

APPENDIX 3A

**DATA DICTIONARY FOR THE KLAMATH HYDROELECTRIC PROJECT ROAD
INVENTORY**

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The data elements for the Klamath Hydroelectric Project (Project) are formatted in Table 3A-1 using Trimble GPS Pathfinder format, which lists themes, features, attributes, and details. For further explanation of this format, see Trimble’s GPS Pathfinder Software Tutorial. A brief explanation of each column is provided below.

Theme: The theme is a major category of data to be collected. For this dictionary, there are four main themes:

1. **Roads.** This theme addresses the type and technical characteristics of Project roads.
2. **Stream Crossings.** This theme addresses the location, type, and characteristics of stream crossings.
3. **Soil Erosion/Potential Resource Damage.** This theme addresses the location of erosion and potential resource damage adjoining or on road features.
4. **Road Hydrological Features/Erosion Mitigation Measures.** This theme addresses the measures taken to control water flow, and the direction of water flows contrary to measures taken.

Feature: Each feature in the Feature column is left-justified and in bold print. Features identify physical objects or an event in the real world for which positions are collected and described for each of the four themes. Each feature is defined as a point, a line, or an area. Features of the four main themes listed above are summarized in the following chart.

Roads	Stream Crossings	Soil Erosion/Potential Resource Damage	Hydrological Features/Mitigation
Road	Bridge	Road Erosion Problem	Lead-Off Ditch
Closed Road	Culvert	Potential Resource Damage	Waterbar
Road Hazard	Ford	Ruts	Broad-Based Dip
End of Road		Ponding	Nonengineered Drainage
Gated Road		Slide	Sump
Road Sign			Diffuse Drainage

Attribute: Attributes are descriptive information about the listed features. Each attribute associated with a feature is indented and underlined. Attribute information includes type (numeric, menu, text [an “R” following the type designation indicates a required field]), value (minimum and maximum), and comments. Each attribute is given an attribute name. Attribute names are equivalent to items, columns, fields, or keys in a geographic information system (GIS) or computer-aided design (CAD) system. Attributes have been grouped into six categories, as follows:

- Numeric
- Text
- Date
- Time
- Menu
- File name

Definitions of data themes, features, and attributes may vary depending on the data logger and software used. However, these elements provide essential information that will need to be inventoried.

Table 3A-1 Road Inventory Data Dictionary				
No.	Theme	Feature	Attribute	Details
1	Roads			
a		Road (line)		
			Segment # (numeric) R	Assign number to road segment (Auto-increment)
			Name (text)	Road name if available (comment text 100)
			Ownership (menu) R	PacifiCorp, Private, Public
			Purpose (menu) R	Facility access*, ROW, property access, recreation access, scenic vista, river access, throughfare, other
			Type (menu) R	Road, OHV, trail, other
			Width (menu) R	Single lane, double lane, trail, variable
			Surface (menu) R	Paved, crushed rock*, cinder, native, herbaceous vegetation, brush, trees<4"
			% Surface Cover (menu) R	>75%*, >50%, >25%, >10%, 0%
			Surface Condition (menu) R	Good*, riled/eroded, washboard, rutted, rocky
			Vegetation Constraints (menu) R	In road (4" dba or less), encroaching, none*
			Date (R)	Auto generate (month, day, year)
			Comment (text)	(Comment text = 100)
b		Intersection (point)	Number (numeric)	Auto-increment number
			Type (menu) (R)	Road to road, road to OHV trail, road to hiking trail
			Comment (text)	(Comment text = 100)
c		Closed Road (point)	Number (numeric)	Auto-increment number
			Closure Description (menu) (R)	Log and berm*, downed trees, overgrown, planted, ripped or subsoiled, trenched, boulders, guard rail, cable, fencing
			Closure Efficiency (menu) (R)	Fully effective, driven around, damaged, missing
			Comment (text)	(Comment text = 100)
d		Road Hazard (point)	Number (numeric)	Auto-increment number
			Type (text) (R)	Comment text = 30 (e.g., document braided roads, extreme slopes, excessive potholes, boulders)

Table 3A-1 Road Inventory Data Dictionary				
No.	Theme	Feature	Attribute	Details
e		End of Road (point)	Description (text) (R)	Comment text = 30
f		Gated Road (point)	Number (numeric)	Auto-increment number
			Type (menu) (R)	Security, entrance, grazing, PP&L lock
			Material (text) (R)	(Comment text = 30)
			Condition (menu) (R)	Functional*, damaged
			Limit Access (menu) (R)	Yes, No: "Can you get around gate?"
			Comment (text)	(Comment text = 100)
g		Road Signs	Number (numeric)	Auto-increment number
			Type (text) (R)	Comment text = 30
			Condition (menu) (R)	Intact, sign damaged, post(s) damaged, sign and posts damaged
2	Stream Crossings			
a		Bridge (point)	Number (numeric)	Auto-increment number
			Stream Name (text)	Stream name (comment text = 100)
			Bridge Length (numeric) R	Min: 1, Max: 3000, "In feet"
			Bridge Width (numeric) R	Min: 1, Max: 1000, "In feet"
			Footing Type (menu) R	Concrete*, wood, steel, other
			Channel Type (Menu) R	Natural stream*, irrigation ditch
			Deck Surface (menu) R	Wood, concrete, earth, rock, steel, aluminum, other
			Water topped Bridge (menu) R	Yes, no*
			Trash Rack Present (menu) R	Yes, no*
			Road Separation (menu) R	Yes, no*
			Channel Width (numeric) R	Min: 1, Max: 20, "In feet"
			Angle to Channel (Menu) R	<30 degrees*, 30-60 degrees, 60-90 degrees
			Evidence of Blockage or Flooding (menu) R	NA*, sediment plume, scoured road, washed out road, organic debris pile
			Crossing Substrate (menu) R	Culvert fill material*, sand, gravel, bedrock

Table 3A-1 Road Inventory Data Dictionary				
No.	Theme	Feature	Attribute	Details
			Year Round Flow (Menu) R	Yes, no*; "Is water present yearly?"
			Comment (text)	(Comment text = 100)
b		Culvert (point)	Number (numeric)	Auto-increment number
			Stream Name (text)	Stream name (comment text = 100)
			Num of pipes (Menu) R	NA, 1*, 2, 3, >3
			Design Type (Menu) R	Round, arch, box, log, bottomless arch, other
			Material Type (Menu) R	Steel, ribbed steel, plastic, aluminum, concrete, wood, log, other
			Condition (Menu) R	0-20%*, 20-80%, 80-100%, partially crushed, totally crushed, rusted significantly, flows around pipe
			Pipe Length (numeric) R	20', 30', 40', 50', 60, 70' >70' (pipe length in feet)
			Round Size (menu) R (diameter in inches)	NA, <12", 12", 15", 18", 24"* , 36", 48", 60", >60"
			Oval Size (menu) R (diameter in inches)	NA*, 13"x17", 15"x21", 20"x28", 24"x35", 29"x42", 33"x49", 38"x57
			Inlet Fill Height (menu) R	<2', 2-4', 4-6', 6-8', 8-10', 10-12", >12'
			Outlet Fill Height (menu) R	<2', 2-4', 4-6', 6-8', 8-10', 10-12", >12'
			Outlet Drop (menu) R	<1', <2', <3', >3'
			(Outlet) Pool Depth (numeric) R	Pool depth in feet
			(Outlet) Pool Length (numeric) R	Pool length in feet
			Discharge to (Menu) R	Forest floor*, gully, ditch, landslide, wetland, stream
			Slope Shape (Menu) R	Concave, planar*, convex
			Slope (degrees) (numeric) R	Minimum = 0, Max = 90, "Degrees"
			Fill Erosion (menu)	No*, Yes
			Percent Plugged (numeric) R	Min: 0, max: 100
			Water Topped Rd (menu) R	Yes, no*: "Yes, if culvert cannot handle flow."
			Year round Flow (Menu) R	Yes, no*

Table 3A-1 Road Inventory Data Dictionary				
No.	Theme	Feature	Attribute	Details
			Trash Rack Present (menu) R	Yes, no*
			Stream Connection (Menu) R	No*, yes, unknown
			Channel Type (Menu) R	Natural stream*, irrigation ditch, canal, other
			Channel Width (numeric) R	Min: 1, Max: 20, "In feet"
			Angle to Channel (Menu) R	<25 degrees, <45 degrees, 45-75 degrees, > 75 degrees*
			Evidence of Blockage or Flooding (menu) R	NA*, no, sediment plume, scoured road, washed out road, organic debris pile
			Crossing Substrate (menu) R	Culvert fill material*, sand, gravel, bedrock
			Comment (text)	(Comment text = 100)
c		Ford (point)	Number (numeric)	Auto-increment number
			Foundation (menu) R	Rock, wood, asphalt/concrete*, other
			Functional (menu) R	Yes*, No
			Year Round Flow (menu) R	Yes, No*, "Does water flow all year long?"
			Channel Width (numeric) R	Min: 1, Max: 1000, "In feet"
			Comment (text)	(Comment text = 100)
3	Soil Erosion/ Potential Resource Damage			
a		Road Erosion Problem (point)	Number (numeric)	Auto-increment number
			Type (menu) R	Stream crossing erosion, stream lateral erosion, streamflow diverted (onto road), seepage area, nonengineered road drainage, other
			Length (numeric) R	Length of erosion feature in feet
			Comment (text)	(Comment text = 100)
b		Potential Resource Damage (point)	Number (numeric)	Auto-increment number
			Type (menu) R	Mud hole*, braided roads, extremely rocky, other
			Length (numeric) R	Length of feature in feet

Table 3A-1 Road Inventory Data Dictionary				
No.	Theme	Feature	Attribute	Details
			Comment (text)	(Comment text = 100)
c		Rut (point)	Number (numeric)	Auto-increment number
			Depth: (menu)	< 2", 2" to 6", > 6"
			Length (numeric) R	Length of rut in feet
			Comment (text)	(Comment text = 100)
d		Water Ponding (point)	Number (numeric)	Auto-increment number
			Length (numeric) R	Length of pond in feet
			Comment (text)	(Comment text = 100)
e		Slide (point)	Number (numeric)	Auto-increment number
			Description (menu) R	Cut failure*, fill failure, (record only when within 400 yards of reservoir or perennial stream)
			Length (numeric) R	Length of slide in feet
			Comment (text)	(Comment text = 100)
4	Road Hydrological Features/ Erosion Mitigation Measures			
a		Lead-Off Ditch (point)	Number (numeric)	Auto-increment number
			Slope shape (menu) R	Concave, planar*, convex
			Discharge To (menu) R	Forest floor*, gully, ditch, landslide, wetland
			Stream Connection (Menu) R	No*, yes, unknown
			Condition (menu) R	No problem*, gullied, not functional, excess deposition
			Comment (text)	(Comment text = 100)
b		Waterbar (point)	Number (numeric)	Auto-increment number
			Slope shape (menu) R	Concave, planar*, convex
			Discharge To (menu) R	Forest floor*, gully, ditch, landslide, wetland
			Stream Connection (Menu) R	No*, yes, unknown
			Fill Erosion (menu) R	No*, yes
			Type (menu) R	Road material*, fabricated material

Table 3A-1 Road Inventory Data Dictionary				
No.	Theme	Feature	Attribute	Details
			Condition (menu) R	No problem*, damaged, too small, drains inboard ditch
			Comment (text)	(Comment text = 100)
c		Broad-Based Dip (point)	Number (numeric)	Auto-increment number
			Slope shape (menu) R	Concave, planar*, convex
			Discharge To (menu) R	Forest floor*, gully, ditch, landslide, wetland
			Stream Connection (Menu) R	No*, yes, unknown
			Fill Erosion (menu) R	No*, yes
			Type (menu) R	Grade reversal*, flat ditch, constructed
			Condition (menu) R	No problem*, puddles on road, wetland in ditch, saturated fill
			Material (menu) R	Crushed rock, native soil, vegetated, paved, cinder
			Comment (text)	(Comment text = 100)
d		Nonengineered Drainage (point)	Number (numeric)	Auto-increment number
			Slope shape (menu) R	Concave, planar*, convex
			Discharge To (menu) R	Forest floor*, gully, ditch, landslide, wetland
			Stream Connection (Menu) R	No*, yes, unknown
			Fill Erosion (menu) R	No*, yes
			Type (menu) R	Grade reversal*, flat ditch, constructed
			Condition (menu) R	Blocked ditch*, diverted wheel track, broken berm, gully crosses road
			Comment (text)	(Comment text = 100)
e		Sump (point)	Number (numeric)	Auto-increment number
			Condition (menu) R	No problem*, puddles on road, saturated fill
			Comment (text)	(Comment text = 100)
f		Diffuse Drainage (point)	Number (numeric)	Auto-increment number
			Slope shape (menu) R	Concave, planar*, convex
			Discharge To (menu) R	Forest floor*, gully, ditch, landslide, wetland

Table 3A-1 Road Inventory Data Dictionary				
No.	Theme	Feature	Attribute	Details
			Stream Connection (Menu) R	No*, yes, unknown
			Fill Erosion (menu) R	No*, yes
			Comment (text)	(Comment text = 100)

* Default category