Ecological site F003XY707OR
HC High Pumice Basin

Last updated: 2/04/2025
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General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

Similar sites

F006XY704OR	**East Crater Lake Pumice Basins** Site F006XY704OR has the same tree species and similar canopy cover, but is in MLRA 6, and has a xeric moisture regime.

Table 1. Dominant plant species

Tree	(1) *Pinus contorta*
Shrub	Not specified
Herbaceous	(1) *Carex*

Physiographic features

This site in on gently sloping, excessively drained pumiceous soils in enclosed basins or areas surrounding enclosed basins.

Table 2. Representative physiographic features

Landforms	(1) Ash flow
Flooding frequency	None
Ponding frequency	None
Elevation	1,680 – 1,980 m
Slope	0 – 10 %
Water table depth	150 cm

Aspect	Aspect is not a significant factor

Climatic features

Winters are long, cold, windy and snowy, due to the very high elevations. Summers are short and cool. Effective precipitation comes mostly as snow. Average annual ppt is 67 inches.

Table 3 Representative climatic features

Frost-free period (average)	50 days
Freeze-free period (average)	60 days
Precipitation total (average)	1,780 mm

Influencing water features

No water influencing water features exist.

Soil features

The site isfound on soils formed in volcanic pumice and ash mainly in enclosed basins and/or areas surrounding enclosed basins.

Table 4. Representative soil features

Surface texture	(1) Paragravelly loamy sand (2) Paragravelly fine sandy loam
Family particle size	(1) Sandy
Drainage class	Somewhat excessively drained to excessively drained
Permeability class	Rapid to very rapid
Soil depth	150 cm
Surface fragment cover <=3"	10 – 30 %
Surface fragment cover >3"	0 – 20 %
Available water capacity (0-101.6cm)	7.37 – 17.53 cm

Calcium carbonate equivalent (0-101.6cm)	Not specified
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	Not specified
Soil reaction (1:1 water) (0-101.6cm)	5.6 – 6.5
Subsurface fragment volume <=3" (Depth not specified)	20 – 40 %
Subsurface fragment volume >3" (Depth not specified)	0 – 40 %

Ecological dynamics

Lodgepole pine is the only tree specie in the historic climax plant community. The position of this site, enclosed basins and surrounding low slopes, is influenced by cold air drainage. Cold air gets trapped in these basins. Lodgepole is the only tree adapted to this environment. Other tree species, Shasta red fir and/or mountain hemlock, may occur, mostly arround the basin edges.

Stands that are heavy to very heavily stocked are susceptible to mountain pine beetle infestations. When conditions are right a massive outbreak will kill all trees. Re-establishment depends upon an existing seed source. If seed trees are available then re-establishment will occur. If not, re-establishment can take many years. Re-planting seedlings will speed up the revegetation process.

Ground vegetation under the mature canopy is sparse, generally less than 5 percent. Where openings occur cover can increase up to 25 percent.

The pumice soils are very porous, and consequently, conduct heat very poorly. The soil surface can be exceptionally hot during the summer midday, but readily looses surface heat at night. Cold air accumulation in these areas (frost pockets) also influence seedling mortality and species distribution. Lodgepole pine seedlings are able to withstand the low night time temperatures.

State and transition model

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)

Recreational uses

Hiking, backpacking, camping

Wood products

Firewood, posts, sawtimber

Type locality

Location 1: Klamath County, OR	
General legal description	Plot data taken over many locations within Crater Lake National Park.

Contributors

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Approval

Kirt Walstad, 2/04/2025

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	08/21/2026
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

2. **Presence of water flow patterns:**

3. **Number and height of erosional pedestals or terracettes:**

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

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5. **Number of gullies and erosion associated with gullies:**

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6. **Extent of wind scoured, blowouts and/or depositional areas:**

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7. **Amount of litter movement (describe size and distance expected to travel):**

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8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

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12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

    Dominant:

    Sub-dominant:

    Other:

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

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14. **Average percent litter cover (%) and depth (in):**

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:**

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17. **Perennial plant reproductive capability:**
