

GIS Pre-Processing Workflow (Part I)

This Document describes the workflow for Part I of the GIS workflow and provides instructions on how to create and populate the [GIS Template Package](#) in Esri's ArcGIS Pro. This template, once updated with recent statewide POD data, can be used to perform further regional analysis.

Open The POD Pre-Processing Template file in ArcGIS Pro

Add POD table to map

Nav: Map > Add Data > Data

Navigate to R-Script [Output](#) folder and add the eWRIMS POD spreadsheet.

1. Add Public Land Survey System (PLSS) Section layer to map

This layer is the version used in eWRIMS and should already be included in the Project package file.

Nav: Map > Add Data > PLSS_Sections_Fill

2. Convert .csv table to File Geodatabase Table and remove unwanted fields

Nav: Analysis > Tools

Enter "Table to Table" in the Find Tools search bar and select the "Table to Table" tool

Enter the following parameters:



Expand the "Fields" section and remove all fields, except the ones listed below, by clicking the red X next to each field name. then Click "Run" Alternately, you can leave all the fields and choose to hide unwanted fields after the geoprocessing tool has run.

| Field Name |
|----------------------|
| OBJECTID |
| POD_ID |
| POD_NUMBER |
| POD_STATUS |
| POD_TYPE |
| POD_LAST_UPDATE_DATE |
| POD_COUNT |
| APPL_ID |
| OBJECTID_1 |
| POD_NUMBER_GIS |
| COUNTY |
| PARCEL_NUMBER |
| SP_ZONE |
| NORTH_COORD |
| EAST_COORD |
| LATITUDE |
| LONGITUDE |
| QUARTER_QUARTER |
| QUARTER |

| |
|--------------------|
| SECTION_CLASSIFIER |
| SECTION_NUMBER |
| TOWNSHIP_NUMBER |
| TOWNSHIP_DIRECTION |
| RANGE_NUMBER |
| RANGE_DIRECTION |
| MERIDIAN |
| LOCATION_METHOD |
| SPECIAL_USE_AREA |
| SOURCE_NAME |
| TRIB_DESC |
| WATERSHED |
| HUC_12_NUMBER |
| HUC_12_NAME |
| HUC_8_NUMBER |
| HUC_8_NAME |
| QUAD_MAP_NAME |
| QUAD_MAP_NUMBER |
| WR_WATER_RIGHT_ID |
| APPLICATION_NUMBER |

| |
|--------------------|
| CERTIFICATE_ID |
| PERMIT_ID |
| LICENSE_ID |
| WATER_RIGHT_TYPE |
| WATER_RIGHT_STATUS |

3. Create POD Points Feature Layer

Nav: Analysis > Tools > XY Table to Point

Enter the following parameters and Click “Run”

Geoprocessing

XY Table To Point

Parameters
Environments

Input Table
pod_spatial_fields_statewide

Output Feature Class
pod_points_statewide

X Field
LONGITUDE

Y Field
LATITUDE

Z Field

Coordinate System
GCS_WGS_1984

4. Concatenate PLSS related Fields in the pod_points_statewide layer

Combine the Meridian, Township_Number, Township_Direction, Range_Number, Range_Direction and Section_Number fields (MTRS) from the pod_points_statewide layer into a new field and format it to match the “MTRS” field within the PLSS Section layer we added to our map in step 2. Then, relate the two layers using this shared field (there is no doubt a more elegant way to complete this task but here is one method).

a. Creating a Meridian Short Name

The PLSS Section Layer uses an abbreviation for the Meridian name, so we must replace the text in the MERIDIAN field within the pod_points_statewide attribute table with those abbreviations.

Save your Project and clear all selections.

calculate the MERIDIAN field using the following python expression and click apply:

```
MERIDIAN = !MERIDIAN!.replace("Humboldt", "H")
```

calculate it twice more using the following python expressions and click apply:

```
MERIDIAN = !MERIDIAN!.replace("Mount Diablo", "M")
```

```
MERIDIAN= !MERIDIAN!.replace(" San Bernardino", "S")
```

Note the Space before “_S...” in San Bernardino.

b. Concatenate Into New Flat File MTRS field

Create a new Text Field within the pod_points_statewide attribute table named “FFMTRS” and save field changes

Calculate the new FFMTRS Field using the following python expression and click apply:

```
FFMTRS=!MERIDIAN!+str(!TOWNSHIP_NUMBER!)+!TOWNSHIP_DIRECTION!+str(!RANGE_NUMBER!)+!RANGE_DIRECTION!+str(!SECTION_NUMBER!)
```

Complete the same process for the PLSS_Section_Fill table to concatenate the Meridian abbreviation, township, range and section fields. Note: You might have to convert a numeric field to an integer before you convert it to text to avoid decimals example:
`str(int(!field!))`

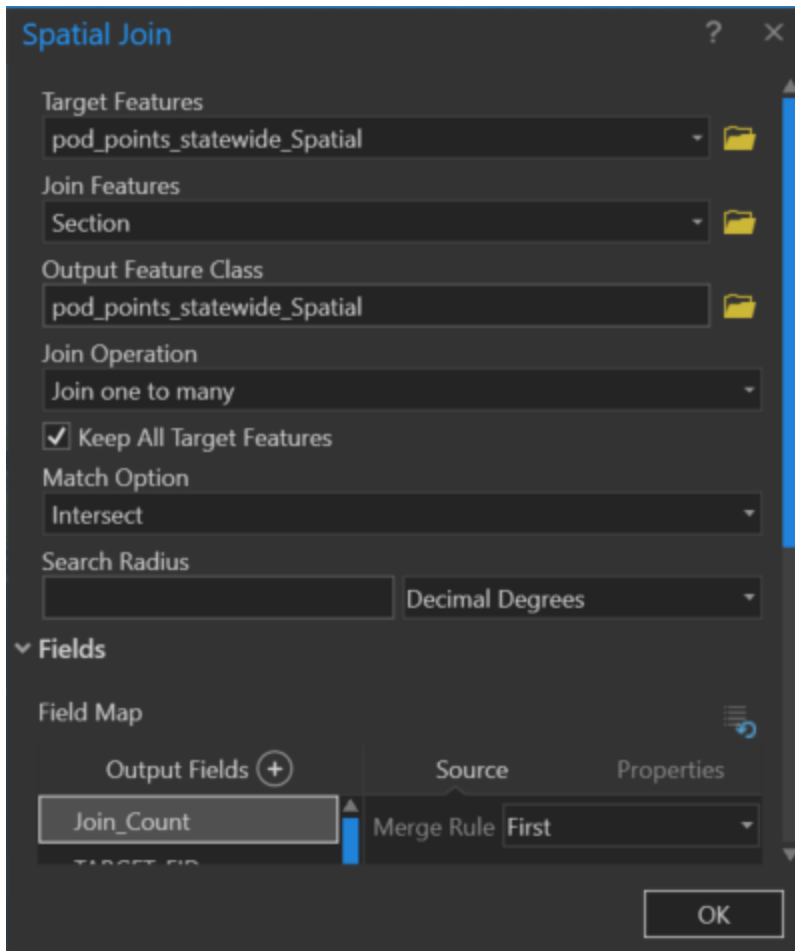
Save your Project

5. Compare the PLSS Section listed in the Flat File (FF_MTRS) with the PLSS Section the Latitude and longitude points actually fall on (MTRS)

After reviewing many water right documents and comparing their data in eWRIMS, we know that both Latitude/Longitude and PLSS Section data in eWRIMS are prone to errors. However, we can compare the PLSS Sections listed for each POD in the Flat file to the PLSS sections for each POD Latitude/Longitude point and spatially intersect to help identify some of these errors.

Perform a spatial join between the POD Points layer and PLSS Section layer.

Right click the POD Points layer in the contents pane > joins and Relates > Spatial Join complete as shown remove all output fields except “MTRS” from the PLSS Section layer to avoid confusion.



Create a new text field named MTRS_Match and calculate that field using the following python expression:

Expression: `reclass(!FF_MTRS!,!MTRS!)`

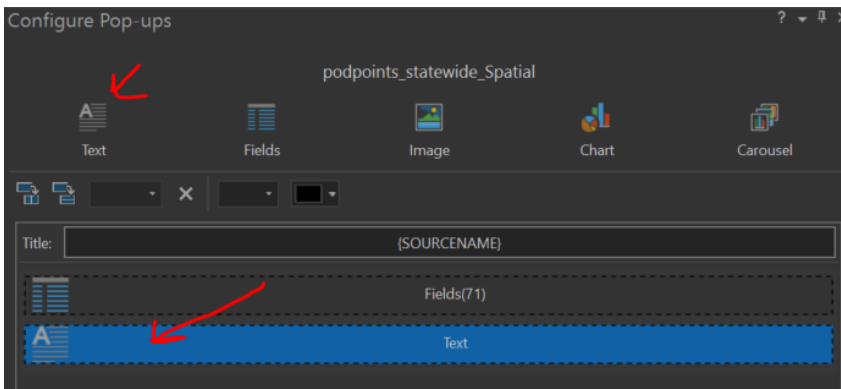
```
CB: def reclass(ffmtrs,mtrs):
    if (ffmtrs == mtrs):
        return "Y"
    else:
        return "N"
```

For rows with “N” in this column we know the POD point is plotted on a different PLSS section than listed in the Flat file.

6. Add eWRIMS links to POD Point Pop up window

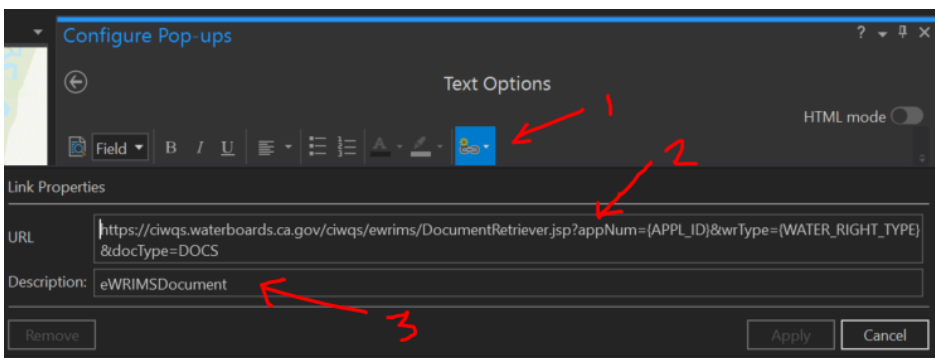
To ease review of individual POD add an eWRIMS document hyperlink to each POD popup window.

Right click the statewide POD layer in the contents pane > configure popups. Then click on the add text field as shown below:

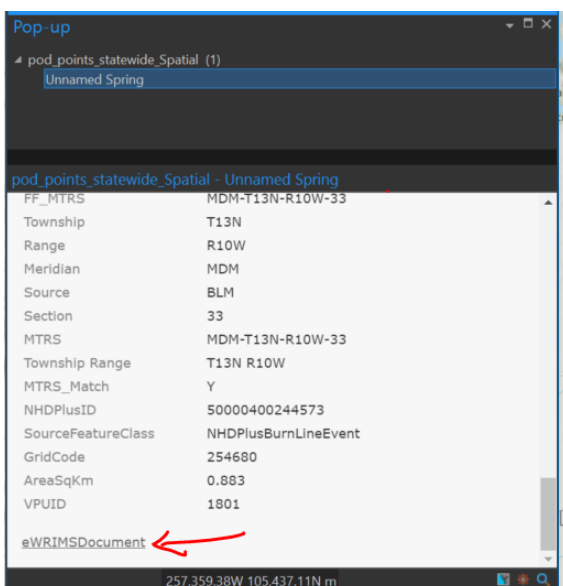


Double click on the new text field, then:

1. click the hyperlink button.
2. Type or paste https://ciwqs.waterboards.ca.gov/ciwqs/ewrims/DocumentRetriever.jsp?appNum={APPL_ID}&wrType={WATER_RIGHT_TYPE}&docType=DOCS into the URL field.
3. Type "eWRIMSDocument" in the description field and click apply.

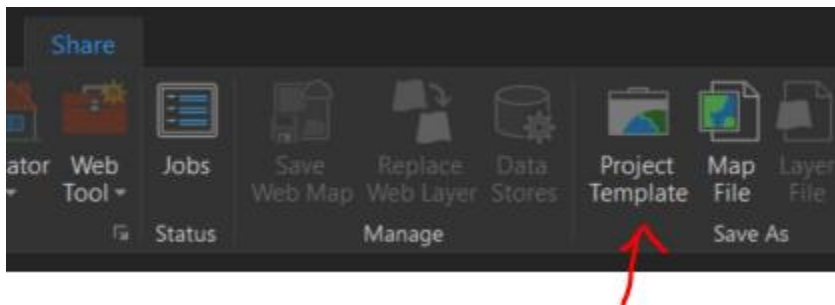


Now when you click on a POD point, the eWRIMS Document hyperlink will appear at the bottom of the popup window. Because APPL_ID and WATER_RIGHT_TYPE are fields, not values, the URL will be populated with the corresponding field value from that specific POD's record.



7. Save Project and all layers as a Package Template

Under the Share tab click on “Project Template”



Choose a file location, add Summary, and Tag text; then click create.