled through existing and modified Intel OC pre-treatment systems and City wastewater treatment facilities that would treat water to Class A+ standards (Section 3.3.3.1).
- As an indirect effect of the Proposed Action, local traffic would increase at Intel OC with the operation of two new fabs, but with Intel's TRP and road improvements already completed or soon to be completed, traffic levels would fall within acceptable levels (Section 3.7.3.1).
- The Proposed Project would increase waste generation at the Facility, where storage and transport could cause higher frequencies or volumes of inadvertent releases that could affect off-site populations. However, Intel uses secondary containment, leak detection systems, and permitted and registered waste transporters to minimize potential releases. Accidental releases of hazardous chemicals would be rare under normal operating conditions (Section 3.9.3.1).

Based on the limited minority and low-income populations near the Facility and the anticipated lack of significant adverse environmental effects of the Proposed Project on the above resource areas, no disproportionate or significant effects on communities with EJ concerns are anticipated from the Proposed Action.

3.11.3.2 No Action Alternative

Environmental effects of the No Action Alternative would not change; therefore, no disproportionate or significant effects on communities with EJ concerns would occur.

3.11.4 BMPs and Mitigation

No significant negative effects on communities with EJ concerns are anticipated under the Proposed Action. Intel's Good Neighbor Policy establishes the steps Intel takes to address potential effects of Intel OC operations on its neighbors. The goal is to communicate to neighbors ahead of time regarding relevant issues. Intel OC also will continue to host its Community Advisory Panel (which provides two-way communication between the community and Intel) to review issues and create a positive, proactive dialogue.

3.12 Summary of Effects on Resource Areas

A summary of the effects of the alternatives is provided in Table 3-9. BMPs to avoid and minimize effects are presented in Section 2 (Table 2-2).

Table 3-9. Summary of Potential Effects on Resource Areas

Resource Area	No Action Alternative	Proposed Action
Air Quality	No significant effects	No significant effects
Climate Change, Disaster Resiliency, and Sustainability	No significant effects	No significant effects with BMPs
Water Resources	No significant effects	No significant effects with BMPs
Cultural Resources	No significant effects	No significant effects
Biological Resources	No significant effects	No significant effects
Noise	No significant effects	No significant effects
Transportation	No significant effects	No significant effects
Human Health and Safety	No significant effects	No significant effects with BMPs
Hazardous Materials and Wastes	No significant effects	No significant effects with BMPs
Socioeconomics	Beneficial effects	Beneficial effects
Environmental Justice	No significant effects	No significant effects

4. CUMULATIVE EFFECTS

This section: (1) defines cumulative effects; (2) describes past, present, and reasonably foreseeable actions and trends relevant to the cumulative effects analysis; (3) analyzes the incremental interactions 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 effects follows the objectives of NEPA, the NEPA regulations, and CEQ guidance. Cumulative effects are defined 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." 40 C.F.R. § 1508.1(g)(3).

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 near 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 time frame in which the effects could be expected to occur. The study area delimits the geographic extent of the cumulative effects analysis. In general, the study area includes those geographic areas previously identified in Section 3 for the respective resource areas. The extended study area considered for cumulative effects includes the Facility, which will house the SME proposed for Fabs 42, 52, and 62, and a 3-mile radius surrounding the Facility (see Figure 4-1). The time frame for cumulative effects centers on the timing and duration of the Proposed Action. The SME to be installed under the Proposed Action is anticipated to operate for approximately 8 years before replacement. The overall Facility is expected to operate for at least 18 years.

For purposes of this analysis, public documents prepared by federal, state, and local government agencies form the primary sources of information regarding reasonably foreseeable actions. Documents used to identify other actions include notices of intent to prepare EISs and EAs, management plans, land use plans, and other planning related studies.

4.3 Past, Present, and Reasonably Foreseeable Actions and Trends

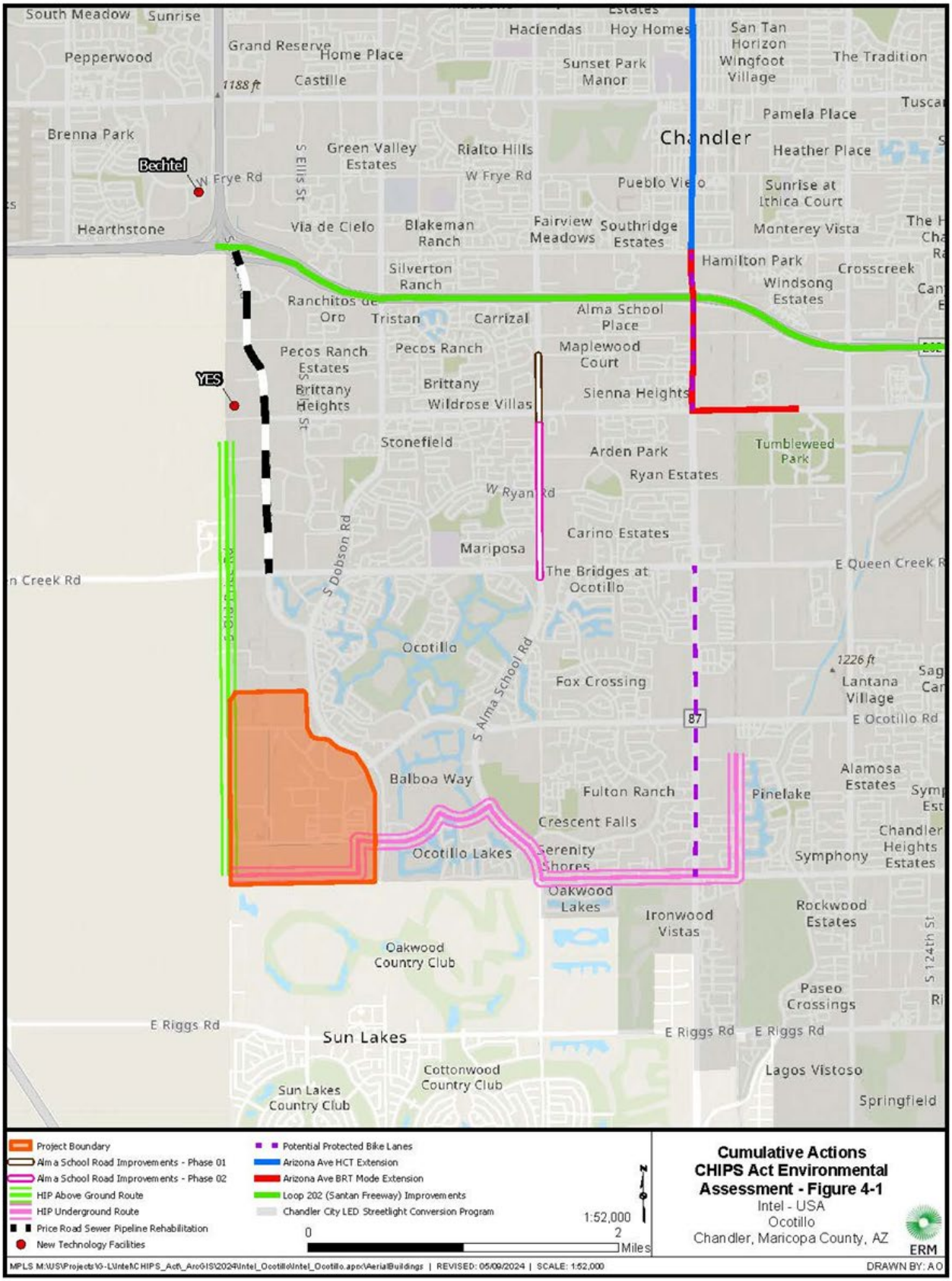
Actions and trends included in this analysis are listed in Table 4-1 and are briefly described in the following subsections.

Table 4-1. Cumulative Effects Evaluation

Past, Present, and Reasonably Foreseeable Future Actions or Trends	Timing	Affected Resource Areas
Potential changes to air regulations for Arizona	Pending	Air Quality

Past, Present, and Reasonably Foreseeable Future Actions or Trends	Timing	Affected Resource Areas
City of Chandler RWIF	Future	Water Resources
Introduction of new semiconductor/electronics technology companies and suppliers in the Phoenix Metropolitan Area	Future	Air Quality; Water Resources; Transportation; Socioeconomics; Climate Change, Disaster Resiliency, and Sustainability
Loop 202 (Santan Freeway), Loop 101 to Val Vista Drive (ADOT, 2024)	Future	Air Quality; Noise; Transportation; Socioeconomics; Climate Change, Disaster Resiliency, and Sustainability
LED Streetlight Conversion Program	Completed	Transportation; Human Health and Safety; Climate Change, Disaster Resiliency, and Sustainability
Alma School Road Multi-Phase Project Improvements (City of Chandler, 2024e)	Present	Air Quality; Noise; Transportation; Socioeconomics; Climate Change, Disaster Resiliency, and Sustainability
Arizona Avenue Alternative Analysis (Valley Metro, 2021)[12]	Present	Air Quality; Noise; Transportation; Socioeconomics; Climate Change, Disaster Resiliency, and Sustainability
Protected Bike Lane Feasibility Study (City of Chandler, 2023c)	Pending	Air Quality; Noise; Transportation; Human Health and Safety; Socioeconomics; Climate Change, Disaster Resiliency, and Sustainability
Price Road Sewer Pipeline Rehabilitation (City of Chandler, 2024f)	Present	Water Resources
High-Tech Interconnection Project (SRP, 2024)	Present	Biological Resources; Environmental Justice
Maricopa County projected population growth	Future	Air Quality; Water Resources; Biological Resources; Transportation; Socioeconomics
Existing operations at the Intel OC Facility	Present	Air Quality; Transportation; Hazardous Materials and Wastes; Socioeconomics

Figure 4-1. Cumulative Actions



4.3.1 Past Actions

The City of Chandler's LED Streetlight Conversion Program began in early January 2023 and was complete by January 2024. This Conversion Program is a city-wide effort throughout the City of Chandler, is considered non-intrusive, and consists of crews using a bucket truck at each streetlight to replace the existing light fixture with a new LED light fixture (City of Chandler 2024b).

4.3.2 Present and Reasonably Foreseeable Actions

The Reclaimed Water Interconnect Facility (RWIF) is an advanced membrane water treatment facility to treat surface water from both Salt River Project and Colorado River sources. The additional supply of water produced from this facility will be used to supplement the City's groundwater recharge efforts as well as supply additional water for industrial cooling at the Intel OC Facility. The availability of reclaimed water allows the City to reduce demand for surface water supplies, saving drinking water for the future (City of Chandler 2024d).

Other semiconductor and electronics manufacturing and technology companies are establishing a presence in the City of Chandler. Both Bechtel and Yield Engineering Systems have selected the City of Chandler to house new offices and manufacturing facilities to increase their companies' manufacturing, engineering, procurement, project controls, and construction management capabilities. The Bechtel facility opened in June 2023, and the Yield Engineering Systems facility opened in July 2023.

ADOT, in collaboration with the Maricopa Association of Governments, initiated the Loop 202 project to widen and make other improvements to the Loop 202 (Santan Freeway) between Loop 101 (Price Freeway) and Val Vista Drive in the City of Chandler and the Town of Gilbert, approximately 3 miles north of the Intel OC Facility. The project is currently in the design phase and is scheduled to begin construction in mid-2024 (ADOT 2024). The purpose of this project is to improve traffic capacity on Loop 202 to address growing traffic demands in the southeast Valley and relieve traffic congestion on Loop 202 during the morning and evening peak travel periods. Maricopa County is one of the fastest growing regions in the United States, with the population expected to increase by nearly 30 percent between 2020 and 2040. Traffic volume projections indicate congestion will worsen in the future due to growth in the region.

The Alma School Road Improvement program includes Phase 1 improvements to Alma School Road, from the first median break south of Germann Road to north of the Pecos Road intersection at approximately Fairview Street. The Phase 1 improvements were completed in 2021. Phase 2 improvements on Alma School Road are from the first median break south of Germann Road to Queen Creek Road. Phase 2 includes widening Alma School Road from four lanes to six lanes, providing higher capacity, and allowing residents to efficiently access regional transportation facilities. Design of Phase 2 is scheduled for Fiscal Years 2023–2025 and construction is scheduled for Fiscal Years 2025–2026. Phase 3 is currently scheduled to begin design in Fiscal Years 2024–2025, with construction tentatively scheduled for Fiscal Years 2026–2027 (City of Chandler 2024c). The Alma School Road Improvement program is approximately 3 miles northeast of the Intel OC Facility.

The Arizona Avenue Alternatives Analysis (Valley Metro 2021) evaluates the potential for a future high-capacity transit system to connect points of interest, and planned developments and emerging transit corridors in the City of Chandler and the greater East Valley. This analysis identifies which types of high-capacity transit, such as bus rapid transit (BRT), light rail, or modern streetcar, will

best meet the area's transportation needs. For both BRT and rail, the analysis identified Pecos Road and Arizona Avenue as the most feasible end-of-line options, with a possible BRT extension south to Germann Road, approximately 3.2 miles from the Intel OC Facility.

The City of Chandler conducted the Protected Bike Lane Feasibility Study (City of Chandler 2023c) to evaluate the feasibility of upgrading existing bike lanes in Chandler to protected bike lanes (PBLs). Additionally, this Feasibility Study developed a prioritized list of locations for potential PBLs based on a series of priorities. While this Feasibility Study identified areas that could benefit from new PBLs, to date no implementation or construction has been scheduled. The results of the Feasibility Study indicate that there are three potentially constructable high-scoring PBLs near the Intel OC Facility:

1. On Arizona Avenue, starting from Germann Road and ending at Pecos Road;
2. On Arizona Avenue, starting from Chandler Heights Road and ending at Ocotillo Road; and
3. On Arizona Avenue, starting from Ocotillo Road and ending at Queen Creek Road.

The City of Chandler is rehabilitating the sewer pipeline on Price Road, from just south of the Loop 202 Santan Freeway to Queen Creek Road, and then further south slightly to the Ocotillo Water Reclamation Facility at Price Road and Queen Creek Road, approximately 0.75 miles north of the Intel OC Facility. The purpose of this rehabilitation is to extend the life of the sewer pipeline, which is less impactful than removal and replacement of the sewer pipeline. During construction, roads will remain open for travel with lane reductions and possible turn restrictions in place. Night work may be required on Price Road nearest the Loop 202 Santan Freeway. Construction is scheduled to begin in June 2024 (City of Chandler 2024d).

To meet the increased power demand for the Intel OC Facility, the Arizona Corporation Commission and the City of Chandler approved the construction of a new 230kV substation at the Facility and new 230kV transmission lines connecting the Facility to Schrader and Henshaw Substations, collectively referred to as the High-Tech Interconnection Project (HIP) (SRP 2024). One new 230 kV line that will serve the Facility is approximately 3 miles in length, and will run from the existing Henshaw Substation, along Old Price Road, and into the Intel OC property. Crews have installed the foundations and poles, and line crews are currently in the process of pulling new conductor. The pole structures range from 90 to 180 feet tall. The 230 kV underground line will be installed on the Intel OC property and along West Chaparral Way, South Alma School Road, Chander Heights Road, and South Arizona Avenue, ending at the existing Schrader Substation. The HIP is expected to be completed in the spring of 2024.

According to the Arizona Office of Economic Opportunity, Maricopa County's population is expected to increase by 21 percent by 2040, to a total population of 5,762,655 residents (Arizona Office of Economic Opportunity 2022).

Operations at the Intel OC Facility would continue with or without implementing the Proposed Project. Intel would continue manufacturing semiconductors and microprocessors at the Facility and is expected to continue to comply with all operating permits and to maintain a similar level of employment at the Facility. It is also expected that Intel would continue to implement their corporate, social, and environmental goals, including reducing GHG emissions, achieving net positive water use, implementing their Environmental, Health, and Safety Policy, and engaging with the surrounding community.

4.4 Cumulative Effects Analysis

Where feasible, the cumulative effects of the Proposed Action were assessed using quantifiable data; however, where quantifiable data were not available, a qualitative analysis was undertaken. In addition, where an analysis of potential environmental effects for future actions has not been completed, assumptions were made regarding cumulative effects for purposes of this EA. The analytical methodology presented in Section 3, which was used to determine potential effects on the various resource areas analyzed in the EA, was also used to evaluate cumulative effects.

4.4.1 Air Quality

The region of influence (ROI) for assessing cumulative effects on air quality is the regional planning area in which the Intel OC Facility is located, which is the City of Chandler, within Maricopa County. Maricopa County is currently designated as in serious nonattainment for PM_{10}, moderate nonattainment for 8-hour ozone, and in attainment or unclassifiable for all other criteria pollutants (USEPA 2024) (see Section 3.1).

Despite Maricopa County being one of the fastest growing and largest counties in the nation, air quality has improved over the last 20 years. According to MCAQD's 2023 Annual Report, MCAQD has implemented several community programs to reduce air pollution. The Travel Reduction Program has over 1,100 participating employers. MCAQD's Business Assistance air pollution reduction programs are helping businesses replace gas powered equipment with electric or battery powered versions. Additionally, the agency's Propane Firepit and Fireplace Retrofit programs are helping to reduce $PM_{2.5}$ emissions.

Two anticipated changes to applicable air regulations include:

- Upcoming Changes to NAAQS for Ground Level Ozone: In October 2023, EPA issued a finding of failure to submit a State Implementation Plan to address moderate ozone attainment. Although ADEQ, the Maricopa Association of Governments, and MCAQD are working with EPA Region 9 on this issue, it is anticipated that EPA will soon redesignate Maricopa County from moderate to serious nonattainment for ground level ozone. However, the date for the change in attainment designation is not known. In January 2024, EPA proposed supplemental rulemaking under the CAA's "good neighbor" provision that would designate Arizona an upwind state, which would require Arizona utilities and industrial facilities to reduce ground level ozone emissions that impact neighboring downwind states. This proposed supplemental rulemaking would impose a Federal Implementation Plan (FIP) on Arizona. However, at this time, advanced manufacturing, including semiconductor manufacturing, is not included as a category in the prospective FIP.
- Upcoming Changes to NAAQS for $PM_{2.5}$: On February 7, 2024, EPA reduced the nationwide regulatory threshold for primary levels of $PM_{2.5}$ from 12.0 $\mu g/m^3$ to 9.0 $\mu g/m^3$. The effective date of this action is 60 days following the notice of final rulemaking in the Federal Register, with the earliest date of attainment in 2032. EPA will identify the attainment status of counties within 2 years of the new standard. For new and expanding facilities that would require a permit or permit modification in or after 2026, the facilities will be required to work with the permitting agencies to determine LAER. Maricopa County was not previously classified as a nonattainment area for $PM_{2.5}$ but would be under the final rule. In March 2024, the Arizona Chamber of Commerce and members of the Arizona legislature filed a lawsuit in the U.S. Court of Appeals for the District of Columbia Circuit challenging EPA's authority to impose stricter regulations.

This lawsuit follows a court action filed previously by 24 state attorneys general who also challenged the authority of EPA to enforce stricter regulations. These legal challenges have the potential to impact the rollout of the new rules.

These upcoming changes to air regulations affecting Arizona could hamper new industrial development in Arizona, require industries to implement more stringent air pollution controls, or induce regulations or programs to promote use of cleaner fuels and other sustainable practices designed to reduce emissions of $PM_{2.5}$ and ground level ozone.

Under the Proposed Action, the Intel OC fabs would continue to comply with the requirements of Intel OC's Title V operating permit, including PALs (see Section 3.1.3). To comply with the emission limits, improve energy efficiency, and reduce emissions, Intel OC proposed to use BACT for its small industrial boilers, emergency diesel generators, and VOC abatement systems. The Facility will follow the requirements of Maricopa County's Travel Reduction Plan to reduce emissions from SOV trips or miles traveled in line with the Plan goal of a 60 percent SOV rate. In 2023, the Facility's SOV rate was approximately 56 percent.

Construction of planned and ongoing roadway and utility projects within Maricopa County would result in additional air pollutant loads in the study area. Development within the area will comply with Regulation III of the Maricopa County Air Pollution Control Rules and Regulations (City of Phoenix Municipal Code Section 626), which addresses smoke, gas, and odor emissions. Any construction-related adverse effects on air quality will be short-term. Once road improvement construction is complete, improved traffic flow and reduced stop-and-go traffic would reduce idling emissions from vehicles to some degree. Additionally, if the PBLs and high-capacity transit are implemented, this could result in decreased numbers of vehicles on the road, thereby further reducing effects on air quality or reducing the increase in vehicle air pollution from anticipated long-term population increases.

Future industrial development within the ROI, including any potential future expansion of the Intel OC Facility, may be limited to those projects that can meet tightening air permitting requirements, which could result in any cumulative effects from industrial and commercial sources on air quality in the study area falling below significant levels. Other MCAQD initiatives also likely would continue to improve air quality. Overall, cumulative effects on air quality are likely to be minor to moderate, depending on the degree of economic development in Maricopa County and associated population increases.

4.4.2 Climate Change, Disaster Resiliency, and Sustainability

The ROI for assessing GHGs and climate change is generally global, although relative effects of a project may be assessed against regional, state, or local climate goals.

Under the Proposed Action, Intel OC's Scope 2 GHGs would be offset through use of on-site solar panels, purchases of renewable electricity from the Salt River Power East Line Solar project in Coolidge and through purchases of RECs for its remaining electricity needs. Further, the installation of SME for the Proposed Action would not have a significant impact on climate change, disaster resiliency nor sustainability. The operation of SME would contribute incrementally to climate change (e.g., Scope 1 GHG emissions) and the Proposed Projects' GHGs at its highest possible case would represent approximately 2 percent of Maricopa County's annual GHG emissions (Section 3.2.3.1). This increase in GHG under the Proposed Project would pose moderate cumulative effects at a local level, detracting from the County's 2018-2020 GHG reductions. The

Proposed Project would increase water use but would include increases in water reclamation such that the City's Assured Water Supply would not be adversely affected. Lastly, Fabs 52 and 62 would be designed in accordance with LEED® standards, fostering sustainable building practices. With BMPs to reduce Scope 1 F-GHGS, to avoid Scope 2 GHGs and Intel's water recycling and reuse measures (see Section 3.2.3), the Proposed Action would likely not contribute to significant adverse cumulative effects on climate change, disaster resiliency nor sustainability.

The City is focused on sustainability, balancing the environment and economic needs of the community through five focus areas: energy consumption, urban land use renewable energy, sustainable vehicles, and water consumption (City of Chandler 2024b). Although climate change may be causing an increase in frequency and intensity of heat waves and natural weather events, reduced precipitation and drought conditions, the City implements strategic initiatives to address potential environmental effects:

1. Reducing energy consumption. The City is conducting building assessments and energy audits to identify energy reduction opportunities and implement energy retrofits, including the LED Streetlight Conversion Program.
2. Water conservation and reuse initiatives. The City proactively invests in infrastructure, diverse water supplies, water reuse, and water conservations programs. This includes an innovative reclaimed water system that treats approximately 11 billion gallons of wastewater each year, which is used for landscape irrigation, industrial use and aquifer recharge (City of Chandler 2024b). As discussed in Section 3.3.2.5, the City of Chandler and Intel are committed to expanding water reclamation as part of the Proposed Project.

Some of the past, present, and future actions described in Table 4-1 would likely contribute beneficial effects to climate change, disaster resiliency, and sustainability. For example, transportation projects and the County Travel Reduction Program are expected to alleviate traffic congestion and improve movement, reducing effects to air quality and emissions from vehicles. The RWIF is expected to enhance water sustainability. Conversely, increases in population may contribute to increased vehicle use with increased mobile source GHGs and increase demand for water. Overall, cumulative effects on climate change, disaster resiliency and sustainability would be minor to moderate depending on the degree of economic development in the local area and associated population increase.

4.4.3 Water Resources

The Proposed Action to purchase and install SME at three fabs at Intel OC would not cause direct effects to surface waters, wetlands, or floodplains. However, the Proposed Project has the potential to affect water resources based on the water demands necessitated by wafer production in those fabs. The Proposed Action would indirectly require water use that is derived from surface water and groundwater. The on-site treatment and reclamation facility will be expanded to allow for additional capacity to serve the two new fabs and will require improvements to the sewage conveyances and modification of the existing wastewater discharge permit to include the new operations. Approximately 57 percent of the City of Chandler's drinking water comes from the Salt and Verde Rivers. During a water shortage, the City can also rely on water stored underground. The City has enough water stored underground to last for approximately 20 to 30 years. Since the 1980s, the City has been investing in infrastructure to treat and reuse wastewater for non-potable uses such as urban irrigation, industrial uses, aquifer recharge and riparian wetlands (City of Chandler 2024c).

On a regional scale, the Colorado River has been over-allocated and drought intensity has been increasing. The first cut to Arizona's allocation of Colorado River water came in 2022. As temperatures continue to rise and the population increases, Maricopa County will see more extreme heat days, which increase water demand. To combat low water supply, Maricopa County has implemented several programs to manage water use more efficiently:

- Groundwater Recharge: The Central Arizona Project water has been replacing groundwater since the 1990s. Excess project water and recycled water has been stored in aquifers for future use.
- Irrigation Efficiency: The agricultural industry continues to increase irrigation efficiency, producing more with the same amount of water.
- Water Reuse: Reclaimed water use has increased four-fold in the Phoenix Active Management Area (which includes Maricopa County) since 1985. Reclaimed water uses include recharge, agricultural irrigation, landscape irrigation, and restoring aquatic and riparian habitat.
- Rainwater Harvesting: Urban landscaping with harvested rainwater can increase shade and reduce urban heat effects while reducing the use of potable water (Maricopa County 2021).

The State of Arizona has granted a "Designation of Assured Water Supply" to the City of Phoenix, affirming that at least 100 years of water is physically, legally, and continuously available to serve the City's existing customers and additional growth. Currently, the City of Phoenix maintains access to water supplies sufficient to demonstrate that demands at anticipated 2025 levels can be met for more than 100 years (City of Phoenix 2011). Further, due to increased conservation and a decrease in agriculture, Arizona is below 1957 water usage levels despite massive population growth. The state has five times more water stored than it uses, and the Colorado River shortage declaration will not impact municipal or residential uses. Even while the state stands above other western states in terms of water management, semiconductor companies in Arizona work to conserve and recycle water (Greater Phoenix Economic Council 2021). In addition to Intel’s efforts to conserve water resources (see Best Management Practices in Section 2, and Section 3.3), the TSMC semiconductor manufacturing plant in Maricopa County intends to treat approximately 65 percent of the water used from their in-house water reclamation system, helping to reduce city water consumption (Arizona Republic 2022). The additional supply of water produced from the RWIF will be used to supplement the City’s groundwater recharge efforts. The addition of the RWIF in the study area will allow the City to reduce demand for surface water supplies, decrease effects from the new technology facilities in Chandler, and provide drinking water for the future (City of Chandler 2024d).

New industries added to the study area will be required to work with the regional providers to assure sufficient availability of water for their own processes, and to appropriately manage and reuse wastewaters. Because Intel OC would treat and reuse a high proportion of its wastewater, the project’s cumulative effects on local and regional water supply would be minor to moderate.

The road improvement projects planned in the study area will potentially impact stormwater runoff and will require additional flood management activities; however, these projects will adhere to state and local requirements for stormwater management. These measures will guide proper management of stormwater to avoid significant effects. The City of Chandler has multiple water conservation programs in place and future developments in the ROI will be required to comply with Chandler’s proactive water management programs (City of Chandler 2024d). Significant cumulative effects to water resources are not anticipated.

4.4.4 Cultural Resources

No cultural resources have been identified within the 1-mile study area of the Proposed Project. As no cultural resources that would be sensitive receptors subject to visual effects were identified within the 1-mile study area, new development within the study area would not be anticipated to have any significant cumulative effects on cultural resources.

4.4.5 Biological Resources

A temporary ITP was issued on March 3, 2022, to authorize the disturbance of one bald eagle nest located approximately 412 feet away from the Facility's western boundary. The ITP is valid from April 1, 2022, to December 31, 2024 (see Section 3.5.2.1). In addition to complying with the requirements of the ITP, Intel OC has implemented BMPs to ensure protection of this bald eagle nest, and no significant effects on bald eagles from the Proposed Project are expected.

Noise and lighting levels during construction of Fabs 52 and 62 would likely cause disturbance to any species within the Facility boundary, but these effects would only occur temporarily during construction. During operation, noise and lighting effects on biological resources would be negligible.

New development in the study area would be expected to follow local guidance regarding landscaping to avoid effects on native species. Assuming that no critical habitat is removed or destroyed by future construction, no significant cumulative effects on biological resources are anticipated.

4.4.6 Noise

The nearest noise sensitive receptors are residences, which are located approximately 2,000 feet to the south of Fab 62, and approximately 2,400 feet to the east of Fab 42. The potential for noise disturbance would be greatest during construction activities but would not rise to the level of significance. Operational noise levels also would remain below the level of significance. Construction and operation activities associated with cumulative actions in the vicinity of the Facility would be subject to the same City of Chandler and Maricopa County noise ordinances. No significant cumulative effects from noise on sensitive receptors are anticipated.

4.4.7 Transportation

Under the Proposed Action, traffic to and from the Intel OC Facility would increase compared to existing traffic levels surrounding the Facility. The BMPs discussed in Section 2 and Section 3.7 will manage traffic increases related to the Proposed Action to avoid significant effects on transportation.

The planned or ongoing transportation improvement projects in the area, including the Loop 202 project, the Alma School Road improvement project, the Arizona Avenue project, and the protected bike lanes project, would all cause some congestion and delays during construction; however, these projects should help alleviate traffic congestion and provide higher capacity in the long-term (ADOT 2024, City of Chandler 2023c, 2024c, Valley Metro 2021).

The LED streetlight conversion program is not expected to cause traffic congestion, as it is non-intrusive, and consists of crews using a bucket truck at each streetlight to replace existing light fixtures with new LED fixtures.

The Price Road sewer pipeline project and the HIP are expected to cause short-term minor effects on transportation, as lane reductions and traffic congestion are expected. Projected increases in traffic and population throughout Maricopa County, including increased traffic from the new technology facilities in Chandler, would likely result in less than significant effects on traffic and transportation within the City due in part to the transportation improvement projects already planned.

The traffic generated by the Proposed Action, combined with the short-term minor effects and the long-term beneficial effects of the other projects in the area, are not expected to result in any significant cumulative effects on transportation.

4.4.8 Human Health and Safety

Potential effects to human health and safety under the Proposed Project would be reduced or avoided through compliance with regulatory and permitting requirements as well as BMPs. All new projects in the study area would be required to comply with health and safety permit and regulatory requirements. For example, air permits would manage emissions to avoid harmful releases to air and OSHA would mandate responsibilities of employers for employee safety. First responders are expected to coordinate with other authorities of the proposed or planned developments so that they are prepared to respond as efficiently as possible to emergencies that could possibly occur. Assuming that the existing safeguards to human health and safety are maintained as new developments are constructed in the study area, no significant effects to human health and safety are anticipated.

4.4.9 Hazardous Materials and Wastes

Under the Proposed Action, all hazardous materials and wastes would be managed and disposed of appropriately and in accordance with applicable law, and no significant effects from hazardous materials and waste are anticipated. The Intel OC Facility uses permitted and registered waste transporters to meet current solid waste generation operations. Intel is currently under contract with a solid waste disposal vendor that includes solid waste management generated from Fabs 52 and 62. Effects to local waste-handling infrastructure are not expected to be cumulatively significant.

All past, present, or future projects in the study area will be subject to regulations ensuring the safe management, storage, and disposal of hazardous materials and wastes. Assuming that all projects in the study area manage and dispose of hazardous materials in accordance with applicable laws and regulations, no significant cumulative effects from hazardous materials and wastes are anticipated.

4.4.10 Socioeconomics

Under the Proposed Action, socioeconomic effects are expected to be beneficial through the creation of construction and operations jobs and subsequent generation of local and state tax revenue. The jobs and local and state tax revenue generated by ongoing and planned projects in the study area also will provide improved economic conditions for the local population. Considering the City of Chandler has a 5 percent vacancy rate for housing, the projected increased population would not stress the housing market and would bring increased tax revenue to the City. Cumulative effects on socioeconomics are anticipated to be beneficial.

4.4.11 Environmental Justice

As stated in Section 3.11.2, the area within a 1-mile radius of the Intel OC Facility is not significantly overburdened by existing pollution and source factors. There are two CBGs in this radius that are more than 50 percent minority, one of which has a low-income population greater than the state or county average. Generally, the population within a 1-mile radius of the Facility is less diverse than Maricopa County and Arizona as a whole and has a higher average income than those populations. Therefore, under the Proposed Action, effects on communities with EJ concerns would not be disproportionately or significantly adverse.

Similarly, the addition of the past, present, and reasonably foreseeable actions and trends described above likely would not contribute to any disproportionate or adverse effects on communities with EJ concerns in the 1-mile radius EJ study area. Although the GRIC may experience temporary adverse effects related to the construction of the HIP above ground and underground routes, these effects would be minor and temporary, lasting only the duration of construction. Cumulative effects on communities with EJ concerns are not anticipated to be significant.

5. OTHER CONSIDERATIONS REQUIRED BY NEPA

5.1 Consistency with Other Federal, State, and Local Laws, Plans, Policies, and Regulations

In accordance with 40 C.F.R. § 1502.16, analysis of environmental consequences includes discussion of possible conflicts between the Proposed Action and the objectives of federal, regional, state, and local land use plans, policies, and controls. Table 5-1 identifies the principal federal and state laws and regulations applicable to the Proposed Action and describes briefly how compliance with EOs, laws, and regulations would be accomplished.

Table 5-1. Principal Federal and State Laws Applicable to the Proposed Action

Federal and State Land Use Authorities, Plans, and Policies	Status of Compliance
National Environmental Policy Act (NEPA) (42 U.S.C. § 4321 *et seq*.); NEPA implementing regulations (40 C.F.R. Parts 1500-1508)	Compliance is being assessed in this EA.
Clean Air Act (42 U.S.C. § 7401 *et seq*.)	Effects on air quality were assessed in this EA (Section 3.1.3) and the Facility is subject to air permitting requirements.
Clean Water Act (33 U.S.C. § 1251 *et seq*.)	Effects on water resources were assessed in this EA (Section 3.3.3) and the Facility is subject to water permitting requirements.
Safe Drinking Water Act (42 U.S.C. § 300f *et seq*.)	Effects on groundwater resources covered under the SDWA would be minimal. The Facility's WaTR plant reduces demand for potable water and the Facility is not subject to regulation as a public drinking water source (Section 3.3).
Coastal Zone Management Act (16 U.S.C. § 1451 *et seq*.)	Not applicable.
National Historic Preservation Act (54 U.S.C. § 3001018 *et seq*.)	As part of the Section 106 consultation process, the Arizona SHPO recommended a Finding of No Historic Properties Affected (Section 3.4).
Endangered Species Act (16 U.S.C. § *1531 et seq*.)	The Proposed Project would not affect listed threatened or endangered species. BMPs would be implemented during construction and operation to manage potential effects (Section 3.5).
Migratory Bird Treaty Act (16 U.S.C. § 703 *et seq*.)	The Proposed Project would not affect migratory birds. BMPs would be implemented during construction and operation to manage potential effects (Section 3.5).
Bald and Golden Eagle Protection Act (16 U.S.C. § 668 *et seq*.)	No adverse effects on bald or golden eagles are expected. The Facility will comply with all requirements of its incidental take permit issued by USFWS (Section 3.5).

Federal and State Land Use Authorities, Plans, and Policies	Status of Compliance
Archeological and Historic Preservation Act (54 U.S.C. § 312501-312508)	No previously recorded architectural resources were identified within the Proposed Project area. Consultation with federally recognized Indian tribes is ongoing and will be complete by the Final EA (Section 3.4).
Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. § 9601 *et seq*.)	Not applicable.
Emergency Planning and Community Right-to-Know Act (EPCRA) (42 U.S.C. § 11001 *et seq*.)	Construction and operations would comply with EPCRA (Sections 3.8.2 and 3.9.2).
Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. § 136 *et seq*.)	Not applicable. The Intel OC Facility does not manufacture, distribute, sell, or use pesticides.
Resource Conservation and Recovery Act (RCRA) (42 U.S.C. § 6901 *et seq*.)	The Proposed Project would comply with RCRA (Section 3.9).
Toxic Substances Control Act (TSCA) (15 U.S.C. § 2601 *et seq*.)	The Proposed Project would comply with TSCA (Section 3.8).
Farmland Protection Policy Act (7 U.S.C. § 4201 *et seq*.)	Not applicable. The site contains no prime farmland.
EO 11988, Floodplain Management	The Proposed Project area is classified as Special Flood Hazard Area Zone D under the FEMA floodplain map. In Zone D, there are no mandatory flood insurance requirements or building requirements (Section 3.3). Because the risk has not been quantified, data on historic flood events (or lack thereof) at the Facility may be used to assess potential effects. There are no records of historic flooding on the project site.
EO 11990, Protection of Wetlands	Not applicable.
EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations	Most communities within the 1-mile radius of the Facility do not meet the definitions of communities with environmental justice concerns. Effects on communities with environmental justice concerns would not be disproportionately or significantly adverse (Section 3.11).
EO 13045, Protection of Children from Environmental Health Risks and Safety Risks	The Proposed Action would not disproportionately affect children (Sections 3.6 and 3.8).
EO 13112, Invasive Species	The Proposed Project would not affect invasive species, as BMPs would be implemented to manage the spread of invasive species (Section 3.5).
EO 13175, Consultation and Coordination with Indian Tribal Governments	Tribal government consultation is ongoing and will be complete by the Final EA (Section 3.4).
EO 14096, Revitalizing our Nation's Commitment to Environmental Justice for All	Effects on communities with environmental justice concerns would not be disproportionately or significantly adverse (Section 3.11).

The Intel Ocotillo AZ Facility is required to comply with additional measures and permit conditions not included in Table 5-1 (see Table 1-1).

6. REFERENCES

ADOT (Arizona Department of Transportation). 2024. *Loop 202 (Santan Freeway), Loop 101 to Val Vista Drive*. Available online at: https://azdot.gov/projects/central-district-projects/loop-202-santan-freeway-loop-101-val-vista-drive

ADWR (Arizona Department of Water Resources). 2024a. *Hydrology: Overview of Groundwater Levels in Arizona's Basins & Sub-Basins*. Accessed 21 February 2024. Available online at: https://www.azwater.gov/hydrology/depth-water-data

ADWR (Arizona Department of Water Resources). 2024b. *Arizona Groundwater Site Inventory (GWSI)*. Accessed 21 February 2024. Available online at: https://azwatermaps.azwater.gov/gwsiweb/?data_id=dataSource_12-GWSI_Layers_2453%3A3539365

Arizona Department of Transportation (ADOT). 2022. *Roadway Design Guidelines including Revisions through February 2022—Roadway Engineering Group*. Accessed April 2024. Available online at: https://azdot.gov/sites/default/files/media/2022/02/2021-roadway-design-guidelines-feb-2022-revised.pdf.

Arizona Department of Transportation (ADOT). 2024. Central District Projects. Accessed July 2, 2024. Available online at: https://azdot.gov/projects/central-district-projects/Central

Arizona Office of Economic Opportunity. 2022. *2022–2060 State and County Population Projections*. Available online at: https://oeo.az.gov/population/projections

Arizona Game and Fish Department. 2022. *The Arizona Wildlife Conservation Strategy, 2022-2032*. Accessed May 2024. Available online at: https://azgfd-wdw.s3.amazonaws.com/awcs-2022/documents/AWCS_Final_Approved_11-22.pdf

Arizona Republic. 2022. *Will semiconductor plants really drain Arizona? That theory is overblown*. March 4, 2022. Available online at: https://www.azcentral.com/story/opinion/op-ed/joannaallhands/2022/03/04/arizona-semiconductor-intel-tsmc-water-use/6915685001/

CDC (Center for Disease Control). 2017. *Vital Signs; Too Loud! For Too Long! Loud Noises Damage Hearing*. Accessed April 2024. Available online at: https://www.cdc.gov/vitalsigns/pdf/2017-02-vitalsigns.pdf

CEQ (Council on Environmental Quality). 2022. *Climate and Economic Justice Screening Tool.* Accessed April 2023. Available online at: https://screeningtool.geoplatform.gov/en/

City of Chandler. 1999. *The Code of the City of Chandler, Arizona*. Accessed April 2024. Available online at: https://library.municode.com/az/chandler/codes/code_of_ordinances?nodeId=THCOCHAR

City of Chandler. 2016. *Chandler General Plan, 2016 a vision refined*. Accessed February 2024. Available online at: https://www.chandleraz.gov/government/departments/development-services/planning-and-zoning/2016-general-plan.

City of Chandler. 2020a. *Transportation Master Plan; 2019 Update.* Accessed April 2024. Available online at: https://www.chandleraz.gov/sites/default/files/Transportation-Master-Plan-2019-Update.pdf

City of Chandler. 2020b. *Five-Year Consolidated Plan and Annual Action Plan—Full Report—2020-2025.* Accessed April 2024. Available online at: City-of-Chandler-Neighborhood-Resources-2020-2025-Consolidated-Plan-Full-Report-July2020.pdf (chandleraz.gov).

City of Chandler. 2021. *Development Agreement between the City of Chandler and Intel Corporation*. Approved by the City of Chander on 14 October 2021.

City of Chandler. 2023a. *Specifications and Standard Details*. January 2023. Accessed April 2024. Available online at: https://www.chandleraz.gov/sites/default/files/documents/imported/UDM_SupptoMAG.pdf

City of Chandler. 2023b. *Engineering & Design Standards Manual for Public Works Construction*. February 2023. Accessed April 2024. Available online at: https://www.chandleraz.gov/sites/default/files/City-of-Chandler-Engineering-Design-Standards-Manual.pdf

City of Chandler. 2023c. *Protected Bike Lane Feasibility Study*. July 2023. Accessed April 2024. Available online at: https://www.chandleraz.gov/sites/default/files/departments/transportation/City-of-Chandler-Protected-Bike-Lane-Feasibility-Final-Report-July-2023.pdf

City of Chandler. 2024a. *Chandler, Arizona – Code of Ordinances*. Article XVII Planned Area Development. Accessed February 2024. Available online at: https://library.municode.com/az/chandler/codes/code_of_ordinances?nodeId=PTVIPL_CH35LAUSZO.

City of Chandler. 2024b. *Sustainability*. Accessed March 2024. Available online at: https://www.chandleraz.gov/government/city-managers-office/sustainability.

City of Chandler. 2024c. *Drought Preparedness*. Available online at: https://www.chandleraz.gov/residents/water/water-conservation/drought-preparedness

City of Chandler. 2024d. *Chandler's Reclaimed Water System*. Available online at: https://www.chandleraz.gov/residents/water/water-conservation/reclaimed-water

City of Chandler. 2024e. *Alma School Road Multi-Phase Project*. Available online at: https://www.chandleraz.gov/residents/transportation/streets/road-construction/alma-school

City of Chandler. 2024f. *Sewer Manhole and Pipeline Rehab Projects*. Available online at Sewer Manhole & Pipeline Rehab Projects | City of Chandler (chandleraz.gov)

City of Phoenix. 2011. *2011 Water Resource Plan. City of Phoenix Water Services Department*. Available online at: https://www.phoenix.gov/waterservicessite/Documents/d_046975.pdf#search=Water%20Resource%20Plan

Environmental Protection Agency (EPA). 2022. Federal Water Quality Standards Requirements. Accessed June 2024. Available online at: https://www.epa.gov/wqs-tech/federal-water-quality-standards-requirements

EPA. 2023. Toxics Release Inventory (TRI) Program: What is the Toxics Release Inventory? Accessed June 2024. Available online at: https://www.epa.gov/toxics-release-inventory-tri-program/what-toxics-release-inventory

Greater Phoenix Economic Council. 2021. *Regional Report: Semiconductors. Greater Phoenix becoming Global Semiconductor Industry Hub*. Available online at: https://www.gpec.org/blog/regional-report-semiconductors/

Hoodline. 2024. Eviction Filings Surge 21% over Four Years in Maricopa County Amidst Housing Shortage. March 29, 2024. Available online at: https://hoodline.com/2024/03/eviction-filings-surge-21-over-four-years-in-maricopa-county-amidst-housing-shortage/

Intel. 2019. *Intel Construction EHS Manual*. Accessed April 2024. Available online at: https://www.intel.com/content/www/us/en/supplier/ehs/construction-ehs-manual.html

Intel. 2021a. *Global Environmental, Health, and Safety Policy*. August 2021. Accessed April 2024. Available online at: https://www.intel.com/content/www/us/en/corporate-responsibility/environmental-health-safety-policy.html

Intel. 2021b. *Intel Ocotillo—BACT Analysis*. 27 June 2021. Accessed April 2024.

Intel. 2022a. *GHG Summary Report*. 29 March 2022. Accessed April 2024. Available online at: https://www.exploreintel.com/assets/documents/ocotillo/reports/2022%20Intel%20Ocotillo%20Greenhouse%20Gas%20Report%202021.pdf

Intel. 2022b. *Intel Code of Conduct*. Accessed April 2024. Available online at: https://www.intel.com/content/dam/www/central-libraries/us/en/documents/code-of-conduct-english.pdf

Intel. 2022c. *Arizona Rise Report*. Accessed April 2023. Available online at: https://www.intel.com/content/www/us/en/corporate-responsibility/arizona-rise-report.html

Intel. 2023b. *Intel Climate Transition Action Plan*. Available online at: https://www.intel.com/content/dam/www/central-libraries/us/en/documents/2023-11/climate-transition-action-plan-2023.pdf

Intel. 2023c. *Intel's Ocotillo Campus Honored for Water Stewardship*. 11 July 2023. Accessed February 2024. Available online at: https://www.intel.com/content/www/us/en/newsroom/article/intel-arizona-site-honored-for-water-stewardship.html#gs.57cx3e

Intel. 2024. *EHS Overview: Process Equipment EHS*. 4 April 2024. Available online at: https://www.intel.com/content/www/us/en/supplier/ehs/overview.html.

Intergovernmental Panel on Climate Change (IPCC). 2023. *Climate Change 2023: Synthesis Report*. Accessed April 2024. Available online: https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf

ISMI. 2006. *International Sematech Manufacturing Initiative*. 2006. Overview of the Semiconductor Industry and its Approach to Chemical Management and Environment, Safety, and Health. 4 April 2024. Available online at: https://www.semiconductors.org/wp-content/uploads/2020/10/Overview-Of-The-Semi-Industry-And-Its-Approach-To-Chem-Mgmt-and-EHS.pdf.

Jacob, P., K. Barzen-Hanson, and D. Helbling. 2021. "Target and nontarget analysis of per-and polyfluoroalkyl substances in wastewater from electronics fabrication facilities." *Environmental Science & Technology*. 4 April 2024.

Kennis, J. 2024. Personal communication between J. Kennis (City of Chandler Wastewater Manager) and Dorothy Peterson (CHIPS Program Office). 7 June 2024.

Kittelson & Associates. 2021. *Intel Ocotillo Campus Master Plan Update with Revisions; Traffic Impact Study*. March 2021; May 2021 Update.

Kjolsrud, S. 2024. Personal communication from S. Kjolsrud (City of Chandler Public Works & Utilities) to Amanda Cruz (ERM Inc.). 2 February 2024.

Maricopa Association of Governments. 2023. *Housing Update June 2023.* Accessed April 2024. Available online at https://azmag.gov/Programs/Maps-and-Data/Land-Use-and-Housing/Housing-Data-Explorer

Maricopa County. 2004. *Hours of Construction Ordinance*. Accessed April 2024. Available online at: https://www.maricopa.gov/DocumentCenter/View/2013/P-22---Hours-of-Construction-Ordinance-PDF#:~:text=Construction%20work%20(non%2Dresidential)%3A,must%20stop%20by%2010%3A00

Maricopa County. 2016. *Vision 2023, Maricopa County Comprehensive Plan*. Accessed April 2024. Available online at: https://www.maricopa.gov/DocumentCenter/View/6756/Comprehensive-Plan---Vision-2030-Plan-PDF

Maricopa County. 2021. *Arizona Water Factsheet: Maricopa County*. Available online at: https://www.maricopa.gov/DocumentCenter/View/73858/Maricopa-County-Water-Factsheet-121721

Maricopa County. 2024a. Personal communication with Alex Torres at Maricopa County, regarding redesignation of the County to serious nonattainment for ozone. Phone call occurred on 29 March 2024.

Maricopa County Air Quality Department (MCAQD). 2021. Technical Support Document. Intel Corporation—Ocotillo Facility. Facility ID: F000701. Permit # P0006742. Revision Date 08/25/2021.

Maricopa County. 2024b. Greenhouse Gas Emissions Inventory. Accessed May 2024. Available online at: https://www.maricopa.gov/5593/Greenhouse-Gas-Emissions-Inventory

Maricopa County School Superintendent. No Date. Maricopa County School Districts and Schools. Accessed April 2024. Available online at: Mcss.knack.com/school-districts#districts/

Occupational Safety and Health Administration (OSHA). No Date. Permissible Exposure Limits—Annotated Tables. Accessed May 2024 at: https://www.osha.gov/annotated-pels

Phoenix New Times. 2024. Maricopa County Faces Eviction Crisis as Pandemic Aid Dries Up. March 11, 2024. Available online at: https://www.phoenixnewtimes.com/news/maricopa-county-faces-eviction-crisis-as-pandemic-aid-dries-up-18266347

Republic Services. 2021. *2020 Summary Annual Report*. Accessed April 2024. Available online at: https://investor.republicservices.com/static-files/141357f1-65e4-4e4d-a78c-833c2bd7aabd

SEMI (Semiconductor Equipment and Materials International). 2024a. *SEMI S2: Environmental, Health & Safety Guidelines for Semiconductor Manufacturing Equipment*. 4 April 2024. Available online at: https://store-us.semi.org/products/s00200-semi-s2-environmental-health-and-safety-guideline-for-semiconductor-manufacturing-equipment?_pos=1&_psq=s2&_ss=e&_v=1.0.

SEMI (Semiconductor Equipment and Materials International). 2024b. *SEMI S16: S Volume Safety Guidelines. SEMI S16: Guide for Semiconductor Manufacturing Equipment Design for Reduction of Environmental Impact at End of Life*. 4 April 2024. Available online at: https://store-us.semi.org/products/s01600-semi-s16-guide-for-semiconductor-manufacturing-equipment-design-for-reduction-of-environmental-impact-at-end-of-life.

SIA (Semiconductor Industry Association). 2021. *Chipping In: The Positive Impact of the Semiconductor Industry on the American Workforce and how Federal Industry Incentives Will Increase Domestic Jobs. May 2021*. Accessed April 2024. Available online at: https://www.semiconductors.org/wp-content/uploads/2021/05/SIA-Impact_May2021-FINAL-May-19-2021_2.pdf

SIA (Semiconductor Industry Association). 2023. *Background on Semiconductor Manufacturing and PFAS*. Semiconductor PFAS Consortium. 4 April 2024. Available online at: FINAL-PFAS-Consortium-Background-Paper.pdf (semiconductors.org)

SRP (Salt River Project). 2021. *SRP Transmission Project Approved by ACC: Project Will Provide Critical Energy for Intel Expansion in Chandler*. December 16, 2021. Accessed April 2024. Available online at: https://media.srpnet.com/srp-transmission-project-approved-by-acc/.

SRP (Salt River Project). 2024. *High-Tech Interconnection Project (HIP)*. Available online at: https://www.srpnet.com/grid-water-management/grid-management/improvement-projects/high-tech-interconnect-project

The Chandler Arizonan. 2024. *Student Population Decline Found Worse than Feared*. January 7, 2024. Available online at: https://www.chandlernews.com/arizonan/citynews/student-population-decline-found-worse-than-feared/article_e8ffab0c-abeb-11ee-ae39-13f8de65eebb.html

U.S. Census Bureau. 2022a. *Selected Economic Characteristics, ACS 5-Year Estimates*. DP03. Accessed February 2024. Available online at: https://data.census.gov/

U.S. Census Bureau. 2022b. *Selected Housing Characteristics, ACS 5-Year Estimates*. DP04. Accessed February 2024. Available online at: https://data.census.gov/

U.S. Census Bureau. 2022c. *Hispanic or Latino Origin by Race, ACS 5-Year Estimates*. B03002. Accessed February 2024. Available online at: https://data.census.gov/

U.S. Department of Commerce. 2023. Draft Programmatic Environmental Assessment for Modernization and Internal Expansion of Existing Semiconductor Fabrication Facilities under the CHIPS Incentives Program. Department of Commerce, National Institute of Standards and Technology, CHIPS Program Office. December 2023. Available online at: https://www.nist.gov/system/files/documents/2023/12/26/CHIPS%20Modernization%20Draft%20PEA.pdf

U.S. Environmental Protection Agency (USEPA). 2015. *Noise and its Effects on Children*. Accessed April 2024. Available online at: https://www.epa.gov/sites/default/files/2015-07/documents/ochp_noise_fs_rev1.pdf.

U.S. Environmental Protection Agency (USEPA). 2016. *Promising Practices for EJ Methodologies in NEPA Reviews: Report of the Federal Interagency Working Group on Environmental Justice & NEPA Committee*. Accessed April 2023. Available online at: https://www.epa.gov/sites/default/files/2016-08/documents/nepa_promising_practices_document_2016.pdf

U.S. Environmental Protection Agency (USEPA). 2021. PFAS Strategic Roadmap. Available online at: https://www.epa.gov/system/files/documents/2021-10/pfas-roadmap_final-508.pdf.

U.S. Environmental Protection Agency (USEPA). 2022a. *National Environmental Policy Act Implementing Regulations Revisions*. Accessed April 2024. Available online at: https://www.regulations.gov/docket/CEQ-2021-0002/unified-agenda

U.S. Environmental Protection Agency (USEPA). 2022b. *Environmental Justice Screening and Mapping Tool, Version 2.2*. Accessed February 2024. Available online at: https://ejscreen.epa.gov/mapper/

U.S. Environmental Protection Agency (USEPA). 2023a. Climate Change Regulatory Actions and Initiatives. Available online: https://www.epa.gov/climate-change/climate-change-regulatory-actions-and-initiatives.

U.S. Environmental Protection Agency (USEPA). 2023b. Hazardous Waste Management Facilities and Units. Last Updated November 9, 2023. Available online: https://www.epa.gov/hwpermitting/hazardous-waste-management-facilities-and-units#facility

U.S. Environmental Protection Agency (USEPA). 2024. *Arizona Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants*. Accessed February 2024. Available online at: https://www3.epa.gov/airquality/greenbook/anayo_az.html.

U.S. Fish and Wildlife Service (USFWS). 2022. *Short-Term Eagle Incidental Take Permit*. Permit Number MBPER0036201; Effective 1 April 2022.

U.S. Fish and Wildlife Service (USFWS). 2024a. *Species Profile—Cactus Ferruginous Pygmy-Owl*. Accessed February 2024. Available online at: https://ecos.fws.gov/ecp/species/1225

U.S. Fish and Wildlife Service (USFWS). 2024b. *Species Profile—Golden Eagle (Aquila chrysaetos)*. Accessed February 2024. Available online at: https://ecos.fws.gov/ecp/species/1680

U.S. Semiconductor Industry Workforce. 2022. The U.S. Semiconductor Industry Workforce. Accessed May 2024. Available online: 20-SIA-15889_Infographic_WORKFORCE_v2 (semiconductors.org).

Valley Metro. 2021. *Arizona Avenue Alternatives Analysis, Final Report*. June 2021. Accessed April 2024. Available online at: https://vulcan-production.nyc3.cdn.digitaloceanspaces.com/projects/downloads/arizona-avenue-alternatives-analysis/210624_aaaa_final_report.pdf

Waste Management. 2016. *Butterfield Station Landfill Factsheet*. Accessed April 2024. Available online at: https://www.wmsolutions.com/pdf/factsheet/Butterfield_Station_Landfill.pdf

WKC Group. 2024. *Sound Attenuation—Inverse Square Law*. Accessed April 2024. Available online at: https://www.wkcgroup.com/tools-room/inverse-square-law-sound-calculator/

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AZ Tech Council

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Phx-East Valley Partnership

Chandler Unified School District

Arizona State University

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Coalition for Sonoran Desert Protection

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Sierra Club

CHIPS Communities United

Arizona Land and Water Trust

Arizona Community Foundation

Audubon Southwest

Chandler Cultural Foundation

Maricopa Associations of Government

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- Cortland Chandler Crossing
- Country Brooks
- The Villas at Biagio Apartments
- Harmon Ranch
- Pueblo Santa Fe Townhomes
- The Enclave at Chandler Senior Living
- Twelve Oaks
- Wild Tree
- Brooke Apartment Homes
- IronOaks at Sun Lakes
- Ocotillo Lakes

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Ak-Chin Indian Community

Salt River Pima-Maricopa Indian Community

Yavapai Apache Nation

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Mescalero Apache Tribe

Colorado River Indian Tribes of the Colorado River Indian Reservation, Arizona and California