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GRAVEL TO BE REMOVED AREA TO BE REVEGETATED AREA TO BE STABILIZED TO NPDES STANDARD AND PER BLM CONDITIONS (SEE PERMIT)

Highway 66







Notes

1.Data Sources: Limits of Work: McMillen Jacobs; Land Ownership: Bureau of Land Management 2. Background: Maxar, USGS The National Map: National Boundaries Dataset, National Elevation Dataset, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; U.S. Census Bureau - TIGER/Line; HERE Road Data

Legend



Lower Klamath Project **BLM Use and Occupancy Plan** Figure A-8: J.C. Boyle Dam **Construction Access** December 2022







<u>Notes</u>

 Data Sources: Campground Boundaries: Kiewit 100 Design Drawings; Land Ownership: Bureau of Land Management
 Background: Maxar, Microsoft, USGS The

National Map: National Boundaries Dataset, National Elevation Dataset, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; U.S. Census Bureau - TIGER/Line; HERE Road Data



Lower Klamath Project **BLM Use and Occupancy Plan** Figure A-9: Topsy Campground December 2021







Notes

1.Data Sources: Limits of Work: McMillen Jacobs, Power Canal: McMillen Jacobs, Access Routes: McMillen Jacobs; Land Ownership: Bureau of Land Management

2. Background: Maxar, USGS The National Map: National Boundaries Dataset, National Elevation Dataset, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; U.S. Census Bureau - TIGER/Line; HERE Road Data

Legend

Project Action

FERC Boundary

Bureau of Land Management

- LKP Distribution Line Complete Access Routes Demo Property Ownership
- LKP Transmission Line Complete Demo
- Existing Transmission Lines to Remain

Lower Klamath Project **BLM Use and Occupancy Plan** Figure A-10: Distribution Line Removal A RIVER RENEWAL December 2022



J.C. Boyle Distribution Pole Removals

| | Site Condition | Minimum Frequency |
|----|---|--|
| 1. | Active period | On initial date that land disturbance activities commence. |
| | | Within 24 hours of any storm event, including runoff from snow melt, that results in discharge from the site. |
| | | At least once every 14 days, regardless of whether stormwater runoff is occurring. |
| 2. | Inactive periods greater than fourteen (14) consecutive calendar days | The Inspector may reduce the frequency of inspections in any area of the site where the stabilization steps in Section 2.2.20 have been completed to twice per month for the first month, no less than 14 calendar days apart, then once per month. |
| 3. | Periods during which the site is inaccessible due to inclement weather | If safe, accessible and practical, inspections must occur daily at a relevant discharge point or downstream location of the receiving waterbody. |
| 4 | Periods during which construction activities are suspended and runoff is unlikely due to frozen conditions. | Visual monitoring inspections may be temporarily suspended. Immediately resume monitoring upon thawing, or when weather conditions make discharges likely. |
| 5. | Periods during which construction activities are conducted and runoff is unlikely during frozen conditions. | Visual monitoring inspections may be reduced to once a month. Immediately resume monitoring upon thawing, or when weather conditions make discharges likely. |

123001

123100

JC Boyle Dam Comm. Pole 3*

JC Boyle Dam Comm. Pole 4*

23300*JC 123301* 130801* 133902* 133901* 123300*JC Boyle Dist Drop Pole 1*

DISTRIBUTION POLE REMOVAL

1. POLES TO BE ACCESSED VIA ALL-TERRAIN VEHICLES AND CREW MEMBERS. NO BLADING OR GRADING TO BE PERFORMED.

2. POLES WILL BE CUT APPROXIMATELY 6 **INCHES BELOW SURFACE AND REMOVED.** SURFACE WILL BE BACKFILLED AND **COMPACTED WITH NATIVE SOIL.**

3. POLES WILL BE CARRIED OR DRAGGED DOWN THE HILLSIDE TO AN EXISTING ACCESS POINT OR ROAD

Google Earth

Boyle Substation Takeoff

Lower Klamath Project **BLM Use and Occupancy Plan** Figure A-11: Distribution Line Removal B December 2022

1000 ft

Legend

Appendix B

Figures: California BLM



0.5 1 2 0 Miles



Figure B-1 **Overview Map of California BLM Site Specific Interests**

Legend

- KRRP Distribution Line Complete Demo- Kiewit -+-
- KRRP Transmission Line Complete Demo- Kiewit ---
- --- KRRP Transmission Line Complete Demo- Pacific Power
- --- Existing Transmission Lines
- Proposed Transmission Line
- KRRP Roads (Existing)



- PacifiCorp-BLM Active ROW
 - Bureau of Land Management
 - Reservior
- Klamath River



0

0.25

0.5 ⊐ Miles



Figure B-2a Mallard Cove Recreation Site Access Road: **Proposed Improvements**



| STATES VI | 111111111 |
|--------------|-----------------------|
| A REAL Y | |
| Store State | In All I |
| and a series | |
| | 2 |
| 3 | Esri, HERE, Garmin |
| 4 | SafeGraph, FAO, METI/ |
| SEL AND | NASA, USGS, Bureau of |
| A CELES AND | Land Management, EPA, |
| | NPS, Esri, NASA, NGA, |
| 100000 | USGS, FEMA |
| | |



Legend

FERC Boundary

Existing Mallard Cove Access Road

BLM Lands

Environmental Regulatory Professionals

Figure B-2b Mallard Cove Recreation Site Access Road: **Final Stabilization**

Mallard Cove Recreation Area

Access Routes

2 1 3 Esri, HERE, Garmin, 4 SafeGraph, FAO, METI/ NASA, USGS, Bureau of Land Management, EPA, NPS, Esri, NASA, NGA, USGS, FEMA









Removal and Restoration Areas



Figure B-4b Iron Gate Reservoir: Transmission Line **Removal and Restoration Areas**

Management, EPA, NPS

Appendix E

Construction Camp Plan

| KLAMATH RIVER RENEWAL CORPORATION | Lower Klamath Project FERC Project No. 14803 |
|---|---|
| | Construction Camp Management Plan |
| | Klamath River Renewal Corporation 2001 Addison Street, Suite 317 Berkeley, CA 94704 Prepared By: McMillen Jacobs Associates 1471 Shoreline Drive Suite 100 Boise, Idaho 83702 |
| | December 2022 |

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Appendices

Appendix A: Figures

Figure 2-1: J.C. Boyle Construction Camp Figure 3-1: Copco No. 1 Construction Camp Figure 4-1: Copco No. 2 Construction Camp (Copco Village) Figure 5-1: Iron Gate Construction Camp

1.0 Introduction

This Construction Camp Plan is a subplan to the Construction Management Plan that provides the camp locations for temporary offices, housing, laydown areas, and storage facilities, as well as the approximate arrangement planned as part of the Proposed Action for the Lower Klamath Project. Temporary housing will only be provided at Copco No. 2 Camp (Copco Village).

2.0 J.C. Boyle Construction Camp

2.1 Overview

The Renewal Corporation will establish a construction office and support facilities for construction at J.C. Boyle Dam. The camp will include an office trailer complex, laydown areas, parking, and other related facilities required to support the construction activities at J.C. Boyle Dam. Efforts will be made to use and optimize existing facilities onsite to the extent possible. Final location and siting of specific temporary facilities and infrastructure will be determined between the co-licensees prior to construction. Temporary housing facilities will not be provided at J.C. Boyle Construction Camp. A description of the primary construction camp facilities is presented in the following sections.

2.2 Location

The J.C. Boyle Construction Camp is located on the east side of the Klamath River as illustrated in Figure 2-1. The work activities taking place at the J.C. Boyle Dam will be supported from the J.C. Boyle Construction Camp location.

2.3 Access Roads

The J.C. Boyle Construction Camp will be accessed from the existing roads that serve the J.C. Boyle Dam complex. The existing roads will be used during construction with periodic maintenance performed to ensure a reliable and durable road surface. No additional roads are required to support the J.C. Boyle Construction Camp facilities.

2.4 Staging and Laydown Areas

Staging areas will be established on the north side of the existing access road to the J.C. Boyle complex (see Figure 2-1). These areas will be approximately 10.5 acres in size and include areas for an office trailer(s), employee and visitor parking, fuel station, hazardous materials storage, as well as laydown areas for equipment and material storage. The staging/laydown areas will be cleared of vegetation and graded, and a layer of pit run rock will be placed to provide a year-round surface. Stormwater will be routed to the sides of these areas where erosion and sediment controls will be installed in accordance with the National Pollutant Discharge Elimination System Stormwater Construction (NPDES) General Permit No. 1200-C (NPDES 1200-C) issued by ODEQ.

2.5 Temporary Office Trailer(s)

The approximate location of the prefabricated temporary office trailer(s) will be in the staging area closest to Topsy Grade Road. The office complex will provide space for interior offices, conference room, small kitchen and dining area, unisex bathrooms, office supply storage, and communications room.

2.6 Temporary Power

A temporary power drop will be provided to the office trailer complex. The temporary power will be routed from an existing electrical service. A transformer will be mounted on an adjacent pole with a meter and power disconnect.

2.7 Communication

Communication facilities will be provided at the office trailer complex. Phone and internet service along with a central radio system supporting the construction team will be housed in the office trailer complex. Cell phone service at this location is limited requiring the radio system to ensure effective communication throughout the Project site.

2.8 Fuel Station and Hazardous Materials Storage

Fuel storage will be provided in a designated area in the staging area closest to Topsy Grade Road. Storage for up to 10,000 gallons of fuel will be provided in this location. The fuel storage will meet all State of Oregon fire code for storage and dispensing of fuel. The containment area will be sized to meet the Oregon fire code for secondary containment. Hazardous materials storage will be located adjacent to the fuel storage area and will consist of an approximately 2,000 square foot area. Storage of hazardous materials will be in accordance with the Oregon Department of Environmental Quality (ODEQ) hazardous waste rules. Any hazardous waste will be stored in Connex boxes or covered storage areas establishing protection from the environmental conditions. Appropriate placarding will be installed to clearly indicate the fueling station and hazardous materials storage areas, No Smoking requirements, and limited access provisions. See the Oregon Waste Disposal and Hazardous Materials Management Plan for detailed measures related to fuel and materials storage.

2.9 Utility Water

A water holding tank will be provided at the office trailer complex to store utility water. Sizing of the tank will occur upon final design of the site. The tank will provide utility water to the bathrooms in the office trailer(s).

2.10 Potable Water

Potable water will consist of 5-gallon water jugs and dispensers provided at the office trailer(s). The potable water will be obtained from commercial water providers.

2.11 Sanitary Facilities

The office trailer(s) will be fitted with bathrooms operated with utility water. The bathroom fixtures will be routed to a temporary holding tank which will be pumped out and transported to a municipal wastewater facility for disposal. Porta-potty facilities will also be provided at the employee parking and staging areas to support crews working in these areas. A commercial service will provide the Porta-potties along with cleaning and maintenance services during construction.

2.12 Sensitive Areas

Prior to mobilization of any construction, all lands will be evaluated for any sensitive resources (cultural, biological) via a database mapping effort. Any sensitive area identified will be protected with exclusion fencing, or other appropriate barrier prior to construction, then maintained throughout construction. See the Historic Properties Management Plan and Terrestrial Wildlife Management Plan for detailed measures related to the protection of sensitive areas.

2.13 Signage

Signage will be provided throughout the construction site to provide effective identification and guidance to the construction workers and visitors within the Project site. A Project sign will be erected at the main construction entrance from Topsy Grade Road. The sign will include the Project name, general description of the work elements, and the primary contact information. Traffic signs will be erected along the access roads providing guidance to the office trailer complex, visitor parking, and laydown areas. Road signs will include speed limits to maintain safe traffic conditions within the Project site. Periodic monitoring of all signs will be done to ensure they remain visible.

3.0 Copco No. 1 Construction Camp

3.1 Overview

The Renewal Corporation will establish a construction office and support facilities for construction at Copco No. 1 Dam. The camp will include an office trailer complex, laydown areas, parking, and other related facilities required to support the construction activities at Copco No. 1 Dam. Efforts will be made to use and optimize existing facilities onsite to the extent possible. Final location and siting of specific temporary facilities and infrastructure will be determined between the co-licensees prior to construction. Temporary housing facilities will not be provided at Copco No. 1 Construction Camp. A description of the primary construction camp facilities is presented in the following sections.

3.2 Location

The Copco No. 1 Construction Camp is located on north side of the Klamath River as illustrated in Figure 3-1. The work activities taking place at Copco No. 1 Dam will be supported from the Copco No. 1 Construction Camp location.

3.3 Access Roads

The Copco No. 1 Construction Camp will be accessed from the existing Copco Access Road which serves the Copco No. 1 complex. The existing road will be used during construction with periodic maintenance performed to ensure a reliable and durable road surface. No additional roads are required to support the Copco No. 1 Construction Camp facilities.

3.4 Staging and Laydown Areas

One staging area will be established on the north side of the existing access road and two staging areas will be established on the south side of the existing access road (see Figure 3-1). These areas will be approximately 3.5 acres total in size and include areas for an office trailer(s), employee and visitor parking, as well as laydown areas for equipment and material storage. The staging/laydown areas will be cleared of vegetation and graded, and a layer of pit run rock will be placed to provide a year-round surface. Stormwater will be routed to the sides of these areas where erosion and sediment controls will be installed in accordance with the California NPDES Construction General Permit (CGP) issued by the North Coast Regional Water Quality Control Board (RWQCB).

3.5 Temporary Office Trailer(s)

The approximate location of the prefabricated temporary office trailer(s) will be in the staging area immediately northwest of Copco No. 1 Dam. The office complex will provide office space interior offices, conference room, small kitchen and dining area, unisex bathrooms, office supply storage, and communications room.

3.6 Temporary Power

A temporary power drop will be provided to the office trailer complex. The temporary power will be routed from an existing PacifiCorp transmission line. A transformer will be mounted on an adjacent pole with a meter and power disconnect.

3.7 Communication

Communication facilities will be provided at the office trailer complex. Phone and internet service along with a central radio system supporting the construction team will be housed in the office complex. Cell phone service at this location is limited requiring the radio system to ensure effective communication throughout the Project site.

3.8 Fuel Station and Hazardous Materials Storage

No fuel storage will be located at the Copco No. 1 Construction Camp. There will be fuel storage locations provided at the Copco No. 2 complex.

3.9 Utility Water

A water holding tank will be provided at the office trailer complex to store utility water. Sizing of the tank will occur upon final design of the site. The tank will provide utility water to the bathrooms in the office trailer(s).

3.10 Potable Water

Potable water will consist of 5-gallon water jugs and dispensers provided at the office trailer(s). The potable water will be obtained from commercial water providers.

3.11 Sanitary Facilities

The office trailer(s) will be fitted with bathrooms operated with utility water. The bathroom fixtures will be routed to a temporary holding tank which will be pumped out and transported to a municipal wastewater facility for disposal. Porta-potty facilities will be provided at the employee parking and staging areas to support crews working in these areas. A commercial service will provide the Porta-potties along with cleaning and maintenance services during construction.

3.12 Sensitive Areas

Prior to mobilization of any construction, all lands will be evaluated for any sensitive resources (cultural, biological) via a database mapping effort. Any sensitive area identified will be protected with exclusion fencing, or other appropriate barrier prior to construction, then maintained throughout construction. See the Historic Properties Management Plan and Terrestrial Wildlife Management Plan for detailed measures related to the protection of sensitive areas.

3.13 Signage

Signage will be provided throughout the construction site to provide effective identification and guidance to the construction workers and visitors within the Project site. A Project sign will be erected at the main construction entrance from Copco Access Road. The sign will include the Project name, general description of the work elements, and the primary contact information. Traffic signs will be erected along the access roads providing guidance to the office trailer complex, visitor parking, and laydown areas. Road signs will include speed limits to maintain safe traffic conditions within the Project site. Periodic monitoring of all signs will be done to ensure they remain visible.

4.0 Copco No. 2 Construction Camp (Copco Village)

4.1 Overview

The Renewal Corporation will establish temporary housing facilities, a construction office and support facilities for construction at Copco No. 2 Dam. The camp will include an office trailer complex, laydown areas, parking, and other related facilities required to support the construction activities at Copco No. 2 Dam. Temporary housing facilities will be co-located with the office

and support facilities for employees working in all areas of the Project. Collectively these facilities are referred to as "Copco Village".

4.2 Location

Copco Village is located south of the Klamath River, immediately south and southwest of the Copco No. 2 powerhouse and switchyard. Copco Village extends the length of the access road leading to the powerhouse and switchyard and spans both sides of Daggett Road, as illustrated in Figure 4-1. The work activities taking place at Copco No. 2 Dam will be supported from Copco Village.

4.3 Access Roads

Copco Village will be accessed from Daggett Road which serves the Copco No. 2 complex. The existing road will be used during construction with periodic maintenance performed to ensure a reliable and durable road surface. No additional roads are required to support Copco Village facilities.

4.4 Staging and Laydown Areas

Staging areas will be established immediately north of the Klamath River at Daggett Road and adjacent to the Copco No. 2 switchyard. These areas will be approximately 1.5 acres total in size and include laydown areas for equipment and material storage, totaling approximately 1.5 acres. The area designated as Copco Village (see Figure 4-1) will be approximately 11 acres in size and include areas for an office trailer(s), employee and visitor parking, as well as areas for equipment and hazardous material storage. The staging/laydown areas will be cleared of vegetation and graded, and a layer of pit run rock will be placed to provide a year-round surface. Stormwater will be routed to the sides of these areas where erosion and sediment controls will be installed in accordance with the California NPDES CGP issued by the RWQCB.

4.5 Temporary Office Trailer(s)

Prefabricated temporary office trailer(s) will be located within Copco Village. The office complex will include interior offices, conference room, small kitchen and dining area, unisex bathrooms, office supply storage, communications room, and open space fitted with multiple cubicles.

4.6 Temporary Housing

Temporary housing will be located within Copco Village (see Figure 4-1), which will be used to house employees working throughout the California Project area (e.g., Copco No. 1, Copco No. 2, and Iron Gate). The Copco Village temporary housing will be located in existing disturbed and hardened/graded areas. As needed, a layer of pit run rock will be placed to provide a year-round surface. If necessary, the area will be graded to route stormwater to the sides of the temporary housing area where erosion and sediment controls will be installed in accordance with the California NPDES CGP.

4.7 Temporary Power

Temporary power will be installed sufficient to meet the needs of the construction camp.

4.8 Communications

Communication facilities will be provided at the office trailer complex. Phone and internet service along with a central radio system supporting the construction team will be housed in the office complex. Cell phone service at this location is limited requiring the radio system to ensure effective communication throughout the Project site.

4.9 Fuel Station and Hazardous Materials Storage

Fuel storage will be provided in a designated area within Copco Village. Storage for up to 10,000 gallons of fuel will be provided in this location. The fuel storage will comply with the CAL FIRE Office of the State Fire Marshal responsible for implementation of the California Aboveground Petroleum Storage Act. Hazardous materials storage will be located adjacent to the fuel storage area and will consist of an approximately 2,000 square foot area. Storage of hazardous materials will be in accordance with the CalEPA Unified Program. Any hazardous materials will be stored in Connex boxes or covered storage areas establishing protection from the environmental conditions. Appropriate placarding will be installed to clearly indicate the fueling station and hazardous materials storage areas, no smoking requirements, and limited access provisions. See the California Hazardous Materials Management Plan for detailed measures related to fuel and materials storage.

4.10 Utility Water

A water holding tank will be provided at the office trailer complex to store utility water if connecting into the existing septic system is not feasible. Sizing of the tank will occur upon final design of the site.

4.11 Potable Water

An existing waterline runs under the Copco Village location. This waterline will be located and tapped to provide water to Copco Village.

4.12 Sanitary Facilities

The temporary office trailer(s) will be equipped with a sanitary sewer connection that will carry all gray water to a septic system area located on the west side of Copco Village. The exact design of this facility is not yet complete. Porta-Potty facilities will be provided at the employee parking and staging areas to support crews working in these areas. A commercial service will provide the Porta-Potties along with cleaning and maintenance services during construction.

4.13 Sensitive Areas

Prior to mobilization of any construction, all lands will be evaluated for any sensitive resources (cultural, biological) via a database mapping effort. Any sensitive area identified will be

protected with exclusion fencing, or other appropriate barrier prior to construction, then maintained throughout construction. See the Historic Properties Management Plan and Terrestrial Wildlife Management Plan for detailed measures related to the protection of sensitive areas.

4.14 Signage

Signage will be provided throughout the construction site to provide effective identification and guidance to the construction workers and visitors within the Project site. A Project Sign will be erected at the main construction entrance from Daggett Road. The sign will include the Project name, general description of the work elements, and the primary contact information. Traffic signs will be erected along the access road providing guidance to the office trailer complex, visitor parking, and laydown areas. Road signs will include speed limits to maintain safe traffic conditions within the Project site. Periodic monitoring of all signs will be done to ensure they remain visible.

5.0 Iron Gate Construction Camp

5.1 Overview

The Renewal Corporation will establish a construction office and support facilities for construction at Iron Gate Dam. The camp will include an office trailer complex, laydown areas, parking, and other related facilities required to support the construction activities at Iron Gate Dam. Efforts will be made to use and optimize existing facilities onsite to the extent possible. Final location and siting of specific temporary facilities and infrastructure will be determined between the co-licensees and PacifiCorp prior to construction. Temporary housing facilities will not be provided at Iron Gate. A description of the primary construction camp facilities is presented in the following paragraphs.

5.2 Location

The Iron Gate Construction Camp is located on both sides of the Klamath River immediately southwest and southeast of Iron Gate Dam, as illustrated in Figure 5-1. The work activities taking place at Iron Gate Dam will be supported from the Iron Gate Construction Camp location.

5.3 Access Roads

The east side of the Iron Gate Construction Camp will be accessed from Lakeview Road which serves the Iron Gate complex. The west side of the construction camp will be accessed from Copco Road. The existing roads will be used during construction with periodic maintenance performed to ensure a reliable and durable road surface. No additional roads are required to support the Iron Gate Construction Camp facilities.

5.4 Staging and Laydown Areas

Staging areas will be established on both the east and west side of Lakeview Road, and east of Copco Road (see Figure 5-1). The Lakeview Road staging areas will be approximately 9 acres

in size and include areas for an office trailer(s), employee and visitor parking, fuel station, hazardous materials storage, as well as laydown areas for equipment and material storage. The Copco Road staging area will be approximately 2 acres in size and will be used for the laydown of equipment and material storage. The staging/laydown areas will be cleared of vegetation and topsoil, and a layer of pit run rock will be placed to provide a year-round surface. Stormwater will be routed to the sides of these areas where erosion and sediment controls will be installed in accordance with the NPDES 1200-C.

5.5 Temporary Office Trailer(s)

The approximate location of the temporary prefabricated office trailer(s) will be in the Lakeview Road staging area closest to the dam. The office complex will provide space for interior offices, conference room, small kitchen and dining area, unisex bathrooms, office supply storage and communications room.

5.6 Temporary Power

A temporary power drop will be provided to the office trailer complex. The temporary power will be routed from an existing PacifiCorp transmission line. A transformer will be mounted on an adjacent pole with a meter and power disconnect.

5.7 Communication

Communication facilities will be provided at the office camp. Phone and internet service along with a central radio system supporting the construction team will be housed in the office complex. Cell phone service at this location is limited requiring the radio system to ensure effective communication throughout the Project site.

5.8 Fuel Station and Hazardous Materials Storage

Fuel storage will be provided in a designated area within one of the staging areas along Lakeview Road. Storage for up to 10,000 gallons of fuel will be provided in this location. The fuel storage will comply with the CAL FIRE Office of the State Fire Marshal responsible for implementation of the California Aboveground Petroleum Storage Act. See the California Hazardous Materials Management Plan for detailed measures related to fuel storage.

5.9 Utility Water

A water holding tank will be provided at the office trailer complex to store utility water. Sizing of the tank will occur upon final design of the site. The tank will provide utility water to the bathrooms in the office trailer(s).

5.10 Potable Water

Potable water will consist of 5-gallon water jugs and dispensers provided at the office trailer(s). The potable water will be obtained from commercial water providers.

5.11 Sanitary Facilities

The temporary office trailer(s) will be fitted with bathrooms operated with utility water. The bathroom fixtures will be routed to a temporary holding tank which will be pumped out and transported to a municipal wastewater facility for disposal. Porta-potty facilities will be provided at employee parking and staging areas to support crews working in these areas. A commercial service will provide the Porta-potties along with cleaning and maintenance services during construction.

5.12 Sensitive Areas

Prior to mobilization of any construction, all lands will be evaluated for any sensitive resources (cultural, biological) via a database mapping effort. Any sensitive area identified will be protected with exclusion fencing, or other appropriate barrier prior to construction, then maintained throughout construction. See the Historic Properties Management Plan and Terrestrial Wildlife Management Plan for detailed measures related to the protection of sensitive areas.

5.13 Signage

Signage will be provided throughout the construction site to provide effective identification and guidance to the construction workers and visitors within the Project site. A Project sign will be erected at the main construction entrance from Lakeview and Copco Roads. The sign will include the Project name, general description of the work elements, and the primary contact information. Traffic signs will be erected along the roads providing guidance to the office trailer complex, visitor parking, and laydown areas. Road signs will include speed limits to maintain safe traffic conditions within the Project site. Periodic monitoring of all signs will be done to ensure they remain visible.

Appendix A

Figures





Notes

1.Data: FERC Boundary, Staging Sites, Access Roads, Proposed Camp Locations: Kiewit; Land Ownership: Bureau of Land Management. Existing Structures: Kiewit. 2.Background: Esri Canada, Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS, Maxar

Legend

FERC Boundary



Camp Structures

* Layout of facilities within staging areas is representative and may be subject to change during construction.

Existing Buildings and Infrastructure

- Access Roads

PRELIMINARY DESIGN (NOT FOR CONSTRUCTION) Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. McMillen Jacobs Associates has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. McMillen Jacobs Associates assumes no responsibility for data supplied in electronic format, sand the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

Lower Klamath Project **Construction Camp Management Plan** Figure 2-1: J.C. Boyle Construction Camp November 2022







<u>Notes</u>

1.Data: FERC Boundary, Staging Sites, Access Roads, Proposed Camp Locations: Kiewit; Land Ownership: Bureau of Land Management. Existing Structures: Kiewit.
 Background: Maxar, Microsoft, Esri Canada, Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS

Legend

FERC Boundary

Camp Structures



Existing Buildings and Infrastructure

- Access Roads

* Layout of facilities within staging areas is representative and may be subject to change during construction.

Lower Klamath Project **Construction Camp Management Plan** Figure 3-1: Copco No. 1 Construction Camp November 2022

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<u>Notes</u>

1.Data: FERC Boundary, Staging Sites, Access Roads, Proposed Camp Locations: Kiewit; Land Ownership: Bureau of Land Management. Existing Structures: Kiewit. 2.Background: Maxar, Microsoft, Esri Canada, Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS

| Legend | |
|----------------|--|
| Copco Village* | |
| Staging Areas | |
| | |
| | |

* Includes a combination of office trailers, temporary housing, a fuel station and hazmat storage.

FERC Boundary

Access Roads

Existing Buildings and Infrastructure

Lower Klamath Project **Construction Camp Management Plan** Figure 4-1: Copco No. 2 Construction Camp (Copco Village) November 2022

PRELIMINARY DESIGN (NOT FOR CONSTRUCTION) Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. McMillen Jacobs Associates has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. McMillen Jacobs Associates assumes no responsibility for data supplied in electronic format, sand the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

Notes

I.Data: FERC Boundary, Staging Sites, Access Roads, Proposed Camp Locations: Kiewit; Land Ownership: Bureau of Land Management. Existing Structures: Kiewit.
 Background: Esri Canada, Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS, Maxar

Legend

FERC Boundary

Camp Structures

may be subject to change during construction.

* Layout of facilities within staging areas is representative and

Existing Buildings and Infrastructure - Access Roads

Lower Klamath Project **Construction Camp Management Plan** Figure 5-1: Iron Gate Construction Camp November 2022

PRELIMINARY DESIGN (NOT FOR CONSTRUCTION) Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. McMillen Jacobs Associates has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. McMillen Jacobs Associates assumes no responsibility for data supplied in electronic format, sand the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

Appendix F

Air Quality Management Plan

| KLAMATH RIVER RENEWAL | | | | | | | | |
|--------------------------|--|--|--|--|--|--|--|--|
| CORPORATION | | | | | | | | |
| | | | | | | | | |

Lower Klamath Project FERC Project No. 14803

Air Quality Management Plan

Klamath River Renewal Corporation 2001 Addison Street, Suite 317 Berkeley, CA 94704

> Prepared by: Camas LLC 680 G Street, Suite C Jacksonville, OR, 97501

> > December 2022

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1.0 Introduction

The Air Quality Management Plan is a subplan of the Construction Management Plan to be implemented as part of the Proposed Action for the Lower Klamath Project.

1.1 Purpose of Air Quality Management Plan

The purpose of the Air Quality Management Plan is to describe the measures the Klamath River Renewal Corporation (Renewal Corporation) will implement to minimize engine exhaust emissions, fugitive dust, and other impacts to air quality due to the construction activities associated with the Proposed Action.

1.2 Relationship to Other Management Plans

The Air Quality Management Plan is supported by elements of the Fire Management Plan (Appendix D of the Water Supply Management Plan) for effective implementation. To avoid duplicating information, elements from the Fire Management Plan are not repeated herein but are, where appropriate, referred to in this Air Quality Management Plan.

2.0 Mitigation Measures

The Renewal Corporation will implement the following measures to protect air quality from impacts associated with dam removal activities as approved by the Federal Energy Regulatory Commission (Commission) in the License Surrender Order. Measures AQ-1 through AQ-5 will reduce exhaust and fugitive dust emissions leading to reduction in the overall construction-related emissions of particulate matter (primarily PM10) and nitrogen dioxide (NOx), both of which can contribute to regional haze and human health effects. Measure ENR-1¹ will offset construction-related greenhouse gas emissions through the purchase of carbon offsets. These measures were included in the Final Environmental Impact Statement (FERC 2022) and are included in their entirety below.

To alert the community of anticipated construction-related activities that could result in poor air quality, the Renewal Corporation will coordinate with the Siskiyou County Air Pollution Control District for activities in Siskiyou County, and with the Oregon Department of Environmental Quality for activities in Oregon.

The Renewal Corporation's Prime Contractor for construction, Kiewit Infrastructure West, will comply with measures AQ-1, AQ-2, and AQ-3. As some subcontractors may not have access to equipment that fully complies with these measures, the Renewal Corporation will give

¹ Mitigation Measures AQ-1 through AQ-5 are directly related to air quality, while Mitigation Measure ENR-1 addresses greenhouse gas emissions, which are ultimately related to energy usage.

App F - Air Quality Management Plan

preference to subcontractors using prescribed equipment that meets the standards referenced in AQ-1, AQ-2, and AQ-3.

Mitigation Measure AQ-1 – Off-Road Construction Equipment Engine Tier

"For the construction activities occurring within California, any off-road construction equipment (e.g., loaders, excavators) that are 50 horsepower or greater will be equipped with engines that meet the U.S. Environmental Protection Agency (EPA) Tier 4 Final emissions standards for off-road compression-ignition (diesel) engines, unless such an engine is not available for a particular item of equipment. To the extent allowed by the California Air Resources Board (CARB) Off-Road Diesel Fueled Fleets regulations, Tier 3 and Tier 4 interim engines would be allowed when the contractor has documented, with appropriate evidence, that no Tier 4 Final equipment or emissions equivalent retrofit equipment is available or feasible (CARB 2016). Documentation may consist of signed statements from at least two construction equipment rental firms." (FERC 2022)

Mitigation Measure AQ-2 – On-Road Construction Equipment Engine Model Year

"Any heavy-duty on-road construction equipment will be equipped with engines that meet the model year (MY) 2010 or newer on-road emission standards." (FERC 2022)

Mitigation Measure AQ-3 – Heavy-Duty Trucks Engine Model Year

"Any heavy-duty trucks used to transport materials to or from the construction sites will be equipped with engines that meet the MY 2010 or later emission standards for on-road heavy-duty engines and vehicles. Older model engines may also be used if they are retrofitted with control devices to reduce emissions to the applicable emission standards." (FERC 2022)

Mitigation Measure AQ-4 – Blasting-related Dust Control Measures

"Dust control measures will be incorporated to the maximum extent feasible during blasting operations at Copco No. 1 Dam. The following control measures will be used during blasting activities as applicable: conduct blasting on calm days to the extent feasible; consider wind direction with respect to nearby residences; and design blast stemming to minimize dust and to control fly rock." (FERC 2022)

Mitigation Measure AQ-5 – General Construction Dust Control Measures

"To reduce fugitive dust emissions, the following additional measures shall be implemented:

- Water all exposed surfaces as appropriate to control fugitive dust through sufficient soil
 moisture. Under normal dry-season conditions this is generally a minimum of two times
 daily. Watering of exposed surfaces is not necessary when soils are already sufficiently
 wetted (e.g., during rain). Exposed surfaces include, but are not limited to soil piles,
 graded areas, unpaved parking areas, staging areas, and access roads.
- Install stabilized construction entrances where appropriate, to include geotextile fabric and/or coarse rock to manage the amount of soil tracked onto paved roadways by motor

vehicle equipment, and suspended in runoff, from the active construction sites." (FERC 2022)

Mitigation Measure ENR-1 – Purchase of Carbon Offsets

"Mitigation Measure ENR-1: Submittal of pre-dam-demolition contract terms requiring compliance with Mitigation Measure ENR-1 prior to any construction activities. Submittal of documentation of purchase and retirement of carbon offsets for the estimated 20,128 metric tons of carbon dioxide equivalent (MTCO2e) of construction greenhouse gas emissions that will be generated by the Proposed Project. The carbon offsets must meet the requirements of California Environmental Quality Act (CEQA) Guidelines, section 15126.4(C)(3), and represent reductions actually achieved (not based on maximum permit levels), not already planned or required by regulations or policy (i.e., not double counted), readily accounted for through process information and other reliable data, acquired through legally binding commitments/agreements, verified through the accurate means by a reliable third party, and will remain as GHG reductions in perpetuity." (FERC 2022)

In May 2022, the Renewal Corporation purchased carbon offsets for 20,128 MTCO2e. This is the amount specified in Mitigation Measure ENR-1, related to construction GHG emissions to be generated by the Proposed Action. The Renewal Corporation purchased the offsets registered with the Climate Action Reserve, and the offsets have the attributes specified in this measure.

2.1 Standards Referenced by Air Quality Mitigation Measures

2.1.1 EPA Emissions Standards for Off-Road Compression-Ignition Engines

The Renewal Corporation expects that contractors will use equipment that meets the EPA Tier 4 Final emissions standards for off-road compression-ignition engines. However, if construction equipment that meets these standards is not available, the Renewal Corporation will ensure that contractors use equipment that meets the Tier 3 or Tier 4 Interim emissions standards and will provide evidence of the lack of availability in an Annual Report to the Commission, as discussed in Section 3.0. Final and Interim EPA emission standards for off-road compression ignition (EPA 2016a) are included in Appendix A.

2.1.2 EPA Model Year 2010 or Newer On-Road Emission Standards

The Renewal Corporation expects that contractors will use trucks and equipment that meet the EPA MY 2010 or newer on-road emission standards. The Renewal Corporation will meet EPA emission standards for both compression and spark-ignition heavy equipment on-road vehicles. EPA emission standards for heavy vehicles with compression-ignition engines (EPA 2016b) are included in Appendix B, and emission standards for heavy vehicles with spark-ignition engines (EPA 2016c) are included in Appendix C. If availability of such equipment is limited, the Renewal Corporation will give preference to contractors using equipment that meets or exceeds the EPA MY 2010 standards.

3.0 Wildfire Measures

Smoke from wildfires can contribute significantly to degraded regional air quality and is a common occurrence in the Klamath Basin. To reduce short-term increases to wildfire risk associated with construction activities and to address long-term regional fire management, the Renewal Corporation has developed a Fire Management Plan (Appendix D of the Water Supply Management Plan). The Fire Management Plan was developed in consultation with CalFire Siskiyou Unit, Oregon Department of Forestry, and local fire departments. The measures in the Fire Management Plan will reduce short- and long-term contributions of the Proposed Action to wildfire-related regional air pollution.

4.0 Reporting

The Renewal Corporation will prepare and submit to the Commission an Annual Report by April 15th of each year which will include information pertaining to implementation of the Air Quality Management Plan.

5.0 References

- CARB (California Air Resources Board). 2016. Overview fact sheet; In-use off-road diesel fueled fleets regulation. <u>https://www.arb.ca.gov/msprog/ordiesel/faq/overview_fact_sheet_dec_2010-final.pdf</u>. *Accessed October 11, 2022.*
- EPA (U.S. Environmental Protection Agency). 2016a. Nonroad Compression-Ignition Engines: Exhaust Emission Standards. Office of Transportation and Air Quality. March. <u>https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100OA05.pdf</u>. *Accessed October 11, 2022.*
- EPA. 2016b. Heavy-Duty Highway Compression-Ignition Engines and Urban Buses: Exhaust Emission Standards. Office of Transportation and Air Quality. March. <u>https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100O9ZZ.pdf</u>. Accessed October 11, 2022.
- EPA. 2016c. Heavy-Duty Highway Spark-Ignition Engines: Exhaust Emission Standards. Office of Transportation and Air Quality. March. <u>https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100OA01.pdf</u>. Accessed October 11, 2022.
- FERC (Federal Energy Regulatory Commission). 2022. Final Environmental Impact Statement for Hydropower License Surrender and Decommissioning – Lower Klamath Project. August. FERC eLibrary Accession Number 20220826-3006.

Appendix A

EPA Emission Standards for Non-Road Compression-Ignition Engines

Nonroad Compression-Ignition Engines: Exhaust Emission Standards

| | Rated Power (kW) | Tier | Model Year | NMHC (g/kW-hr) | NMHC + NOx (g/kW-hr) | NOx (g/kW-hr) | PM (g/kW-hr) | CO (g/kW-hr) | Smoke ^a (Percentage) | Useful Life (hours /years) ^b | Warranty Period (hours /years) ^b |
|---------|------------------------|------------------------------|----------------------------|-------------------|----------------------------|------------------|-----------------|-----------------|------------------------------------|--|--|
| | | 1 | 2000- 2004 | - | 10.5 | - | 1.0 | 8.0 | | | 1,500/2 |
| | kW < 8 | 2 | 2005- 2007 | - | 7.5 | - | 0.80 | 8.0 | | 3,000/5 | |
| | | 4 | 2008+ | - | 7.5 | - | 0.40 ° | 8.0 | | | |
| | 0 < 1.10/ | 1 | 2000- 2004 | - | 9.5 | - | 0.80 | 6.6 | | | |
| | 8 ≤ KVV < 19 | 2 | 2005- 2007 | - | 7.5 | - | 0.80 | 6.6 | | 3,000/5 | 1,500/2 |
| | | 4 | 2008+ | - | 7.5 | - | 0.40 | 6.6 | | | |
| | | 1 | 1999- 2003 | - | 9.5 | - | 0.80 | 5.5 | | 5,000/7 ^d | |
| | 19 ≤ kW < 37 | 2 | 2004- 2007 | - | 7.5 | - | 0.60 | 5.5 | | | 3,000/5 ° |
| | . 01 | 4 | 2008- 2012 | - | 7.5 | - | 0.30 | 5.5 | - 20/15/50 | | |
| | | | 2013+ | - | 4.7 | - | 0.03 | 5.5 | | | |
| | 37 ≤ kW < 56 | 1 | 1998- 2003 | - | - | 9.2 | - | - | | | |
| | | 2 | 2004- 2007 | - | 7.5 | - | 0.40 | 5.0 | | | |
| Federal | | 3 ^f | 2008- 2011 | - | 4.7 | - | 0.40 | 5.0 | | | |
| rederai | | 4 (Option 1) ^g | 2008- 2012 | - | 4.7 | - | 0.30 | 5.0 | 20/13/30 | | |
| | | 4 (Option 2) ^g | 2012 | - | 4.7 | - | 0.03 | 5.0 | | | |
| | | 4 | 2013+ | - | 4.7 | - | 0.03 | 5.0 | | | |
| | | 1 | 1998- 2003 | - | - | 9.2 | - | - | | | |
| | | 2 | 2004- 2007 | - | 7.5 | - | 0.40 | 5.0 | | 8,000/10 | 3,000/5 |
| | 56 ≤ KVV < 75 | 3 | 2008- 2011 | - | 4.7 | - | 0.40 | 5.0 | | | |
| | | 4 | 2012- 2013 ^h | - | 4.7 | - | 0.02 | 5.0 | | | |
| | | | 2014+ ⁱ | 0.19 | - | 0.40 | 0.02 | 5.0 | | | |
| | | 1 | 1997- 2002 | - | - | 9.2 | - | - | | | |
| | 75 4114 | 2 | 2003- 2006 | - | 6.6 | - | 0.30 | 5.0 | | | |
| | 75 ≤ KW < 130 | 3 | 2007- 2011 | - | 4.0 | - | 0.30 | 5.0 | | | |
| | | 4 | 2012- 2013 ^h | - | 4.0 | - | 0.02 | 5.0 | | | |
| | | | 2014+ | 0.19 | - | 0.40 | 0.02 | 5.0 | | | |

| | Rated Power (kW) | Tier | Model Year | NMHC (g/kW-hr) | NMHC + NOx (g/kW-hr | NOx (g/kW-hr | PM (g/kW-hr | CO (g/kW-hr) | Smoke ^a (Percentage) | Useful Life (hours /years) ^b | Warranty Period (hours /years) ^b | | | | |
|---------|------------------------|-------------------|----------------------------|-------------------|---------------------------|------------------|-------------------|------------------|------------------------------------|--|--|------|--|--|--|
| | | 1 | 1996- 2002 | 1.3 ^j | - | 9.2 | 0.54 | 11.4 | | | | | | | |
| | 100 (11) | 2 | 2003- 2005 | - | 6.6 | - | 0.20 | 3.5 | | | | | | | |
| | 130 ≤ KW < 225 | 3 | 2006- 2010 | - | 4.0 | - | 0.20 | 3.5 | | | | | | | |
| | | 4 | 2011- 2013 ^h | - | 4.0 | - | 0.02 | 3.5 | | | | | | | |
| | | | 2014+ ⁱ | 0.19 | - | 0.40 | 0.02 | 3.5 | | | | | | | |
| | | 1 | 1996- 2000 | 1.3 ^j | - | 9.2 | 0.54 | 11.4 | | | | | | | |
| | | 2 | 2001- 2005 | - | 6.4 | - | 0.20 | 3.5 | | | | | | | |
| | 225 ≤ kW < 450 | 225 ≤ kW < 450 | 3 | 2006- 2010 | - | 4.0 | - | 0.20 | 3.5 | | | | | | |
| | | 4 | 2011- 2013 ^h | - | 4.0 | - | 0.02 | 3.5 | | | | | | | |
| | | | 2014+ ⁱ | 0.19 | - | 0.40 | 0.02 | 3.5 | | | | | | | |
| | | 1 | 1996- 2001 | 1.3 ^j | - | 9.2 | 0.54 | 11.4 | | | | | | | |
| Federal | 450 ≤ kW < 560 | 2 | 2002- 2005 | - | 6.4 | - | 0.20 | 3.5 | 20/15/50 | 8,000/10 | 3,000/5 | | | | |
| | | 3 | 2006- 2010 | - | 4.0 | - | 0.20 | 3.5 | | | | | | | |
| | | 4 | 2011- 2013 ^h | - | 4.0 | - | 0.02 | 3.5 | | | | | | | |
| | | | 2014+ ⁱ | 0.19 | - | 0.40 | 0.02 | 3.5 | | | | | | | |
| | 560 ≤ kW | 560 ≤ kW | | | | 1 | 2000- 2005 | 1.3 ^j | - | 9.2 | 0.54 | 11.4 | | | |
| | | | 2 | 2006- 2010 | - | 6.4 | - | 0.20 | 3.5 | | | | | | |
| | < 900 | 4 | 2011- 2014 | 0.40 | - | 3.5 | 0.10 | 3.5 | | | | | | | |
| | | | 2015+ ⁱ | 0.19 | - | 3.5 ^k | 0.04 ^I | 3.5 | | | | | | | |
| | | 1 | 2000- 2005 | 1.3 ^j | - | 9.2 | 0.54 | 11.4 | | | | | | | |
| | kW > 900 | 2 | 2006- 2010 | - | 6.4 | - | 0.20 | 3.5 | | | | | | | |
| | | 4 | 2011- 2014 | 0.40 | - | 3.5 ^k | 0.10 | 3.5 | | | | | | | |
| | | | 2015+ ⁱ | 0.19 | - | 3.5 ^k | 0.04 1 | 3.5 | | | | | | | |

Notes on following page.

Notes:

- For Tier 1, 2, and 3 standards, exhaust emissions of nitrogen oxides (NOx), carbon monoxide (CO), hydrocarbons (HC), and non-methane hydrocarbons (NMHC) are measured using the procedures in 40 Code of Federal Regulations (CFR) Part 89 Subpart E. For Tier 1, 2, and 3 standards, particulate matter (PM) exhaust emissions are measured using the California Regulations for New 1996 and Later Heavy-Duty Off-Road Diesel Cycle Engines.
- For Tier 4 standards, engines are tested for transient and steady-state exhaust emissions using the procedures in 40 CFR Part 1039 Subpart F. Transient standards do not apply to engines below 37 kilowatts (kW) before the 2013 model year, constant-speed engines, engines certified to Option 1, and engines above 560 kW.
- Tier 2 and later model naturally aspirated nonroad engines shall not discharge crankcase emissions into the atmosphere unless these emissions are permanently routed into the exhaust. This prohibition does not apply to engines using turbochargers, pumps, blowers, or superchargers.
- In lieu of the Tier 1, 2, and 3 standards for NOX, NMHC + NOX, and PM, manufacturers may elect to participate in the averaging, banking, and trading (ABT) program described in 40 CFR Part 89 Subpart C.
- a Smoke emissions may not exceed 20 percent during the acceleration mode, 15 percent during the lugging mode, and 50 percent during the peaks in either mode. Smoke emission standards do not apply to single-cylinder engines, constant-speed engines, or engines certified to a PM emission standard of 0.07 grams per kilowatt-hour (g/kW-hr) or lower. Smoke emissions are measured using procedures in 40 CFR Part 86 Subpart I.
- **b** Useful life and warranty period are expressed hours and years, whichever comes first.
- c Hand-startable air-cooled direct injection engines may optionally meet a PM standard of 0.60 g/kW-hr. These engines may optionally meet Tier 2 standards through the 2009 model years. In 2010 these engines are required to meet a PM standard of 0.60 g/kW-hr.
- **d** Useful life for constant speed engines with rated speed 3,000 revolutions per minute (rpm) or higher is 5 years or 3,000 hours, whichever comes first.

- e Warranty period for constant speed engines with rated speed 3,000 rpm or higher is 2 years or 1,500 hours, whichever comes first.
- f These Tier 3 standards apply only to manufacturers selecting Tier 4 Option 2. Manufacturers selecting Tier 4 Option 1 will be meeting those standards in lieu of Tier 3 standards.
- **g** A manufacturer may certify all their engines to either Option 1 or Option 2 sets of standards starting in the indicated model year. Manufacturers selecting Option 2 must meet Tier 3 standards in the 2008-2011 model years.
- h These standards are phase-out standards. Not more than 50 percent of a manufacturer's engine production is allowed to meet these standards in each model year of the phase out period. Engines not meeting these standards must meet the final Tier 4 standards.
- These standards are phased in during the indicated years. At least 50 percent of a manufacturer's engine production must meet these standards during each year of the phase in. Engines not meeting these standards must meet the applicable phase-out standards.
- **j** For Tier 1 engines the standard is for total hydrocarbons.
- k The NOx standard for generator sets is 0.67 g/kW-hr.
- I The PM standard for generator sets is 0.03 g/kW-hr.

Citations: Code of Federal Regulations (CFR) citations:

- 40 CFR 89.112 = Exhaust emission standards
- 40 CFR 1039.101 = Exhaust emission standards for after 2014 model year
- 40 CFR 1039.102 = Exhaust emission standards for model year 2014 and earlier
- 40 CFR 1039 Subpart F = Exhaust emissions transient and steady state test procedures
- 40 CFR 86 Subpart I = Smoke emission test procedures
- 40 CFR 1065 = Test equipment and emissions measurement procedures

Appendix B

EPA Emission Standards for On-Road Compression-Ignition Engines

Heavy-Duty Highway Compression-Ignition Engines and Urban Buses: Exhaust Emission Standards

| | Year | HC (g/bhp-hr) | NMH C (g/bhp-hr) | NMHC + NOx g/bhp-hr) | NOx (g/bhp-hr) | PM (g/bhp-hr) | CO (gbhp-hr) | Idle CO (percent exhaust gas flow) | Smoke ^a (Percentage) | Useful Life (hours/years/miles) | Warranty Period (years/miles) |
|----------------------|--------------------------------|------------------|---------------------|--|-------------------|--|-----------------|---|------------------------------------|--|-------------------------------------|
| | 1974-78 | - | - | 16 | - | - | 40 | - | 20 / 15 / 50 | - | - |
| | 1979-84 | 1.5 | - | 10 | - | - | 25 | - | 20 / 15 / 50 | - | - |
| | 1985-87 | 1.3 | - | - | 10.7 | - | 15.5 | - | 20 / 15 / 50 | LHDDE: - / 8 / 110,000 MHDDE: - / 8 / 185,000 HHDDE: - / 8 / 290,000 | - |
| | 1988-89 | 1.3 ^d | - | - | 10.7 | 0.6 | 15.5 | 0.5 ° | 20 / 15 / 50 | 1990-97 and 1998+ for | |
| | 1990 | 1.3 ^d | - | - | 6.0 | 0.6 | 15.5 | 0.5 ° | 20 / 15 / 50 | HC, CO, and PM: LHDDE: - / 8 / 110,000 MHDDE: - / 8 / 185,000 HHDDE: - / 8 / 290,000 1994+ urban buses for PM only: | 5 / 100,000 ^q |
| | 1991-93 | 1.3 | - | - | 5.0 [ABT] | 0.25 [ABT] 0.10 ° | 15.5 | 0.5 ° | 20 / 15 / 50 | | |
| Federal ^b | 1994-97 | 1.3 | - | - | 5.0 [ABT] | 0.1 [ABT] 0.07 ^f , 0.05 ^g | 15.5 | 0.5 ° | 20 / 15 / 50 | | |
| | 1998-2003 | 1.3 | - | - | 4.0 [ABT] | 0.1 [ABT] 0.05 ^g | 15.5 | 0.5 ° | 20 / 15 / 50 | - / 10 / 290,000 1998+ for NOx: LHDDE: - / 10 / 110,000 MHDDE: - / 10 / 185,000 HHDDE: - / 10 / 290,000 | |
| | 2004-2006 ^h | - | - | 2.4 (or 2.5 with a limit of 0.5 on NMHC) ^o [ABT ^{i, j}] | - | 0.1 0.05 ^g | 15.5 | 0.5 | 20 / 15 / 50 | For all pollutants: P LHDDE: - / 10 / 110,000 | LHDDE: 5 / 50,000 |
| | 2007+ ^{h, k, l, m, n} | - | 0.14 ° | 2.4 (or 2.5 with a limit of 0.5 on NMHC) [ABT] | 0.2 ° | 0.01 | 15.5 | 0.5 | 20 / 15 / 50 | HHDDE: 22,000 / 10 / 435,000 | All other HDDE: 5 / 100,000 9 |

Notes:

- The test procedures are the EPA Transient Test Procedure and the EPA Smoke Test Procedure.
- a Percentages apply to smoke opacity at acceleration/lug/peak modes.
- b Standards for 1990 apply only to diesel-fueled heavy-duty engines (HDE). Standards for 1991+ apply to both diesel- and methanol-fueled HDEs. Standards that apply to urban buses specifically are footnoted.
- **c** This standard applies to the following fueled engines for the following model years: methanol 1990+, natural gas and liquefied petroleum gas (LPG) 1994+.
- **d** For petroleum-fueled engines, the standard is for hydrocarbons (HC). For methanol-fueled engines, the standard is for total hydrocarbon equivalent (THCE).
- e Certification standard for urban buses for 1993.

- f Certification standard for urban buses from 1994-95.
- **g** Certification standard for urban buses from 1996 and later. The in-use standard is 0.07.
- h Load Response Test certification data submittal requirements take effect for heavyduty diesel engines beginning in model year 2004. The following requirements take effect with the 2007 model year: steady-state test requirement and Not-to-Exceed (NTE) test procedures for testing of in-use engines. On-board diagnostic requirements applicable to heavy-duty diesel vehicles and engines up to 14,000 pounds gross vehicle weight rating (GVWR) phase in from the 2005 through 2007 model years.

- i The modified averaging, banking, and trading program for 1998 and later model year engines applies only to diesel cycle engines. Credits generated under the modified program may be used only in 2004 and later model years.
- j For heavy-duty diesel engines, there are three options to the measurement procedures currently in place for alternative fueled engines: (1) use a THC measurement in place of an non-methane hydrocarbon (NMHC) measurement; (2) use a measurement procedure specified by the manufacturer with prior approval of the Administrator; or (3) subtract two percent from the measured THC value to obtain an NMHC value. The methodology must be specified at time of certification and will remain the same for the engine family throughout the engines' useful life. For natural gas vehicles, EPA allows the option of measuring NMHC through direct quantification of individual species by gas chromatography.
- **k** Starting in 2006, refiners must begin producing highway diesel fuel that meets a maximum sulfur standard of 15 parts per million (ppm).
- I Subject to a Supplemental Emission Test (1.0 x Federal Test Procedure [FTP] standard (or Family Emission Limit [FEL]) for nitrogen oxides [NOx], NMHC, and particulate matter [PM]) and a NTE test (1.5 x FTP standard [or FEL] for NOx, NMHC, and PM).
- m EPA adopted the lab-testing and field-testing specifications in 40 CFR Part 1065 for heavy-duty highway engines, including both diesel and Otto-cycle engines. These procedures replace those previously published in 40 Code of Federal Regulations (CFR) Part 86, Subpart N. Any new testing for 2010 and later model years must be done using the 40 CFR Part 1065 procedures.
- n Two-phase in-use NTE testing program for heavy-duty diesel vehicles. The program begins with the 2007 model year for gaseous pollutants and 2008 for PM. The requirements apply to diesel engines certified for use in heavy-duty vehicles (including buses) with GVWRs greater than 8,500 pounds. However, the requirements do not apply to any heavy-duty diesel vehicle that was certified using a chassis dynamometer, including medium-duty passenger vehicles with GVWRs of between 8,500 and 10,000 pounds.

- NOx and NMHC standards will be phased in together between 2007 and 2010. The phase-in will be on a percent-of-sales basis: 50 percent from 2007 to 2009 and 100 percent in 2010.
- P Note that for an individual engine, if the useful life hours interval is reached before the engine reaches 10 years or 100,000 miles, the useful life shall become 10 years or 100,000 miles, whichever occurs first, as required under Clean Air Act section 202(d).
- **q** Years or miles, whichever comes first but never less than the basic mechanical warranty for the engine family.

Code of Federal Regulations (CFR) citations:

- 40 CFR 86.099-11 Emission standards for 1999 and later model year diesel heavyduty engines and vehicles.
- 40 CFR 86.004-11 Emission standards for 2004 and later model year diesel heavyduty engines and vehicles.
- 40 CFR 86.007-11 Emission standards and supplemental requirements for 2007 and later model year diesel heavy-duty engines and vehicles.

Appendix C

EPA Emission Standards for On-Road Spark-Ignition Engines

Heavy-Duty Highway Spark-Ignition Engines: Exhaust Emission Standards

| | Engine or Vehicle | Year | Gross Vehicle Weight (Ibs) | HC ^a (g/bhp-hr) | NMHC ^ь (g/bhp-hr) | NOx (g/bhp-hr) | NOx + NMHC ^c (g/bhp-hr) | PM (g/bhp-hr) | CO (g/bhp-hr) | Idle CO (% exhaust gas flow) | Formal- dehyde | Useful Life (years / miles) | Warranty Period (years / miles) ^r |
|---------|--|---------------------|-------------------------------------|-------------------------------|---------------------------------|-------------------|--|------------------|------------------|------------------------------------|-------------------|-----------------------------------|---|
| Federal | Heavy Duty Engines ^d | Prior to Control | - | 12.7 | - | - | 6.86 | - | 155 | - | - | 5 / 50,000 | - |
| | | 1970-73 | - | 275 ppm | - | - | - | - | 1.5% | - | - | | - |
| | | 1974-78 | - | - | - | 16 | - | - | 40 | - | - | | - |
| | | 1979-84 | - | 1.5 | - | 10 | - | - | 25 | - | - | | - |
| | | 1985-86 | - | 1.9 | - | - | 10.6 | - | 37.1 | - | - | | - |
| | | 1987 | ≤ 14,000 | 1.1 | - | - | 10.6 | - | 14.4 | 0.5 | - | | - |
| | | | > 14,000 | 1.9 | - | - | 10.6 | - | 37.1 | 0.5 | - | - | - |
| | | 1988-90 | ≤ 14,000 | 1.1 | - | - | 6.0 | - | 14.4 | - | - | | - |
| | | | > 14,000 | 1.9 | - | - | 6.0 | - | 37.1 | - | - | | - |
| | | 1990 ° | ≤ 14,000 | 1.1 | - | - | 6.0 | - | 14.4 | | - | - 8 / 110,000 k | 5 / 50,000 |
| | | | > 14,000 | 1.9 | - | - | 6.0 | - | 37.1 | | - | | |
| | | 1991-97 f | ≤ 14,000 | 1.1 ^g | - | - | 5.0 | - | 14.4 | | - | | |
| | | | > 14,000 | 1.9 ^h | - | - | 5.0 | - | 37.1 | | - | | |
| | | 1998- 2004 f | ≤ 14,000 | 1.1 ^g | - | - | 40i | - | 14.4 | | - | | |
| | | | > 14,000 | 1.9 ^h | - | - | 4.0 | - | 37.1 | | - | | |
| | | 2005- 2007 f | ≤ 14,000 | 1.1 ^g | - | 1.0 ' | - | - | 14.4 | 0.5 i | - | 10 / 110,000 | |
| | | | > 14,000 | 1.9 ^h | - | | - | - | 37.1 | | - | | |
| | | 2008+ | All | - | 0.14 | 0.20 | - | 0.01 | 14.4 | 0.57 | - | | |
| | Complete Heavy-Duty Vehicles ^{n, q} | 2005- 2007 | 8,500 - 10,000 | - | 0.280 ^m g/mi | 0.9 g/mi | - | - | 7.3 g/mi | | _ | - 11 / 120 000 | |
| | | | 10,000 - 14,000 | - | 0.330 ^m g/mi | 1.0 g/mi | - | - | 8.1 g/mi | | - | | |
| | | 2008+ P | 8,500 - 10,000 | - | 0.195 ° g/mi | 0.2 g/mi | - | 0.02 g/mi | 7.3 g/mi | | 0.032 g/mi | 117 120,000 | |
| | | | 10,000 - 14,000 | - | 0.230 ° g/mi | 0.4 g/mi | - | 0.02 g/mi | 8.1 g/mi | | 0.040 g/mi | | |

Notes on following page.

Notes:

- a For methanol-fueled engines, the standard is for total hydrocarbon equivalent (THCE).
- b For methanol and alcohol fueled vehicles the standard is for non-methane hydrocarbon equivalent (NMHCE)
- c For methanol fueled engines the standard is for nitrogen oxides (NOx) plus NMHCE.
- d Standards for heavy-duty engines are expressed in grams per brake horsepowerhour (g/bhp-hr). Starting with the 1998 model year crankcase emissions are not allowed.
- e Standards for 1990 apply to gasoline and methanol-fueled engines.
- f Standards for 1991 and later apply to gasoline and methanol engines and are optional for natural gas and Liquefied Petroleum Gas-fueled engines through the 1996 model year.
- g For natural gas fueled engines the standard is 0.9 g/bhp-hr non-methane hydrocarbon (NMHC).
- h For natural gas fueled engines the standard is 1.7 g/bhp-hr NMHC.
- i The NOx standard is 5.0 for all natural gas-fueled engines.
- j This standard applies to the following engines utilizing aftertreatment technology (except for methanol) for the following model years: gasoline/1990+; natural gas and LPG/1991+; methanol/1990+. Starting in 2005, engines certified to on-board diagnostics requirements are not required to meet the idle carbon monoxide (CO) standard.
- k Useful life is expressed in years or miles, whichever comes first. Useful life for the 1998 and later NOx standard and for all 2004 standards is 10 years or 110,000 miles, whichever comes first.
- I Manufacturers can choose this standard or one of the following options: (1) a standard of 1.5 g/bhp-hr NMHC+NOX that applies to the 2004 through 2007 model years, with complete heavy-duty vehicle standards taking effect in 2005; or (2) a standard of 1.5 g/bhp-hr NMHC + NOX that would apply to the 2003 through 2007 heavy-duty engines and optionally to 2003 through 2006 complete heavy-duty vehicles.

- m Standard is expressed as non-methane organic gas, but compliance can optionally be shown using measurement of NMHC or total hydrocarbon (THC).
- n Complete heavy-duty vehicles have the primary load-carrying container or device attached. Incomplete heavy-duty vehicles are optionally certified to heavy-duty engine or heavy-duty chassis standards. Standards for complete or incomplete heavy-duty vehicles are expressed in grams per mile (g/mi). Starting in 2005 (or 2003 or 2004 depending on the selected phase in option; see footnote I), complete heavy-duty vehicles under 14,000 lbs gross vehicle weight are tested on chassis-based rather than engine-based procedures and must meet these complete heavy-duty vehicle standards.
- o Although expressed as NMHC, compliance can optionally be shown using measurement of NMOG or THC.
- p At least 50 percent of a manufacturer's sales must meet these standards in 2008, with 100 percent required in 2009.
- q Gross vehicle weight ranges are more accurately specified as follows: $8500 \le GVW \le 10,000$ and 10,000 < GVW < 14,000.
- r Warranty period is expressed in years or miles, whichever comes first, but not less than the basic mechanical warranty for the engine family.

Code of Federal Regulations (CFR) citations:

- 40 CFR 86.1816-05, 86.1816-08 Emission standards for complete heavy-duty vehicles
- 40 CFR 86.1806-01, 86.1806-04, 86.1806-05 Onboard diagnostics requirements
- 40 CFR 86.1817-05, 86.1817-08 Complete heavy-duty vehicle averaging, banking, and trading program
- 40 CFR 86.091-10 Heavy-duty engine averaging, banking, and trading program for 1991 and later - Not available in the e-CFR
- 40 CFR 86 Subpart B Vehicle test procedures

Appendix G

Consultation Record

Consultation Record

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| Construction Management Plan | | | | | | | | | |
|---|--|----------------------------------|----------------------------------|--|--|--|--|--|--|
| Sub-Plan | Agency | Date of Agency Plan Submittal | Agency Comments Received Date | | | | | | |
| Oregon Traffic Management Plan | Klamath County Public Works and Planning Department | February 3, 2021 | February 23, 2021 | | | | | | |
| California Traffic Management Plan | No formal agency consultation conducted to date. | NA | NA | | | | | | |
| Emergency Response Plan | No formal agency consultation conducted to date. | NA | NA | | | | | | |
| Use and Occupancy Plan for BLM Lands | Bureau of Land Management – Klamath Falls Field Office and Redding Field Office | November 21, 2021 | December 8, 2021 | | | | | | |
| Construction Camp Plan | No formal agency consultation conducted to date. | NA | NA | | | | | | |
| Air Quality Management Plan | No formal agency consultation conducted to date. | NA | NA | | | | | | |