Oregon FIT Historical Railroad Data Standard

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1.0 Introduction

The Oregon Historical Railroads Project is mapping Oregon's railroad development dating from 1846 and the state's first wooden tramway going forward to include the present-day railroad network. The scope of this endeavor includes common-carrier railroads, past and present trolley, streetcar and interurban lines and the extensive network of private railroads that blanketed much of the state's forested landscape during the old-growth logging era.

Creation of a comprehensive map of Oregon's historical railroads is the creation of a virtual roadmap depicting how Anglo culture arrived, dispersed and settled in the state from the 1870's to the post-WWII era. The map of Oregon's railroads will also identify the original infrastructure for many miles of today's vehicular road system and provide historians with a systematic view of how many of our communities and neighborhoods developed and grew.

As this project develops, social science disciplines will have at their disposal an entirely new lens through which to follow the establishment of Anglo culture in Oregon. A by- product of the mapping effort will be the identification and recording of untold numbers of former construction and logging camps, communities and landmarks, providing a basis for further study.

1.1 Mission and Goals of Standard

The purpose of the Oregon Historical Railroad Data Standard is to provide a consistent structure for the collection, documentation, and display of the location of historical railroad features that were located in Oregon.

1.2 Relationship to Existing Standards

The Oregon Historical Railroad Data Standard is designed to be compatible with the FGDC GIS Framework Data Content standard Part 7B: Transportation – Rail (FGDC-STD-014.7b-2008). It is anticipated that the Oregon Historical Railroad Data Standard will be compatible with the Oregon Transportation Framework team Railroad standard when it is proposed.

1.3 Description of Standard

The Oregon Historical Railroad Data Standard is composed of four parts 1) Linear features, 2) Point features, 3) Area features, and 4) A temporal table linked to the geographic features. The primary rail features are represented by linear features representing the location of the rails. The point features are rail supporting features such as signals, switches, water tanks, and localities. The area features represent larger features such as logging camps, sawmills, switch yards, and borrow pits. Since many of the features had a short lifespan it is important to track the timeframe of features which is accomplished through a related time of temporal attributes.

1.4 Applicability and Intended Use of Standard

The Oregon Historical Railroad Data Standard is intended to be used as a template to aid in the collection and documentation of historical railroad features and to enable efficient display and analysis by historians.

1.5 Standard Development Procedures

The Oregon Historical Railroad Data Standard process development was coordinated by the Oregon Department of Forestry with the Oregon Historical Railroads Project and the Oregon Framework forums.

1.6 Maintenance of Standard

The Oregon Historical Railroad Data Standard will be maintained by the cooperators and users of the standard. It is anticipated that as data development projects proceed revisions will be required to provide clearer documentation of historical railroad features.

2.0 Body of the Standard

2.1 Scope and Content of the Standard

The scope of the Oregon Historical Railroad Data Standard is limited to the lines and associated features of historical rail lines within and adjoining the state of Oregon.

2.2 Need for the Standard

The Oregon Historical Railroad Data Standard is needed to ensure that railroad information collected by various historical researchers is consistent and provides those researchers with a means to clearly communicate the extent and development of railroads in Oregon over time.

2.3 Participation in Standards Development

The Oregon Historical Railroad Data Standard was developed through a collaborative effort with the Oregon Framework Implementation Teams.

2.4 Integration with Other Standards

The Oregon Historical Railroad Data Standard is integrated with the FGDC Geospatial Information Framework Data Content Standard, Part 7b: Transportation - Rail. (FGDC-STD-014.7b-2008). It is anticipated that any rail standard adopted by OGIC will be aligned with the FGDC standard.

2.5.1 Technical and Operation Context

2.5.1 Data Environment

The data environment for this standard is vector point, line and polygon data types.

2.5.2 Reference Systems

The geographic framework for all current reference systems is the North American Geographic Coordinate System of 1983 (NAD83) or the similar World Geodetic System of 1984 (WGS-84). Latitude positions in degrees north of the Equator and Longitude positions in degrees west of the Greenwich Prime Meridian describe any location on the Earth. Reference systems using meters or feet from a defined point use the GCS. The coordinate reference systems typically used in Oregon are the Universal Transverse Mercator (UTM) the Oregon State Plane system and the Oregon Geographic Information Council (OGIC) standard Oregon Lambert coordinate system. The UTM zones are zone 10, which comprises all land in Oregon to the west of 120 degrees west longitude, and zone 11, which comprises all land to the east of 120 degrees west longitude. The State Plane North and State Plane South zones are divided along the county boundaries near 44 degrees north latitude. The Oregon Lambert coordinate system is known as European Petroleum Survey Group (EPSG) # 2992.

2.5.3 Global Positioning Systems (GPS)

GPS is a critical technology for collection of location information of geographic features. It is important that field crews utilize this technology to minimize errors and create information that is the best possible representation of historical features. Additionally GPS is a key technology for the collection of lidar topographic information. Lidar of the bare earth representations are one of the most useful tools to determine the location and extent of historical rail features.

2.5.4 Integration of Themes

The geometry of the historical rail features needs to tile to the geometry to existing railroad theme features where appropriate. The historical rail features represented will also have a physical proximity to other historical features such as town sites and abandoned mines.

2.5.5 Encoding

N/A

2.5.6 Resolution

The resolution of the data will correspond to the resolution of the base map used for indexing, or the accuracy of the locational values derived from GPS at the time of location capture.

2.5.7 Accuracy

The accuracy of the Oregon Historical Rail Data is expected to meet national map accuracy standards, generally 1:24,000. Many of the source manuscripts are not sufficient to meet those standards, however, when used in conjunction with ancillary data the accuracy can be improved. High resolution elevation data is especially helpful in determining historical rail locations.

2.5.8 Edge Matching

As with any transcription from hardcopy maps to digital it is important to pay special attention to edge matching issues. This can be especially problematic when switching between sheets from different sources and potentially different source scales.

2.5.9 Feature Identification Code

The primary identifier for Oregon Historical Rail Data is the *Rail_Segment_ID*, this unique identifier is intended to be used as a link to related tables.

2.5.10 Attributes

A full description of the data attributes can be found in section 3.1. The feature data types are *lines*, *polygons*, and *points*.

2.5.11 Transactional Updating

The update process for the data produced following this standard is the responsibility of each organization that develops and maintains this data.

2.5.12 Records Management

The Oregon Historical Rail Data Standard documentation will be maintained and housed with other Oregon Framework standards. The geospatial data collected using this standard will be made available to the public through standard means such as online data services provided by various State, Federal and University organizations.

2.5.13 Metadata

The standard follows the Framework Metadata Standard for geospatial data which is integrated with the FGDC Metadata standard.

3.0 Data Characteristics

3.1 Spatial Data Elements Lines

3.1.1 Historical Rail Lines, Line

Features representing historical railroad lines

Item Name	*Type & Size*	*Mandatory*	*Description*
Rail_Segment_ID	Text 100	Yes	A unique ID used to link to related tables
RR_line_name	Text 100	No	The common name for the line
RR_line_builder	Text 100	No	The company or organization that constructed the line *owner*
RR_operator	Text 100	No	The company or organization that operated the line
RR_install_date	Date	No	The date (year) the railroad was constructed, *yyyymmdd inServiceDate*
RR_install_date_accuracy	Text 15	No	The accuracy of the date for rail construction.

			+/- day(s), month(s), year(s)
RR_isInService	Y/N	No	Whether or not the Rail segment is in service
RR_removal_date	Date	No	The date (year) the rails were removed, *yyyymmdd outOfServiceDate*
RR_removal_date_accuracy	Text 15	No	The accuracy of the date for rail removal. +/- day(s), month(s), year(s)
RR_line_final_owner	Text 100	No	The final owner of the line when it was removed
RR_line_type	Text 20	No	The type of line (*trackType*); *Mainline* *Interlocking* *Branch line* *Spur* *Siding* *Station* *Wye* *Yard*
RR_gauge	Text 10	No	Gauge of the rails; *Standard gauge* *Narrow gauge* *Dual gauge*
RR_line_construction	Text 20	No	The type of construction; *Bridge* *Fill* *Incline* *Through cut* *Trestle* *Tunnel*
startingMileage	Number	No	The mile at which the rail segment begins
endingMileage	Number	No	The mile at which the rail segment ends
Feature_collection_date	Date	No	The date the feature was digitized
Feature_accuracy	Text 50	No	The estimated relative accuracy of the horizontal location of the line feature
Feature_source	Text 20	No	The source of the feature location information
Source_reference	Text 20	No	The reference number identifier from the information source
Historic_register	Y/N	No	Yes/No if the feature has received Historic Register designation
Historic_register_date	Date	No	The date the feature received Historic Register designation

3.1.2 Historical Rail Lines Time Table,
Temporal table linked to line features

Item Name	*Type & Size*	*Mandatory*	*Description*
Rail_Segment_ID	Text 100	Yes	A unique ID used to link to related tables
RR_start_date	Date	No	The start date of the record (year), *yyyymmdd*
RR_start_date_accuracy	Text	No	The accuracy of the date for the event start. +/- day(s), month(s), year(s)
RR_end_date	Date	No	The end date (year) the record, *yyyymmdd*
RR_end_date_accuracy	Text	No	The accuracy of the date for the event end. +/- day(s), month(s), year(s)
RR_line_owner	Text 100	No	The owner of the line for this time period
RR_Class	Text 10	No	The class of railroad for this time period; *Class I* *Class II* *Class III*
RR_line_type	Text 20	No	The type of line for this time period; *Mainline* *Spur* *Siding* *Yard*
RR_line_usage	Text 30	No	The primary usage of the line for this time period; *Docking (wharf lines)* *Freight* *Interurban* *Light rail* *Logging* *Mining* *Passenger* *Trolley*
RR_joint_usage	Y/N	No	Boolean field for lines utilized by more than one rail operator. Refer to *Source_reference* for details.
RR_Primary_Operator	Text 100	No	The primary rail operator for this time period
RR_Secondary_Operator	Text 100	No	The secondary rail operator for this time period
RR_electric	Y/N	No	Boolean field for electric or catenary rail lines for this time period
Source_reference	Text 20	No	The reference number identifier from the information source

3.1.3 Historical Rail Points

Point features constructed or utilized in conjunction with historical rail lines. In some cases the point features will identify and name features that are contained in the line features. Examples of lines that could exist, but would be named in the point features are siding and wye.

Item Name	*Type & Size*	*Mandatory*	*Description*
RR_line_builder	Text 100	No	The company or organization that constructed the line
RR_point_type	Text 20	Yes	The type of feature related to a rail line *Camp* *City* *Depot* *Dispatch* *Dump* *Engine house* *Flume* *Fuel tank* *Grade crossing* *Grade separation* *Interchange* *Landing* *Landmark* *Mill* *Oil or fuel depot* *Pond* *Reload* *Rock or cinder pit* *Roundhouse* *Siding* *Signal* *Station* *Summit* *Switch* *Switchback* *Telephone* *Tower (rail communication)* *Turntable* *Water tank* *Wye* *Yard*
RR_site_name	Text 50	No	The name of the point feature
Feature_collection_date	Date	No	The date the feature was digitized

Feature_accuracy	Text 50	No	The relative accuracy of the horizontal location of the point feature
Feature_source	Text 20	No	The source of the feature information
Source_reference	Text 20	No	The reference number identifier from the information source
Historic_register	Y/N	No	Yes/No if the feature has received Historic Register designation

3.1.4 Historical Rail Polygons

Polygon features constructed or utilized in conjunction with historical rail lines

Item Name	*Type & Size*	*Mandatory*	*Description*
RR_line_builder	Text 100	No	The company or organization that constructed the line
RR_site_description	Text 100	No	The type of feature portrayed
RR_site_name	Text 50	No	The name of the polygon feature
Feature_accuracy	Text 50	No	The relative accuracy of the horizontal location of the polygon feature
Feature_source	Text 20	No	The source of the feature information
Source_reference	Text 20	No	The reference number identifier from the information source
Historic_register	Y/N	No	Yes/No if the feature has received Historic Register designation

References

FGDC Geospatial Information Framework Data Content Standard, Part 7b: Transportation - Rail. (FGDC-STD-014.7b-2008)
http://www.fgdc.gov/standards/projects/FGDC-standards-projects/framework-data-standard/GI_FrameworkDataStandard_Part7b_Transportation_Rail.pdf