

---

Draft Environmental Impact Report

# **Golden State Natural Resources Forest Resiliency Demonstration Project**

---

OCTOBER 2024

*Prepared for:*

**GOLDEN STATE FINANCE AUTHORITY**

1215 K Street, Suite 1650  
Sacramento, California 95814  
Contact: Terrance Rodgers

*Prepared by:*

**DUDEK**

605 Third Street  
Encinitas, California 92024  
Contact: Brian Grattidge

**Printed on 30% post-consumer recycled material.**

---

# Table of Contents

<b>SECTION</b>		<b>PAGE NO.</b>
	Executive Summary .....	ES-1
	ES.1    Summary of Impacts .....	ES-2
	ES.2    Analysis of Alternatives .....	ES-66
	ES.3    Areas of Controversy .....	ES-68
	ES.4    Issues to be Resolved by the Lead Agency .....	ES-68
1	Introduction .....	1-1
	1.1    Purpose and Intended Use of this EIR .....	1-1
	1.2    Project Background and Overview.....	1-1
	1.3    EIR Process .....	1-2
	1.4    Scope of the Draft EIR.....	1-5
	1.5    Organization of the Draft EIR .....	1-5
2	Project Description.....	2-1
	2.1    Background.....	2-1
	2.2    Project Objectives.....	2-2
	2.3    Project Overview .....	2-3
	2.4    Feedstock Acquisition .....	2-4
	2.4.1    Harvest Residuals.....	2-4
	2.4.2    GSNR Biomass Only Thinning Projects.....	2-9
	2.4.3    "Mill Residuals" .....	2-34
	2.5    Northern California (Lassen) Facility .....	2-35
	2.5.1    Location.....	2-35
	2.5.2    Existing Conditions.....	2-36
	2.5.3    Wood Pellet Facility Components .....	2-36
	2.5.4    Plant Security and Access .....	2-40
	2.5.5    Construction and Schedule.....	2-40
	2.5.6    Operation.....	2-40
	2.5.7    Utilities.....	2-41
	2.6    Central Sierra Nevada (Tuolumne) Site .....	2-42
	2.6.1    Location.....	2-42
	2.6.2    Existing Conditions.....	2-42
	2.6.3    Wood Pellet Facility Components .....	2-43
	2.6.4    Plant Security and Access .....	2-46
	2.6.5    Construction and Schedule.....	2-46
	2.6.6    Operation.....	2-47
	2.6.7    Utilities.....	2-47

## TABLE OF CONTENTS

---

2.7	Port of Stockton .....	2-48
2.7.1	Location.....	2-48
2.7.2	Existing Conditions.....	2-48
2.7.3	Facility Components .....	2-48
2.7.4	Plant Security and Access .....	2-50
2.7.5	Construction and Schedule.....	2-50
2.7.6	Operation.....	2-50
2.7.7	Utilities.....	2-50
2.8	Project Approvals.....	2-51
2.9	References.....	2-54
3	Environmental Setting, Impacts, and Mitigation Measures .....	3.0-1
3.0	Introduction to Analyses.....	3.0-1
3.0.1	Section Organization.....	3.0-1
3.0.2	Significance Determinations.....	3.0-2
3.0.3	Cumulative Impacts Overview.....	3.0-2
3.0.4	References.....	3.0-8
3.1	Aesthetics .....	3.1-1
3.1.1	Environmental Setting.....	3.1-1
3.1.2	Regulatory Setting .....	3.1-7
3.1.3	Thresholds of Significance .....	3.1-14
3.1.4	Impact Analysis .....	3.1-15
3.1.5	References.....	3.1-25
3.2	Air Quality.....	3.2-1
3.2.1	Environmental Setting.....	3.2-1
3.2.2	Regulatory Setting .....	3.2-26
3.2.3	Thresholds of Significance .....	3.2-46
3.2.4	Impact Analysis .....	3.2-51
3.2.5	Additional Air Quality Considerations.....	3.2-198
3.2.6	References.....	3.2-205
3.3	Biological Resources .....	3.3-1
3.3.1	Environmental Setting.....	3.3-1
3.3.2	Regulatory Setting .....	3.3-30
3.3.3	Thresholds of Significance .....	3.3-59
3.3.4	Impacts Analysis .....	3.3-60
3.3.5	References.....	3.3-136
3.4	Cultural Resources .....	3.4-1
3.4.1	Environmental Setting.....	3.4-1
3.4.2	Regulatory Setting .....	3.4-43
3.4.3	Thresholds of Significance .....	3.4-49
3.4.4	Impact Analysis .....	3.4-51

## TABLE OF CONTENTS

---

3.4.5	References .....	3.4-63
3.5	Energy .....	3.5-1
3.5.1	Environmental Setting .....	3.5-1
3.5.2	Regulatory Setting .....	3.5-3
3.5.3	Thresholds of Significance .....	3.5-16
3.5.4	Impact Analysis .....	3.5-16
3.5.5	Additional Energy Considerations .....	3.5-41
3.5.6	References .....	3.5-42
3.6	Geology and Soils .....	3.6-1
3.6.1	Environmental Setting .....	3.6-1
3.6.2	Regulatory Setting .....	3.6-10
3.6.3	Thresholds of Significance .....	3.6-21
3.6.4	Impact Analysis .....	3.6-21
3.6.5	References .....	3.6-50
3.7	Greenhouse Gas Emissions .....	3.7-1
3.7.1	Environmental Setting .....	3.7-1
3.7.2	Regulatory Setting .....	3.7-12
3.7.3	Thresholds of Significance .....	3.7-35
3.7.4	Impact Analysis .....	3.7-37
3.7.5	Additional GHG Considerations .....	3.7-73
3.7.6	References .....	3.7-86
3.8	Hazards and Hazardous Materials .....	3.8-1
3.8.1	Environmental Setting .....	3.8-1
3.8.2	Regulatory Setting .....	3.8-5
3.8.3	Thresholds of Significance .....	3.8-13
3.8.4	Impact Analysis .....	3.8-13
3.8.5	References .....	3.8-32
3.9	Hydrology and Water Quality .....	3.9-1
3.9.1	Environmental Setting .....	3.9-1
3.9.2	Regulatory Setting .....	3.9-14
3.9.3	Thresholds of Significance .....	3.9-33
3.9.4	Impact Analysis .....	3.9-33
3.9.5	References .....	3.9-72
3.10	Land Use and Planning .....	3.10-1
3.10.1	Environmental Setting .....	3.10-1
3.10.2	Regulatory Setting .....	3.10-4
3.10.3	Thresholds of Significance .....	3.10-13
3.10.4	Impact Analysis .....	3.10-13
3.10.5	References .....	3.10-16
3.11	Noise .....	3.11-1
3.11.1	Setting .....	3.11-1

## TABLE OF CONTENTS

---

3.11.2	Regulatory Setting .....	3.11-9
3.11.3	Thresholds of Significance .....	3.11-24
3.11.4	Impact Analysis .....	3.11-25
3.11.5	References .....	3.11-49
3.12	Population and Housing.....	3.12-1
3.12.1	Environmental Setting.....	3.12-1
3.12.2	Regulatory Setting .....	3.12-6
3.12.3	Thresholds of Significance .....	3.12-9
3.12.4	Impact Analysis .....	3.12-10
3.12.5	References .....	3.12-15
3.13	Public Services .....	3.13-1
3.13.1	Environmental Setting.....	3.13-1
3.13.2	Regulatory Setting .....	3.13-9
3.13.3	Thresholds of Significance .....	3.13-17
3.13.4	Impact Analysis .....	3.13-18
3.13.5	References .....	3.13-24
3.14	Transportation .....	3.14-1
3.14.1	Environmental Setting.....	3.14-1
3.14.2	Regulatory Setting .....	3.14-8
3.14.3	Thresholds of Significance .....	3.14-18
3.14.4	Impact Analysis .....	3.14-18
3.14.5	References .....	3.14-50
3.15	Utilities and Service Systems.....	3.15-1
3.15.1	Environmental Setting.....	3.15-1
3.15.2	Regulatory Setting .....	3.15-10
3.15.3	Thresholds of Significance .....	3.15-16
3.15.4	Impact Analysis .....	3.15-17
3.15.5	References .....	3.15-30
3.16	Wildfire .....	3.16-1
3.16.1	Environmental Setting.....	3.16-1
3.16.2	Regulatory Setting .....	3.16-7
3.16.3	Thresholds of Significance .....	3.16-15
3.16.4	Impact Analysis .....	3.16-15
3.16.5	References .....	3.16-34
4.0	Alternatives.....	4.0-1
4.1	Introduction.....	4.0-1
4.2	Project Objectives.....	4.0-2
4.3	Overview of Significant Project Impacts.....	4.0-2
4.4	Alternatives Considered but Eliminated from Further Consideration .....	4.0-3
4.4.1	Alternative Locations .....	4.0-3

## TABLE OF CONTENTS

---

4.5	Alternatives Selected for Analysis in the EIR .....	4.0-5
4.5.1	No Project Alternative .....	4.0-5
4.5.2	Wood Product Alternative.....	4.0-6
4.5.3	Biochar Alternative .....	4.0-8
4.5.4	Alternative Layout at Northern California Facility .....	4.0-10
4.6	Impact Comparison .....	4.0-10
4.7	Environmentally Superior Alternative.....	4.0-21
4.8	References.....	4.0-21
5	Other CEQA Considerations .....	5.0-1
5.1	Effects Not Found To Be Significant.....	5.0-1
5.2	Significant and Unavoidable Impacts.....	5.0-1
5.3	Significant Irreversible Environmental Changes.....	5.0-2
5.4	Growth Inducement.....	5.0-2
5.4.1	Growth Inducement Employment .....	5.0-3
5.4.2	Removal of Obstacles to Population Growth.....	5.0-3
5.5	Conclusions.....	5.0-5
5.6	References.....	5.0-5
6	List of Preparers.....	6-1

## FIGURES

2.1	Feedstock Lassen .....	2-55
2.2	Feedstock Tuolumne.....	2-57
2.3	Project Location Lassen.....	2-59
2.4	Project Site Lassen.....	2-61
2.5	Site Layout Lassen .....	2-63
2.6	Process Flow Chart.....	2-65
2.7	Project Location Tuolumne .....	2-67
2.8	Project Site Tuolumne .....	2-69
2.9	Site Layout Tuolumne .....	2-71
2.10	Port Location .....	2-73
2.11	Port Site Layout .....	2-75
3.1-1	View of Lassen Site from SR 299.....	3.1-27
3.1-2	View of Tuolumne Site from La Grange Road.....	3.1-29
3.1-3	Elevation Drawing of Lassen Facility.....	3.1-31
3.1-4	Elevation Drawing of Tuolumne Facility .....	3.1-33
3.1-5	Elevation Drawing of Port of Stockton Facility .....	3.1-35
3.2-1	Feedstock Areas - California Air Districts.....	3.2-215
3.2-2	Haul Routes – California Air Districts.....	3.2-217

## TABLE OF CONTENTS

---

3.3-1	Working Area - Northern California – Ecoregions.....	3.3-141
3.3-2	Working Area - Central Sierra Nevada – Ecoregions.....	3.3-143
3.3-3	Lassen Facility - Vegetation Communities and Land Cover Types .....	3.3-145
3.3-4	Lassen Facility - Aquatic Resources .....	3.3-147
3.3-5	Tuolumne Facility - Vegetation Communities and Land Cover Types .....	3.3-149
3.3-6A	Tuolumne Facility - Aquatic Resources .....	3.3-151
3.3-6B	Tuolumne Facility - Aquatic Resources .....	3.3-153
3.3-7	Port of Stockton - Biological Resources .....	3.3-155
3.3-8	Working Area - Wildlife Connectivity.....	3.3-157
3.6-1	Geomorphic Provinces .....	3.6-55
3.6-2	Regional Faulting – Lassen Facility.....	3.6-57
3.6-3	Regional Faulting – Tuolumne Facility .....	3.6-59
3.6-4	Regional Faulting – Port of Stockton Facility.....	3.6-61
3.9-1	Feedstock Area Hydrologic Regions.....	3.9-77
3.9-2	Upper Pit River Watershed.....	3.9-79
3.9-3	Lassen Surface Water Features .....	3.9-81
3.9-4	Lassen FEMA Flood Zones.....	3.9-83
3.9-5	Groundwater Basins - Lassen Facility .....	3.9-85
3.9-6	On-Site Wells – Lassen Facility.....	3.9-87
3.9-7	Tuolumne Surface Water Features .....	3.9-89
3.9-8	Public Water Systems – Tuolumne Facility.....	3.9-91
3.9-9	Tuolumne On-Site Wells.....	3.9-93
3.9-10	Port of Stockton Surface Water Features .....	3.9-95
3.11-1	Predicted Overall Operation Noise Levels – 12 hr with Rail Pellet Loading – Lassen.....	3.11-51
3.11-2	Predicted Overall Operation Noise Levels – 12 hr without Rail Pellet Loading – Lassen .....	3.11-53
3.11-3	Predicted Overall Operation Noise Levels – 24 hr Daytime with Rail Pellet Loading – Lassen .....	3.11-55
3.11-4	Predicted Overall Operation Noise Levels – 24 hr Daytime without Rail Pellet Loading – Lassen .....	3.11-57
3.11-5	Predicted Overall Operation Noise Levels – 24 hr Nighttime with Rail Pellet Loading – Lassen .....	3.11-59
3.11-6	Predicted Overall Operation Noise Levels – 24 hr Nighttime without Rail Pellet Loading – Lassen .....	3.11-61
3.11-7	Predicted Overall Operation Noise Levels – 12 hr with Rail Pellet Loading – Tuolumne .....	3.11-63
3.11-8	Predicted Overall Operation Noise Levels – 12 hr without Rail Pellet Loading – Tuolumne.....	3.11-65
3.11-9	Predicted Overall Operation Noise Levels – 24 hr Daytime with Rail Pellet Loading – Tuolumne .....	3.11-67
3.11-10	Predicted Overall Operation Noise Levels – 24 hr Daytime without Rail Pellet Loading – Tuolumne .....	3.11-69

## TABLE OF CONTENTS

---

3.11-11	Predicted Overall Operation Noise Levels – 24 hr Nighttime with Rail Pellet Loading – Tuolumne .....	3.11-71
3.11-12	Predicted Overall Operation Noise Levels – 24 hr Nighttime without Rail Pellet Loading – Tuolumne .....	3.11-73
3.11-13	Predicted Overall Operation Noise Levels – Port of Stockton .....	3.11-75
3.14-1	Feed Stock and Haul Routes - Lassen Facility .....	3.14-53
3.14-2	Feed Stock and Haul Routes - Tuolumne Facility.....	3.14-55
3.15-1	Proposed Transmission Upgrades – Lassen Facility.....	3.15-33
3.15-2	Proposed Transmission Upgrades – Tuolumne Facility.....	3.15-35
3.16-1	Fire Hazard Severity Zones – Lassen Facility .....	3.16-39
3.16-2	Fire Hazard Severity Zones – Tuolumne Facility .....	3.16-41
3.16-3	Fire Hazard Severity Zones – Port of Stockton Facility .....	3.16-43
3.16-4	Project Area Fire History – Lassen Processing Facility .....	3.16-45
3.16-5	Project Area Fire History – Tuolumne Processing Facility.....	3.16-47
3.16-6	Project Area Fire History – Port of Stockton Facility.....	3.16-49
4-1	Northern California Site Alternative Layout .....	4.0-25

## TABLES

ES-1	Summary of Project Impacts .....	ES-3
2-1	Feedstock Specifications.....	2-37
2-2	Industrial Grade Wood Pellet Specifications .....	2-38
2-3	Lassen Operation Schedule.....	2-40
2-4	Lassen Daily Employees .....	2-41
2-5	Utility Summary .....	2-41
2-6	Feedstock Specifications.....	2-44
2-7	Industrial Grade Wood Pellet Specifications .....	2-45
2-8	Tuolumne Operation Schedule.....	2-47
2-9	Tuolumne Daily Employees.....	2-47
2-10	Utility Summary .....	2-47
3-1	Summary of Past and Present Cumulative Projects (2004-2018) .....	3.0-5
3.2-1	Attainment Status of Counties Located Within the Working Area of the Lassen and Tuolumne Facilities .....	3.2-10
3.2-2	Lassen Facility Local Ambient Air Quality Data.....	3.2-13
3.2-3	Tuolumne Facility Local Ambient Air Quality Data.....	3.2-17
3.2-4	Port of Stockton Local Ambient Air Quality Data .....	3.2-22
3.2-5	Annual PM Emissions and Acres Burned from Wildfire, 2000-2022.....	3.2-25
3.2-6	Ambient Air Quality Standards.....	3.2-27
3.2-7	Criteria Air Pollutant Thresholds of Significance by California Air District .....	3.2-49

## TABLE OF CONTENTS

---

3.2-8	Lassen Feedstock Acquisition Assumptions.....	3.2-54
3.2-9	Tuolumne Feedstock Equipment Assumptions .....	3.2-55
3.2-10	Lassen Facility Construction Scenario Assumptions.....	3.2-58
3.2-11	AERMOD Principal Parameters – Lassen Construction Air Quality Impact Assessment .....	3.61
3.2-12	AERMOD Principal Parameters – Lassen Operational Air Quality Impact Assessment .....	3.2-66
3.2-13	AERMOD Principal Parameters – Lassen Health Risk Assessment.....	3.2-70
3.2-14	Tuolumne Facility Construction Scenario Assumptions.....	3.2-74
3.2-15	AERMOD Principal Parameters – Tuolumne Construction Air Quality Impact Assessment.....	3.2-75
3.2-16	AERMOD Principal Parameters – Tuolumne Air Quality Impact Assessment.....	3.2-80
3.2-17	AERMOD Principal Parameters – Tuolumne Health Risk Assessment.....	3.2-84
3.2-18	Line-Haul Assumptions for Pellet Transport .....	3.2-87
3.2-19	Switcher Assumptions for the Lassen Facility .....	3.2-89
3.2-20	Switcher Assumptions for Pellet Transport at the Port .....	3.2-90
3.2-21	Port of Stockton Construction Scenario Assumptions .....	3.2-92
3.2-22	AERMOD Principal Parameters – Port of Stockton Air Quality Impact Assessment.....	3.2-95
3.2-23	AERMOD Principal Parameters – Port of Stockton Health Risk Assessment.....	3.2-98
3.2-24	Estimated Maximum Daily Criteria Air Pollutant Emissions – Lassen Feedstock Area – Unmitigated .....	3.2-106
3.2-25	Estimated Annual Criteria Air Pollutant Emissions – Lassen Feedstock Area – Unmitigated .....	3.2-107
3.2-26	Estimated Maximum Daily Criteria Air Pollutant Emissions – Lassen Feedstock Area – Mitigated.....	3.2-108
3.2-27	Estimated Annual Criteria Air Pollutant Emissions – Lassen Feedstock Area – Mitigated .....	3.2-108
3.2-28	Estimated Maximum Daily Criteria Air Pollutant Emissions – Tuolumne Feedstock Area – Unmitigated .....	3.2-109
3.2-29	Estimated Annual Criteria Air Pollutant Emissions – Tuolumne Feedstock Area – Unmitigated .	3.2-110
3.2-30	Estimated Maximum Daily Criteria Air Pollutant Emissions – Tuolumne Feedstock Area – Mitigated .....	3.2-110
3.2-31	Estimated Annual Criteria Air Pollutant Emissions – Tuolumne Feedstock Area – Mitigated.....	3.2-111
3.2-32	Estimated Maximum Daily Construction Criteria Air Pollutant Emissions – Lassen Facility - Unmitigated.....	3.2-113
3.2-33	Estimated Annual Construction Criteria Air Pollutant Emissions – Lassen Facility – Unmitigated.....	3.2-113
3.2-34	Estimated Maximum Daily Construction Criteria Air Pollutant Emissions – Lassen Facility - Mitigated .....	3.2-114
3.2-35	Estimated Annual Construction Criteria Air Pollutant Emissions – Lassen Facility – Mitigated ..	3.2-115
3.2-36	Lassen Facility Construction Air Quality Impact Assessment - Unmitigated.....	3.2-116
3.2-37	Lassen Facility Construction Air Quality Impact Assessment - Mitigated .....	3.2-117
3.2-38	Estimated Maximum Daily Operation Criteria Air Pollutant Emissions – Lassen Facility and Project Activities within Lassen County APCD - Unmitigated .....	3.2-118

## TABLE OF CONTENTS

---

3.2-39	Estimated Annual Operation Criteria Air Pollutant Emissions – Lassen Facility and Project Activities within Lassen County APCD – Unmitigated.....	3.2-119
3.2-40	Estimated Maximum Daily Operation Criteria Air Pollutant Emissions – Lassen Facility and Project Activities within Lassen County APCD - Mitigated .....	3.2-120
3.2-41	Estimated Annual Operation Criteria Air Pollutant Emissions – Lassen Facility and Project Activities within Lassen County APCD – Mitigated .....	3.2-121
3.2-42	Lassen Facility Operational Air Quality Impact Assessment - Unmitigated.....	3.2-124
3.2-43	Lassen Facility Operational Air Quality Impact Assessment - Mitigated .....	3.2-126
3.2-44	Estimated Maximum Daily Construction Criteria Air Pollutant Emissions – Tuolumne Facility - Unmitigated .....	3.2-128
3.2-45	Estimated Annual Construction Criteria Air Pollutant Emissions – Tuolumne Facility - Unmitigated .....	3.2-129
3.2-46	Tuolumne Facility Construction Ambient Air Quality Analysis - Unmitigated.....	3.2-131
3.2-47	Tuolumne Facility Construction Air Quality Impact Assessment - Mitigated.....	3.2-132
3.2-48	Estimated Maximum Daily Operation Criteria Air Pollutant Emissions – Tuolumne Facility and Project Activities within Tuolumne County APCD - Unmitigated .....	3.2-134
3.2-49	Estimated Maximum Daily Operation Criteria Air Pollutant Emissions – Tuolumne Facility and Project Activities within Tuolumne County APCD - Mitigated .....	3.2-135
3.2-50	Estimated Annual Operation Criteria Air Pollutant Emissions – Tuolumne Facility and Project Activities within Tuolumne County APCD – Unmitigated.....	3.2-136
3.2-51	Estimated Annual Operation Criteria Air Pollutant Emissions – Tuolumne Facility and Project Activities within Tuolumne County APCD – Mitigated.....	3.2-137
3.2-52	Tuolumne Facility Operational Ambient Air Quality Analysis - Unmitigated .....	3.2-140
3.2-53	Tuolumne Facility Operational Air Quality Impact Assessment - Mitigated.....	3.2-141
3.2-54	Estimated Maximum Daily Criteria Air Pollutant Emissions – Line Haul - Unmitigated .....	3.2-144
3.2-55	Estimated Annual Criteria Air Pollutant Emissions – Line Haul - Unmitigated .....	3.2-145
3.2-56	Estimated Annual Construction Criteria Air Pollutant Emissions – Port of Stockton - Unmitigated .....	3.2-146
3.2-57	Estimated Maximum Daily Construction Criteria Air Pollutant Emissions – Port of Stockton - Unmitigated.....	3.2-147
3.2-58	Estimated Annual Operation Criteria Air Pollutant Emissions – Port of Stockton and Project Activities within San Joaquin Valley APCD – Unmitigated.....	3.2-147
3.2-59	Estimated Maximum Daily Operation Criteria Air Pollutant Emissions – Port of Stockton and Project Activities within San Joaquin Valley APCD - Unmitigated .....	3.2-148
3.2-60	Estimated Annual Operation Criteria Air Pollutant Emissions – Port of Stockton and Project Activities within San Joaquin Valley APCD – Mitigated .....	3.2-149
3.2-61	Estimated Maximum Daily Operation Criteria Air Pollutant Emissions – Port of Stockton and Project Activities within San Joaquin Valley APCD – Mitigated .....	3.2-150
3.2-62	Transport to Market Operational Ambient Air Quality Analysis - Unmitigated .....	3.2-153
3.2-63	Transport to Market Operational Air Quality Impact Assessment - Mitigated.....	3.2-154

## TABLE OF CONTENTS

---

3.2-64	Estimated Maximum Daily Operation Criteria Air Pollutant Emissions – City of Stockton - Unmitigated.....	3.2-157
3.2-65	Estimated Annual Operation Criteria Air Pollutant Emissions – City of Stockton – Unmitigated .....	3.2-158
3.2-66	Estimated Maximum Daily Operation Criteria Air Pollutant Emissions – City of Stockton - Mitigated.....	3.2-159
3.2-67	Estimated Annual Operation Criteria Air Pollutant Emissions – City of Stockton – Mitigated.....	3.2-159
3.2-68	Estimated BAAQMMD Annual Criteria Air Pollutant Emissions – Ships - Unmitigated .....	3.2-160
3.2-69	Health Effects of Criteria Air Pollutants – Criteria Air Pollutant Threshold Exceedances with Mitigation .....	3.2-167
3.2-70	Avoided Wildfire Criteria Air Pollutant Emissions Due to GSNR Only Thinning Projects .....	3.2-171
3.2-71	Lassen Facility Construction Health Risk Assessment Results – Unmitigated .....	3.2-175
3.2-72	Lassen Facility Construction Health Risk Assessment Results – Mitigated.....	3.2-175
3.2-73	Lassen Facility Operation Health Risk Assessment Results – Unmitigated .....	3.2-176
3.2-74	Lassen Facility Operation Health Risk Assessment Results – Mitigated.....	3.2-176
3.2-75	Lassen Facility Combined Health Risk Assessment Results – Unmitigated .....	3.2-177
3.2-76	Lassen Facility Combined Health Risk Assessment Results – Mitigated.....	3.2-177
3.2-77	Tuolumne Facility Construction Health Risk Assessment Results – Unmitigated .....	3.2-179
3.2-78	Tuolumne Facility Construction Health Risk Assessment Results – Mitigated .....	3.2-180
3.2-79	Tuolumne Facility Operation Health Risk Assessment Results – Unmitigated .....	3.2-180
3.2-80	Tuolumne Facility Operation Health Risk Assessment Results – Mitigated.....	3.2-181
3.2-81	Tuolumne Facility Combined Health Risk Assessment Results – Unmitigated.....	3.2-181
3.2-82	Tuolumne Facility Combined Health Risk Assessment Results – Mitigated .....	3.2-182
3.2-83	Port of Stockton Construction Health Risk Assessment Results – Unmitigated.....	3.2-184
3.2-84	Port of Stockton Operation Health Risk Assessment Results – Unmitigated.....	3.2-185
3.2-85	Port of Stockton Combined Health Risk Assessment Results – Unmitigated .....	3.2-185
3.2-86	Port of Stockton Combined Health Risk Assessment Results – Mitigated.....	3.2-185
3.2-87	Estimated Annual Criteria Air Pollutant Emissions – Ship Transport Outside of California Geographic Jurisdiction.....	3.2-200
3.2-88	Estimated Criteria Air Pollutant Emissions from Combustion of Wood Pellets .....	3.2-201
3.2-89	Estimated Criteria Air Pollutant Emissions from the Lifecycle of Wood Pellets vs. Coal .....	3.2-202
3.2-90	Estimated Criteria Air Pollutant Emissions from Combustion of Wood Pellets vs. Coal – EPA AP-42 .....	3.2-203
3.2-91	Estimated Criteria Air Pollutant Emissions from Combustion of Wood Pellets vs. Coal – Washington State Department of Natural Resources.....	3.2-204
3.3-1	States and Counties in the Northern California Working Area (Lassen Site) .....	3.3-3
3.3-2	States and Counties in the Central Sierra Nevada Working Area (Tuolumne Site).....	3.3-4
3.3-3	Proportion of Ecoregions, States, and Counties in the Working Area .....	3.3-5
3.3-4	Vegetation Communities and Land Cover Types in the Working Area .....	3.3-11
3.3-5	Designated Critical Habitat for Federally Listed Species in the Working Area .....	3.3-14

## TABLE OF CONTENTS

---

3.3-6	Prior Biological Field Surveys and Technical Studies at the Lassen Facility Site.....	3.3-18
3.3-7	Vegetation Communities and Land Cover Types at the Lassen Facility Site .....	3.3-19
3.3-8	Potential Jurisdictional Aquatic Resources at the Lassen Facility Site.....	3.3-21
3.3-9	Prior Biological Technical Studies at the Tuolumne Facility Site.....	3.3-21
3.3-10	Vegetation Communities and Land Cover Types at the Tuolumne Facility Site .....	3.3-22
3.3-11	Potential Jurisdictional Aquatic Resources at the Tuolumne Facility Site .....	3.3-24
3.3-12	Special-Status Wildlife Species With Some Potential to Occur Within or Adjacent to the Port Site	3.3-27
3.3-13	Project Phase Activities and Applicable Potential Impact Mechanisms .....	3.3-62
3.3-14	Special-Status Wildlife Species Considered and Grouped by Life History.....	3.3-69
3.4-1	Summary of Buildings and Structures of Property. 1, Big Valley Lumber Company Site.....	3.4-12
3.4-2	Summary of Property. 2: GNWP Railroad Buildings, Structures, and Features .....	3.4-15
3.5-1	Lassen Feedstock Acquisition Petroleum Demand.....	3.5-23
3.5-2	Tuolumne Feedstock Acquisition Petroleum Demand.....	3.5-24
3.5-3	Total Lassen Facility Construction Petroleum Demand .....	3.5-25
3.5-4	Lassen Facility Annual Petroleum Demand .....	3.5-26
3.5-5	Total Tuolumne Facility Construction Petroleum Demand .....	3.5-27
3.5-6	Tuolumne Facility Annual Petroleum Demand .....	3.1-28
3.5-7	Total Port of Stockton Construction Petroleum Demand.....	3.1-29
3.7-1	Project Area Stand Density Index .....	3.7-7
3.7-2	Six Top GHG Producer Countries.....	3.7-8
3.7-3	Greenhouse Gas Emissions Sources in California .....	3.7-9
3.7-4	Annual GHG Emissions and Acres Burned from Wildfire, 2000-2022 .....	3.7-11
3.7-5	Estimated Annual Feedstock Greenhouse Gas Emissions – Lassen Feedstock Area.....	3.7-45
3.7-6	Estimated Annual Feedstock Greenhouse Gas Emissions – Tuolumne Feedstock Area .....	3.7-46
3.7-7	Estimated Annual Construction Greenhouse Gas Emissions – Lassen Facility .....	3.7-47
3.7-8	Estimated Annual Operational Greenhouse Gas Emissions – Lassen Facility .....	3.7-47
3.7-9	Estimated Annual Construction Greenhouse Gas Emissions – Tuolumne Facility.....	3.7-48
3.7-10	Estimated Annual Operational Greenhouse Gas Emissions – Tuolumne Facility.....	3.7-49
3.7-11	Estimated Annual Greenhouse Gas Emissions – Line Haul Rail.....	3.7-50
3.7-12	Estimated Annual Construction Greenhouse Gas Emissions – Port of Stockton .....	3.7-51
3.7-13	Estimated Annual Operational Greenhouse Gas Emissions – Port of Stockton .....	3.7-51
3.7-14	Estimated Annual Greenhouse Gas Emissions – Marine .....	3.7-52
3.7-15	Initial Carbon Impact of GSNR Biomass Only Thinning Projects .....	3.7-54
3.7-16	Effects of GSNR Biomass Only Thinning Projects on Carbon Sequestration.....	3.7-54
3.7-17	Changes in Wildfire GHG Emissions Due to GSNR Biomass Only Thinning Projects .....	3.7-55
3.7-18	Changes in Wildfire Caused Tree Mortality Due to GSNR Biomass Only Thinning Projects .....	3.7-56
3.7-19	GSNR Biomass Only Thinning Projects Treated and Untreated Forest Stand GHG Emissions .....	3.7-57
3.7-20	Project Potential to Conflict with 2022 Scoping Plan .....	3.7-62

## TABLE OF CONTENTS

---

3.7-21	Project Potential to Conflict with Natural and Working Lands Implementation Plan.....	3.7-65
3.7-22	Estimated Greenhouse Gas Emissions – Wood Pellets vs. Coal Lifecycle (1 MMT) .....	3.7-83
3.7-23	Estimated GHG Emissions from Combustion of Wood Pellets vs. Coal – EPA AP-42 .....	3.7-84
3.7-24	Estimated Greenhouse Gas Emissions – Burning Wood Pellets vs. Coal – Washington State Department of Natural Resources.....	3.7-85
3.9-1	Rainfall Depths, Lassen Site .....	3.9-4
3.9-2	Groundwater Well Information .....	3.9-6
3.9-3	Rainfall Depths, Tuolumne Site.....	3.9-8
3.9-4	On-Site Groundwater Well Information .....	3.9-10
3.9-5	Rainfall Depths, Port of Stockton .....	3.9-11
3.11-1	Typical Noise Levels Associated with Common Activities .....	3.11-2
3.11-2	Building Noise Reduction Factors .....	3.11-4
3.11-3	Lassen Facility – Measured Baseline Outdoor Ambient Noise Levels .....	3.11-6
3.11-4	Tuolumne Facility – Measured Baseline Outdoor Ambient Noise Levels .....	3.11-8
3.11-5	Port of Stockton Facility – Measured Baseline Outdoor Ambient Noise Levels .....	3.11-9
3.11-6	Federal Transit Administration Vibration Threshold Guidance.....	3.11-10
3.11-7	Community Noise Equivalent Level Standards for Receiving Land Uses .....	3.11-14
3.11-8	Sound Level Limits in Decibels (dBA).....	3.11-17
3.11-9	Requirements for an Acoustical Analysis.....	3.11-20
3.11-10	Maximum Allowable Noise Exposure-Transportation Noise Sources Excluding Aviation Related Noise .....	3.11-20
3.11-11	Maximum Allowable Noise Exposure-Stationary Noise Sources <sup>1</sup> .....	3.11-21
3.11-12	Significance of Changes in Cumulative Noise Exposure <sup>1</sup> .....	3.11-21
3.11-13	Maximum Allowable Noise Exposure by Land Use.....	3.11-22
3.11-14	Typical Construction Equipment Maximum Noise Levels .....	3.11-25
3.11-15	Sound Power Levels for the Modeled Individual Sources of Outdoor Noise Emission .....	3.11-28
3.11-16	Sustainable Forest Management Projects – Equipment by Treatment Activity .....	3.11-29
3.11-17	Sustainable Forest Management Projects – Noise Levels from Treatment Equipment Types ....	3.11-29
3.11-18	Sustainable Forest Management Projects – Noise Levels from Treatment Activities .....	3.11-30
3.11-19	Estimated Distances between Construction Activities and the Nearest Noise-Sensitive Receptors – Lassen Facility.....	3.11-31
3.11-20	Predicted Construction Noise Levels per Activity Phase – Lassen Facility.....	3.11-32
3.11-21	Lassen Facility Traffic Noise Levels With and Without Project.....	3.11-33
3.11-22	Lassen Facility Operation Noise Prediction Model Results (12-Hour Scenario) .....	3.11-34
3.11-23	Lassen Facility Operation Noise Prediction Model Results Summary (24-Hour Daytime Hour Scenario).....	3.11-34
3.11-24	Lassen Facility Operation Noise Prediction Model Results Summary (24-Hour Nighttime Hour Scenario).....	3.11-34

---

## TABLE OF CONTENTS

---

3.11-25	Estimated Distances between Construction Activities and the Nearest Noise-Sensitive Receptors – Tuolumne Facility .....	3.11-35
3.11-26	Predicted Construction Noise Levels per Activity Phase – Tuolumne Facility .....	3.11-36
3.11-27	Tuolumne Facility Traffic Noise Levels With and Without Project .....	3.11-37
3.11-28	Tuolumne Facility – Operation Noise Prediction Model Results (12-Hour Scenario) .....	3.11-38
3.11-29	Tuolumne Facility – Operation Noise Prediction Model Results (24-Hour Daytime Hour Scenario).....	3.11-38
3.11-30	Tuolumne Facility – Operation Noise Prediction Model Results (24-Hour Nighttime Hour Scenario).....	3.11-38
3.11-31	Estimated Distances between Construction Activities and the Nearest Noise-Sensitive Receptors – Port of Stockton .....	3.11-40
3.11-32	Predicted Construction Noise Levels per Activity Phase – Port of Stockton Facility.....	3.11-40
3.11-33	Port of Stockton – Operation Noise Prediction Model Results Summary.....	3.11-41
3.11-34	Predicted Onsite Construction Vibration at Nearest Sensitive Receptor (Lassen Facility).....	3.11-43
3.11-35	Predicted Onsite Construction Vibration at Nearest Sensitive Receptor (Tuolumne Facility) .....	3.11-44
3.11-36	Predicted Onsite Construction Vibration at Nearest Sensitive Receptor (Port of Stockton Facility).....	3.11-45
3.12-1	Population Projections for Lassen County.....	3.12-2
3.12-2	Average Annual Unemployment Rate (2018-2023) .....	3.12-2
3.12-3	Labor Force (2023 Average Annual) .....	3.12-2
3.12-4	Unincorporated Household Growth Predictions .....	3.12-2
3.12-5	D.O.F Housing Estimates for Lassen County (Jan. 2023).....	3.12-3
3.12-6	Population Projections for Tuolumne County .....	3.12-3
3.12-7	Average Annual Unemployment Rate (2018-2023) .....	3.12-4
3.12-8	Labor Force (2023 Average Annual) .....	3.12-4
3.12-9	D.O.F. Housing Estimates for Tuolumne County (Jan. 2023) .....	3.12-4
3.12-10	Population Projections for San Joaquin County .....	3.12-5
3.12-11	Average Annual Unemployment Rate (2018-2023) .....	3.12-5
3.12-12	Labor Force (2023 Annual Average) .....	3.12-6
3.12-13	D.O.F. Housing Estimates for the City of Stockton (Jan. 2023).....	3.12-6
3.12-14	Feedstock Workforce for Lassen Work Area .....	3.12-10
3.12-15	Feedstock Workforce for Tuolumne Work Area.....	3.12-12
3.13-1	Tuolumne County Fire Department Locations and Staffing .....	3.13-5
3.13-2	City of Stockton Fire Department Locations.....	3.13-8
3.14-1	Vehicle Trip Generation Summary (Lassen and Tuolumne Facilities).....	3.14-18
3.14-2	Train Trip Generation Summary (Lassen and Tuolumne Facilities; Stockton Terminal).....	3.14-19
3.14-3	Lassen County VMT Threshold Summary .....	3.14-23
3.14-4	VMT Threshold Summary.....	3.14-24
3.14-5	VMT Threshold Summary.....	3.14-25

## TABLE OF CONTENTS

---

3.14-6	Lassen County VMT Thresholds and Project Site Analysis .....	3.14-31
3.14-7	Summary of Project Area VMT .....	3.14-33
3.14-8	Peak-Hour Queuing Summary for Existing Plus Project Conditions .....	3.14-37
3.14-9	Peak-Hour Queuing Summary for Opening Year (2025) Plus Project Conditions .....	3.14-38
3.14-10	Peak-Hour Queuing Summary for Existing Plus Project Conditions (Tuolumne Facility).....	3.14-43
3.14-11	Peak-Hour Queuing Summary for Opening Year (2025) Plus Project Conditions .....	3.14-44
3.15-1	Lassen Facility Utility Providers .....	3.15-1
3.15-2	Landfill Capacities (Lassen Facility) .....	3.15-3
3.15-3	Tuolumne Facility Utility Providers .....	3.15-3
3.15-4	Landfill Capacity (Tuolumne Facility) .....	3.15-5
3.15-5	Port of Stockton Utility Providers.....	3.15-5
3.15-6	Actual and Forecasted Water Supplies.....	3.15-7
3.15-7	Projected Water Supply and Demand during Normal, Single Dry, and Multiple Dry Years (AF).....	3.15-7
3.15-8	Historical Groundwater Supply (AF) from 2016 - 2020 .....	3.15-8
3.15-9	Landfill Capacities (Port of Stockton Site) .....	3.15-9
4-1	Comparison of Alternatives .....	4.0-11

## APPENDICES

A	NOPs and Comment Letters
B1	California Emission Estimator Model (CalEEMod) Output Files
B2	Supporting Mass Emission Calculations
B3	Ambient Air Quality Analyses
B4	Health Risk Assessments
B5	Health Effects from Criteria Air Pollutant Emissions Memorandum
B6	Additional Air Quality and Greenhouse Gas Emissions Considerations Supporting Calculations
B7	Energy Calculations
B8	Forest Carbon Change Analysis
C1	Biological Resources Summary Tables
C2	Biological Resources Assessment - Lassen Facility
C3	Aquatic Resources Delineation Report - Lassen Facility
C4	Delineation of Potential Waters of the U.S. and State - Lassen Facility
C5	Biological Resources Assessment – Tuolumne Facility
C6	Aquatic Resources Delineation Report - Tuolumne Facility
D1	Archaeological Resources Inventory Report - Lassen Facility
D2	Built Environment Inventory and Evaluation Report - Lassen Facility
D3	Cultural Resources Inventory Report - Tuolumne Facility
D4	Built Environment Inventory and Evaluation Report - Tuolumne Facility
E1	Geotechnical Engineering Report - Lassen Facility
E2	Supplemental Geotechnical Investigation Services - Lassen Facility
E3	Geotechnical Engineering Report - Tuolumne Facility
F1	Phase 1 Environmental Site Assessment - Lassen Facility
F2	Phase I Environmental Site Assessment -Tuolumne Facility

## TABLE OF CONTENTS

---

- F3 Phase II Environmental Site Assessment - Tuolumne Facility
- F4 Soil Excavation and Disposal Report - Tuolumne Facility
- G1 Lassen Hydrology and Hydraulics Technical Study
- G2 Lassen Water Supply Assessment
- G3 Lassen Groundwater Well Evaluation
- G4 Tuolumne Water Supply Assessment
- G5 Tuolumne Groundwater Well Assessment
- H1 Baseline Noise Measurement Field Data
- H2 Construction Noise Modeling Inputs and Outputs
- H3 Traffic Noise Model Input and Output
- H4 Operation Noise Model Prediction Inputs
- I1 Federal Railways Administration Crossing Inventory Form
- I2 Lassen Traffic Impact Study
- I3 Tuolumne Traffic Impact Study

## TABLE OF CONTENTS

---

INTENTIONALLY LEFT BLANK