

# Aquatic Resource Management



## Local Wetlands Inventory

### *GIS Data Description*

The purpose of this document is to provide a description and set of instructions for creating a Local Wetlands Inventory (LWI) Geographic Information System (GIS) dataset when submitting to the Department of State Lands (DSL). This document also outlines the names of all GIS layers and their attributes required for such an LWI GIS dataset submittal. To make submittals easier, DSL created an LWI template containing the layers and attributes listed in this document. The template is based on Esri's File Geodatabase format. The template can be found at the following location, [www.oregon.gov/dsl/WW/Pages/Inventories.aspx](http://www.oregon.gov/dsl/WW/Pages/Inventories.aspx). When submitting an LWI GIS dataset to DSL, please follow the structure outlined in this document or download a copy of the LWI Template and populate it with the necessary data.

- 1) **Format** – The DSL template database includes everything described below and is developed by DSL as a File Geodatabase; a proprietary data structure developed by the company Esri.
- 2) **Metadata** – All submitted GIS datasets will conform to the current State of Oregon GIS Metadata Standard. Model language is included in the DSL LWI GIS data template. If the template is used be sure to fill in the details. If the template is not used, please cut and paste the language from the template or request it as a Word document, and complete the item description model language. For more information about the Oregon Metadata Standard, including examples of properly completed metadata, please consult the [Oregon GIS Metadata Standard](http://www.oregon.gov/geo/FIT%20Documents/FINAL_OR_Metadata_standard_ver_2.04.pdf).  
([www.oregon.gov/geo/FIT%20Documents/FINAL\\_OR\\_Metadata\\_standard\\_ver\\_2.04.pdf](http://www.oregon.gov/geo/FIT%20Documents/FINAL_OR_Metadata_standard_ver_2.04.pdf) )
- 3) **Projection** – Per rule all GIS datasets delivered shall be in in the State's standard map projection, Lambert Conic Conformal with Datum NAD83. For more information about the correct standard projection please consult the [Oregon Coordinate Reference System Standard](http://www.oregon.gov/geo/Pages/standards.aspx) web page.  
([www.oregon.gov/geo/Pages/standards.aspx](http://www.oregon.gov/geo/Pages/standards.aspx))
- 4) **Data Extent** – Excepting the Watershed, Tax Lot, and Wetlands and Waters (when wetlands extend out of the study area or waters continue between parts of the study area) datasets, all other LWI datasets will have features clipped to the Study Area Boundary. Watershed boundaries partially within the study area will be the full watershed polygon(s) (See Appendix A, Watershed Polygons) and Tax Lots will be all polygons that fall within, are bounded by, or intersect with the Study Area Boundary.  
  
For each layer the overall extent should include all the features in the layer and extend no further. For assistance on recalculating the extent of a layer please reference the Esri [ArcMap](#) and [ArcGIS Pro](#) help pages.
- 5) If changes are made to any portion of an LWI GIS data set while a previously submitted version of the data set is under review by DSL, the entire LWI GIS package must be provided to the Department before approval can be given.
- 6) **Appendices** – See Appendices for additional guidance (Appendix A) and references (Appendix B).

**7) Layers (Feature Classes) and Attributes** – In order to comply with the requirements contained in the [LWI Process and Standards \(OAR 141-086-0180 et seq.\)](#), the following specifications for the layers and attributes have been developed and are listed below in items I – XIII. These layers and attributes are all required for any LWI dataset submission to DSL unless specifically shown. If the database template provided by DSL is not used, then follow the description and format of the layers and attribute names listed in this document. All required fields must be populated where values exist.

**Note:** There are some attributes that are colored in light gray. These attributes represent items that are populated by the GIS software. All other attributes (not colored in gray) are the responsibility of the party conducting the LWI and need to be populated.

**I. Artificial Feature Lines (ARTIFICIAL\_FEAT\_LINE)**

Note – “Artificial Feature” does not imply that a feature is non-jurisdictional. \*See Appendix A

Attribute	Type	Width	Description
OBJECTID			Database unique ID
SHAPE	Line		Database Feature Type
Purpose	Text	100	Original purpose of the artificial wetland or water feature
Name	Text	50	Name of artificial wetland or water feature, if named
SHAPE_Length	Double		Database calculation of the length of the line

**II. Artificial Feature Polygons (ARTIFICIAL\_FEAT\_POLY)**

Note – “Artificial Feature” does not imply that a feature is non-jurisdictional.

Attribute	Type	Width	Description
OBJECTID			Database unique ID
SHAPE	Polygon		Database Feature Type
Purpose	Text	100	Original purpose of the artificial wetland or water feature, required label
Name	Text	50	Name of artificial wetland or water feature, if named
Acres	Double		Area in acres
SHAPE_Length	Double		Database calculation of the perimeter of the polygon
SHAPE_Area	Double		Database calculation of the area of the polygon

**III. LWI Stream Lines (LWI\_STREAM) \*See Appendix A**

Attribute	Type	Width	Description
OBJECTID			Database unique ID
SHAPE	Line		Database Feature Type
Name	Text	50	If not named in NHD provide local name. If unnamed an LWI identifier may be helpful.
SHAPE_Length	Double		Database calculation of the length of the line

**IV. LWI Water Body Polygons (LWI\_WATERBODY)**

Attribute	Type	Width	Description
OBJECTID			Database unique ID
SHAPE	Polygon		Database Feature Type
Name	Text	50	Name of water body from NHD. If not named in NHD provide local name. If unnamed an LWI identifier may be helpful.
Acres	Double		Area in acres
SHAPE_Length	Double		Database calculation of the perimeter of the polygon
SHAPE_Area	Double		Database calculation of the area of the polygon

**V. Probable Wetland Points (PROBABLE\_WETLAND\_POINTS)**

Attribute	Type	Width	Description
OBJECTID			Database unique ID
SHAPE	Point		Database Feature Type
PW_ID	Text	12	1 to 3-character value for Probable Wetland unique identifier, shall have the prefix "PW-"

**VI. Probable Wetland Polygons (PROBABLE\_WETLAND\_POLYS)**

Attribute	Type	Width	Description
OBJECTID			Database unique ID
SHAPE	Polygon		Database Feature Type
PW_ID	Text	12	1 to 3-character value for Probable Wetland unique identifier, shall have the prefix "PW-"
Acres	Double		Area in acres
SHAPE_Length	Double		Database calculation of the perimeter of the polygon
SHAPE_Area	Double		Database calculation of the area of the polygon

**VII. Sample Plot Points (SAMPLE\_PLOT)**

Attribute	Type	Width	Description
OBJECTID			Database unique ID
SHAPE	Point		Database Feature Type
ID	Text	50	Location of wetland determination sample plots. Alphanumeric ID with a one-to-one correspondence with a wetland determination data sheet

### VIII. Study Area Polygons (STUDY\_AREA)

Attribute	Type	Width	Description
OBJECTID			Database unique ID
SHAPE	Polygon		Database Feature Type
Study_Name	Text	50	The name of the LWI study area given by the local jurisdiction or if other inventory then the name of the closest mapped locality and study area name.
Approval_Date	Date		TO BE FILLED BY DSL UPON APPROVAL
Acres	Double		Area in acres
SHAPE_Length	Double		Database calculation of the perimeter of the polygon
SHAPE_Area	Double		Database calculation of the area of the polygon

### IX. Tax Lot Polygons (TAX\_LOT) At a minimum, this layer will contain the following attributes.

Attribute	Type	Width	Description
OBJECTID			Database unique ID
SHAPE	Polygon		Database Feature Type
MapNumber	Text	20	Must use map number as stored in the County's Assessor's database
Taxlot	Text	5	Tax lot number padded with leading zeros (00100, 00200, etc., per DOR ORMAP standard, or as given by county GIS), or, for polygons without tax lot numbers, the allowable values are, ROADS, RAILS, WATER or [NONTL]
MapTaxlot	Text	25	The combined map and tax lot number as stored in the assessor's database
Access	Text	3	Property access granted (Yes/No)
Comment	Text	100	Any additional comment regarding access for a particular property (tax lot)
SHAPE_Length	Double		Database calculation of the perimeter of the polygon
SHAPE_Area	Double		Database calculation of the area of the polygon

### X. Transportation Lines (TRANSPORTATION)

Request this from the local jurisdiction, or map service. Another possible source for street centerlines and attributes is the Oregon Department of Transportation road centerline data set, it can be found at the Oregon Geospatial Data Library,

[https://spatialdata.oregonexplorer.info/geportal/search;fq=Transportation;q=\\*roads\\*](https://spatialdata.oregonexplorer.info/geportal/search;fq=Transportation;q=*roads*).

Attribute	Type	Width	Description
OBJECTID			Database unique ID
SHAPE	Line		Database Feature Type
Name	Text	50	Street name, required for major streets
Type	Text	12	Type of transportation feature (picked from list; Road or Railroad or Trail)
SHAPE_Length	Double		Database calculation of the line length

**XI. Watershed HUC12 Polygons (WATERSHED\_HUC12)**

Attribute	Type	Width	Description
OBJECTID			Database unique ID
SHAPE	Polygon		Database Feature Type
HUC12_Name	Text	120	Watershed HUC12 name, as defined by the USGS
HUC12	Text	12	12-digit USGS hydrologic unit code, as defined by the USGS
SHAPE_Length	Double		Database calculation of the perimeter of the polygon
SHAPE_Area	Double		Database calculation of the area of the polygon

**XII. Watershed, LWI Specific Polygons (WATERSHED\_LWI) \*Optional**

Attribute	Type	Width	Description
OBJECTID			Database unique ID
SHAPE	Polygon		Database Feature Type
LWI_WS_NAME	Text	120	If a watershed smaller than the HUC12 is used, that is an LWI specific watershed, use the local stream name, or if unnamed use an LWI specific watershed identifier
SHAPE_Length	Double		Database calculation of the perimeter of the polygon
SHAPE_Area	Double		Database calculation of the area of the polygon

**XIII. Wetland Polygons (WETLANDS) Next page.**

**XIII. Wetland Polygons (WETLANDS)** This polygon dataset shall be developed to meet the LWI requirements in rule and this document with additional guidance found in the [Oregon Wetland Mapping Standard](#) (OWMS). If the DSL-provided template is not used, then this dataset must include all LWI required attributes in the table below. Cowardin shall be entered as the FGDC code abbreviation to the level required in DSL Division 86 rules. HGM shall be entered as the codes given in the DSL LWI GIS template drop down and as provided in Adamus, 2001. The following attributes are required to be included and populated in the LWI wetland polygon dataset. Other attributes as defined in the OWMS are included in the DSL LWI template but are OPTIONAL.

Attribute	Type	Width	Description
OBJECTID			Database unique ID
SHAPE	Polygon		Database Feature Type
SITENAME	Text	100	The name of the LWI study area given by the local jurisdiction or if other inventory then the name of the closest mapped locality and study area name.
POLY_S_ID	Text	15	Unique wetland identification label
COWARDIN	Text	15	The FGDC code abbreviation to the level required in DSL Division 86 rules
HGM	Text	15	The codes given in the DSL LWI GIS template drop down and as provided in Adamus, 2001
LSW	Text	5	Locally Significant Wetland Determination, yes or no (or N/A if not an LWI)
DSL_WD	Text	50	DSL WD report number when applicable (Format example: WD2015-0561. Additional numbers to be separated by a comma “,”) Make a differentiation between Delineations from Determinations by using “WDet” prefix for Determinations (Format example: WDet2015-0561).
DSL_FILE	Text	50	Local gov’t option: DSL permit or other file number, if exists. May restrict to compensatory mitigation sites (Format example: 51842-RF, -ENF, etc.) Additional numbers to be separated by a comma “,”
FIELD_OBS_LWI	Text	10	Populated from drop down menu. Values of “Onsite”, “Offsite”, “Visual”.
MOSAIC	Text	25	Identification of “Wetland/Upland Mosaic” features. By default, this field will be blank, choose from drop down “Wetland-Upland Mosaic” when applicable.
ACRES	Double		Area in acres

## Appendix A: Additional Guidance

When creating a Local Wetlands Inventory read all the rules, OAR 141-086-0180 through -0350, and the assessment methodology manual completely and carefully. If questions arise, please seek clarification from the DSL Aquatic Resource Planner.

Common missteps are made when creating wetland sub-polygons for Cowardin Classification (141-086-0210(15)(a) and (16)) and when determining how to split or lump wetlands for assessment. If using OFWAM read and strictly follow page 19 of the manual. Consult with DSL for clarification.

Culverts and Connectivity: It is important to depict the connectivity of flowing water, and inflow and outflow points, when known, for many future uses. The inclusion of the locations of culverts is not required currently in the LWI rules, however many jurisdictions have included culvert mapping in their LWI products. Additionally, past DSL guidance was to discontinue stream lines and polygons where they go through culverts or under streets or structures. This poor GIS practice creates what are called “digital dams” or the appearance that waterbodies are disconnected when they are, in fact, connected. Knowledge of culvert location and direction of flow is helpful information for future wetland studies and public works departments. If the local government wishes to include culverts in the LWI then some guidance and recommendations for best representations of culverts and waters is given below.

Culverts: To date the standardized LWI GIS datasets have represented culverts in the “Artificial Feature – Line” layer with the “purpose” attribute filled as “culvert.” However, there are times when only one end of a culvert can be located. In this case the consultant may create a separate “Culvert” point layer (not included in the DSL template). Create complete item descriptions and attributes to describe the features.

LWI Stream Lines: To depict connectivity through culverts, under roads or structures and through LWI Water Body polygons please use a continuous stream line.

Jurisdiction: As with the National Wetlands Inventory, a Local Wetlands Inventory is not a representation of regulatory jurisdiction. All wetlands and waters that exist on the ground must be mapped according to LWI rule. The determination of regulatory jurisdiction is a second step usually done within the delineation report process.

The Study Name attribute within the Study Area layer and the SITENAME attribute within the WETLANDS polygon layer shall have the same entries.

Watershed polygons: Usually the LWI study area will be smaller than the HUC-12 polygon(s). Include the entire HUC-12 polygon in the HUC-12 watershed layer. Do not clip the HUC-12 polygons to the study area boundary.

When the entire study area is within one HUC-12 watershed the consultant and jurisdiction may choose to create smaller, LWI specific sub-watersheds. Use the LWI Specific Watershed polygon layer for the smaller watershed polygons. Use the stream name if named, or an LWI stream ID for the watershed name.

In all cases see item 4) Data Extent, above, regarding layer clipping, the extent, and rendering of all layers. None of the layers should extend beyond the HUC-12 watershed polygons.

## Appendix B: Additional Resources and References

DSL's LWI Digital Data Standards (OAR 141-086-0225)

<https://secure.sos.state.or.us/oard/displayDivisionRules.action?selectedDivision=351>

Adamus, P.R. 2001. Guidebook for Hydrogeomorphic (HGM)–based Assessment of Oregon Wetland and Riparian Sites: Statewide Classification and Profiles. Oregon Division of State Lands, Salem, OR.

Adamus, P.R. and D. Field. 2001. Guidebook for Hydrogeomorphic (HGM)–based Assessment of Oregon Wetland and Riparian Sites. I. Willamette Valley Ecoregion, Riverine Impounding and Slope/Flats Subclasses. Volume IA: Assessment Methods. Oregon Division [Department] of State Lands, Salem, OR. [www.oregon.gov/dsl/WW/Pages/Resources.aspx#assessment](http://www.oregon.gov/dsl/WW/Pages/Resources.aspx#assessment)

Adamus, P.R. 2006. Hydrogeomorphic (HGM) Assessment Guidebook for Tidal Wetlands of the Oregon Coast, Part 1: Rapid Assessment Method, Adamus Resource Assessment, Inc., Corvallis, OR 97330; [www.oregon.gov/dsl/WW/Pages/Resources.aspx#assessment](http://www.oregon.gov/dsl/WW/Pages/Resources.aspx#assessment)

Cowardin, L. M., V. Carter, F. C. Golet, E. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. Jamestown, ND: Northern Prairie Wildlife Research Center Online. <https://www.usgs.gov/centers/npwrc>.

Federal Geographic Data Committee. 2013. Classification of wetlands and deepwater habitats of the United States, [FGDC-STD-004-2013](#), Second Edition, Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, DC.

Oregon Department of Revenue. 2018. Oregon Cadastral Data Exchange Standard v 3.2.

<https://www.oregon.gov/geo/Pages/standards.aspx>