WORKFLOW POWER GEOPAK SS4/SS10
IMPORT WETLAND SHAPES INTO DGN FOR DISPLAY IN PLAN AND CROSS SECTION VIEW

Contents

Overview

This document guides you through the process of importing wetland areas from a .SHP file so they can be viewed in Dynamic Cross Section view. It will also go over the process of setting the wetlands to the correct Element Templates for plan production. Includes instruction for delineation of the ordinary high water mark using the same techniques.

Workflow Provenance

- Date of development: *4-29-2019*

- Revision date(s): *11-23-2020*

- Software: *Power GEOPAK SS4 / SS10*

- Software version(s): *08.11.09.878 / 08.11.09.918*

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Statement of Need

Users need to be able to display the wetland areas in cross section view, as well as plan view for plan production with the correct line style and hatching.

Definitions Used in This Document

Shape File – as used in this document refers to an ArcView .SHP file containing the wetlands graphics that will be referenced into MicroStation.

Feature Definition – Feature Definitions define the engineering properties of a civil feature in the design file, and how that feature is displayed in plan, profile, cross section, and 3D view.
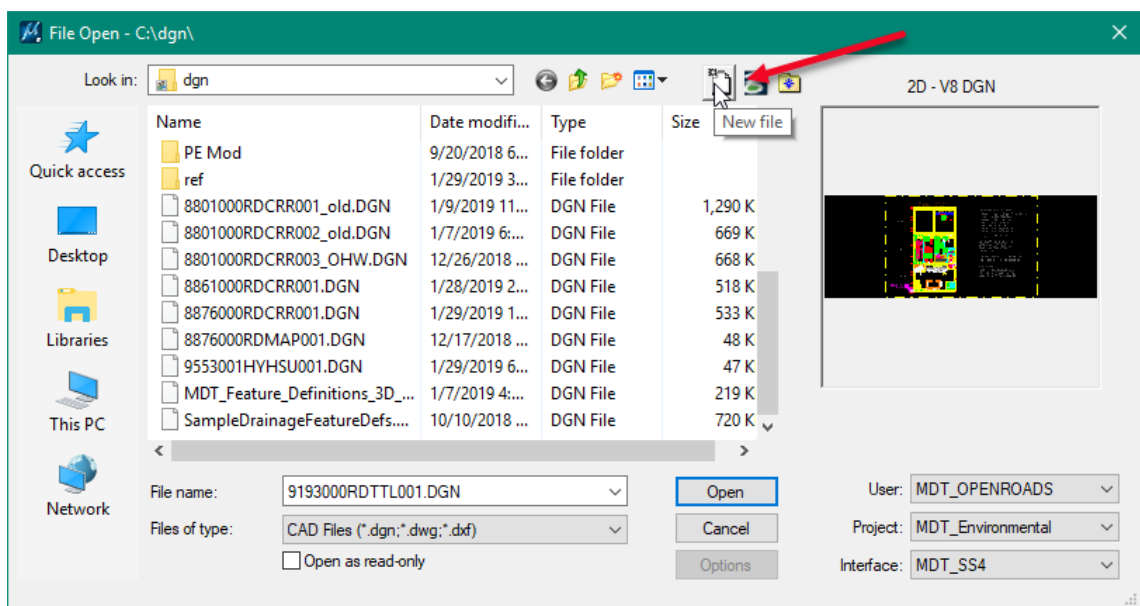
Terrain Model – The OpenRoads format of terrain models which are stored in DGN files.
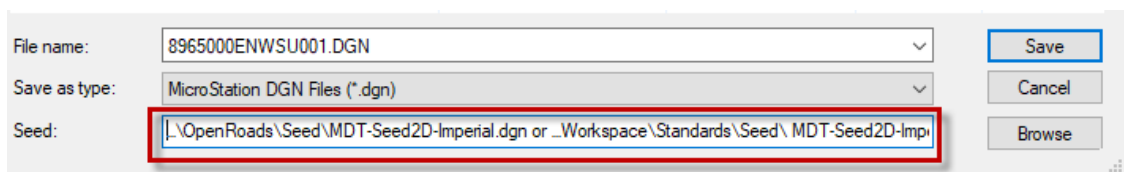
Workflow Description and Examples

Section I. Attach Shape File and Merge into Master

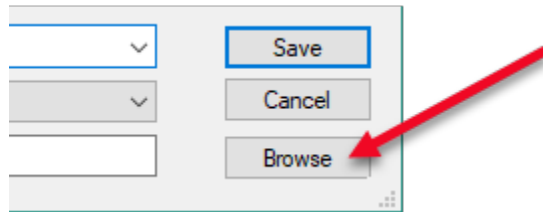### Workflow – Attach Shape File as a Reference

1. **Open** MicroStation and Geopak or PowerGEOPAK with the MDT Enhanced workspace.

2. Create the ***ENWSU*** wetlands dgn ***(######ENWSU001.DGN)*** file.

   a. From the ***MicroStation Manager***, **Select** *New File*.

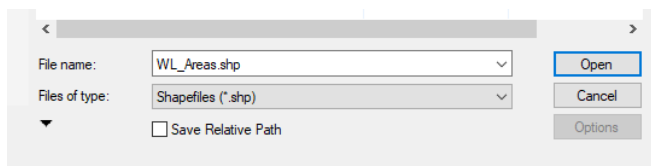   b. Verify the seed file is ***MDT-Seed2D-Imperial.dgn.***

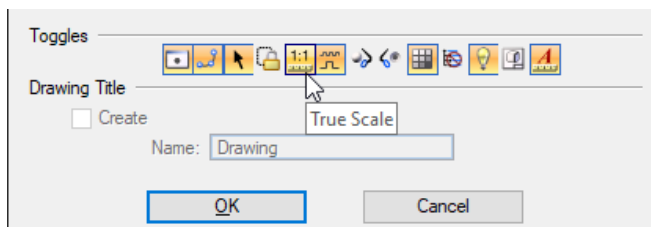   c. If the seed file is incorrect. Browse to select the correct seed file from the path listed below.

…Workspace\Standards\Seed\ MDT-Seed2D-Imperial.dgn

    d. **Save** the new dgn file.

3. Before attaching the shape file, attach the existing terrain and the corridor file for reference purposes.

4. From the **References** dialog, **go** to **Tools > Attach** or **click** on the **Attach Reference** icon. Attach the existing terrain file (**######DETR001.DGN)**, and the corridor file **(######RDCRR001.DGN)**. Note that there may be more than one of each file for a project. Clarification from the Designer may be required to ensure use of the proper files.

5. Follow the same process as above to attach the shape file. **Change** the **File Type** to **Shapefiles (*.shp)**, and **select** the **WL_Areas.shp** file.
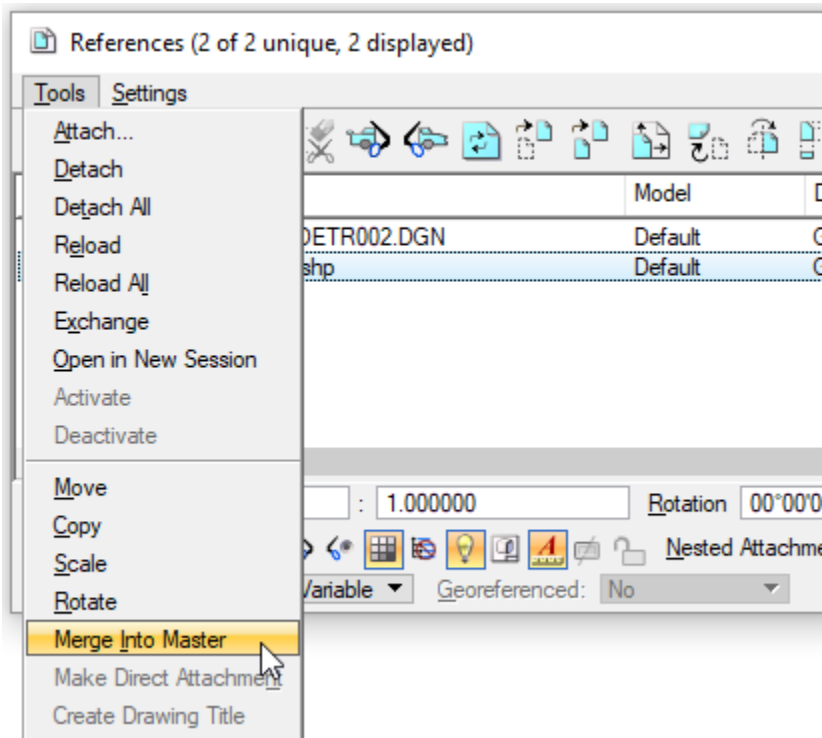

6. From the **Reference Attachment Settings** dialog, **select Coincident-World**. In the **Toggles** section check **OFF** the **True Scale** toggle. This will ensure that the shape file is attached in the correct location.
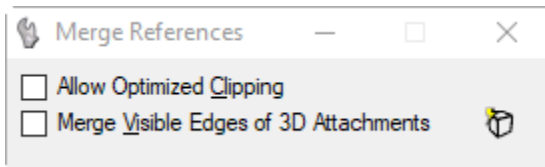

Note: If you don't check off the **True Scale** toggle during attachment, you can still change the setting from the **References** dialog. **Select** the **WL_Areas.shp**, and from the **Toggles** section in the lower left corner, **check** off the 1:1 **True Scale** toggle. Notice that the **Scale** field changed to 3.28, **change** this to **1.0**, and **press Tab**.
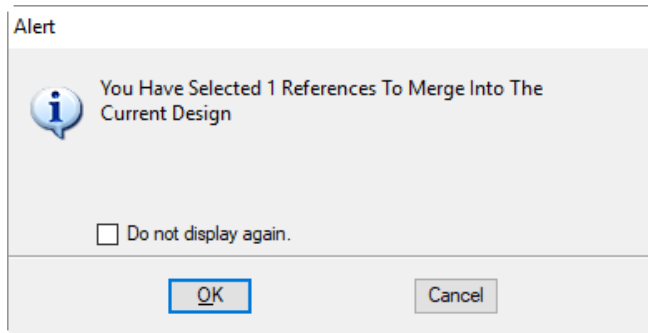
7. **Click *OK*** and then ***Fit All*** to ensure the wetland areas are attached in the correct location.

8. Now merge the linework from the shape file into the active design file using the ***Merge into Master*** command, but first we need to do a ***Fit All*** because it will merge what is in the current view.

9. From the ***References*** dialog **go** to ***Tools > Merge Into Master,*** or **right-click** on the ***WL_Areas.shp***, and from the pop up menu **select *Merge Into Master***.

10. Look at the 2 options available in the ***Tool Settings*** dialog. Leave them both checked off.

11. In the lower left corner of the **Status Bar** it is asking **Select View for Merge**. **Left-click** anywhere in the view. The Alert dialog box will display.

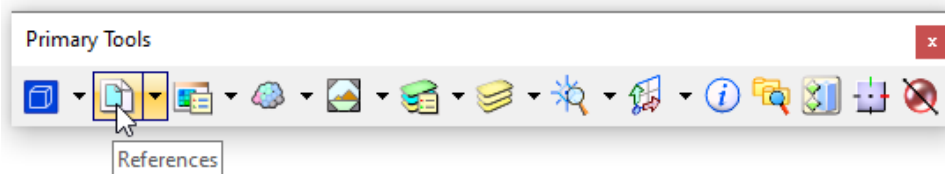12. **Click *OK*** on the Alert dialog and all of the line work has been merged into the **ENWSU** file.

This completes the referenced section from the Ordinary High Water Mark workflow for **Step 1**.

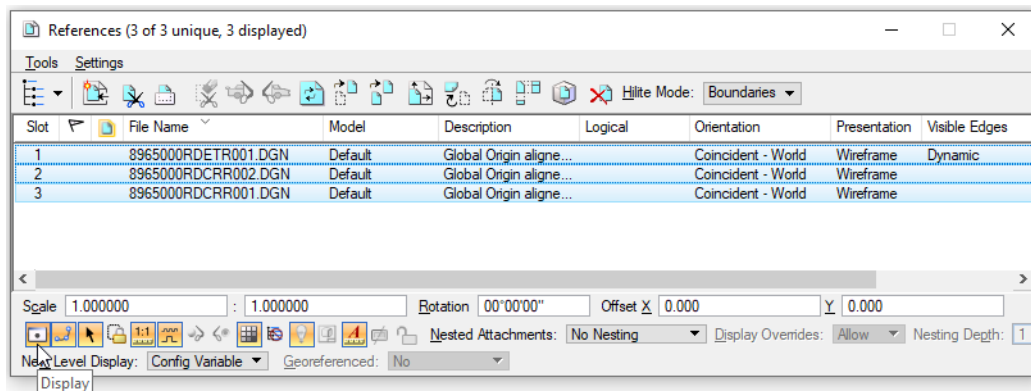Use link to return – OHWM Workflow

Section II.   Create Wetlands

Workflow – Creating Wetlands from Shapes

The wetland areas come into MicroStation as a Shape element. In order to display the wetlands in *Dynamic Cross Section View*, we need to drop them so they are no longer shapes, and can be assigned a *Feature Definition*. Complex shapes won't display in Cross Section view. To accomplish this, we will use a macro that will automatically drop the shapes to line strings.

1. For ease of viewing and selecting the wetland delineation areas turn **OFF** all the references.

    a. From the *Primary* tool bar, **select *References***.
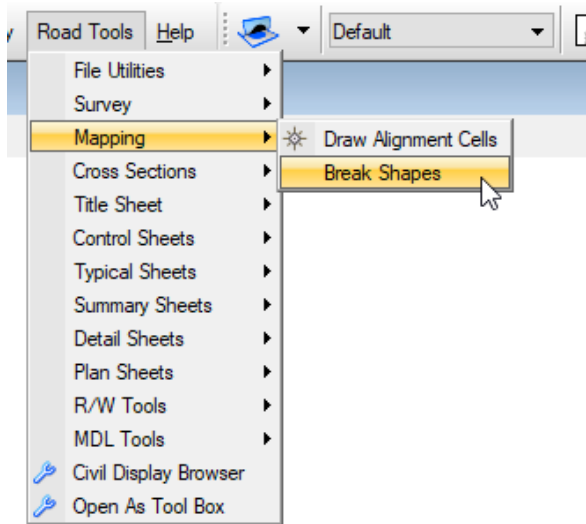

    b. From the *References* dialog, **select** all references listed in the dialog (references listed will vary for each project). Click the *Display* toggle to turn off the display for all reference files.
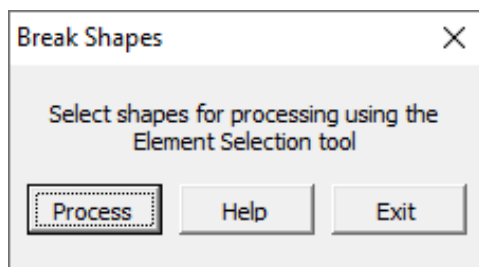

> This completes the referenced section from the Ordinary High Water Mark workflow for **Step 2**.
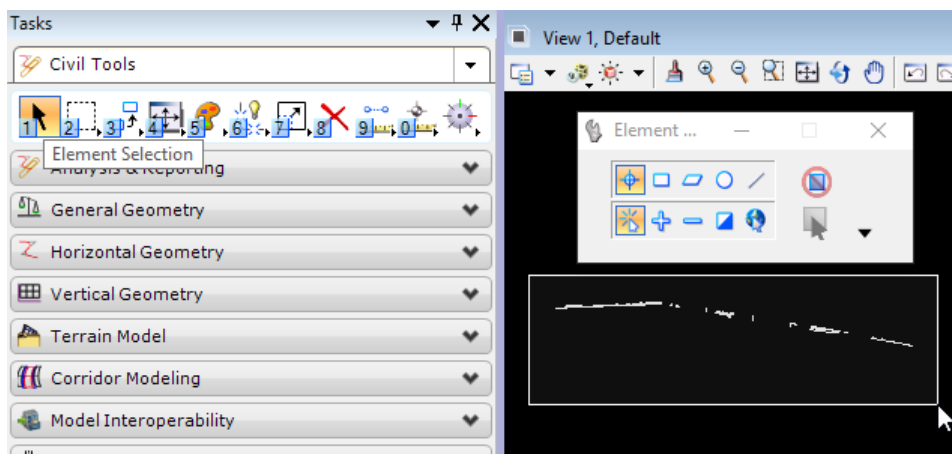>
> Use link to return – OHWM Workflow

2. **Launch** the ***Break Shapes*** vba from the ***Road Tools*** menu. Go to ***Road Tools > Mapping > Break Shapes***.
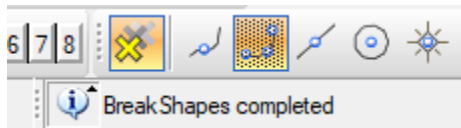

3. The ***Break Shapes*** dialog will load, prompting the user to select all the shapes using ***Element Selection***.
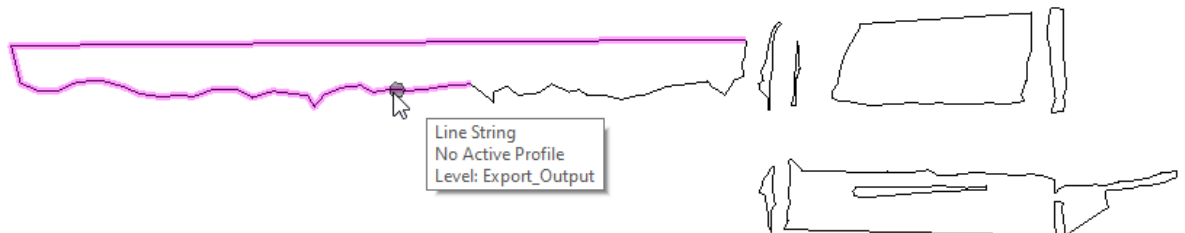

   Drag a box around all the wetland areas to select them, and **click *Process***.

4. Once completed, **Break Shapes Completed** will be displayed in the message center in the lower left corner

5. **Click *Exit*** on the **Break Shape** Dialog.

6. Using *Element Selection*, **left-click** anywhere on one of the wetland areas, now we can see that they are dropped to individual Line Strings.
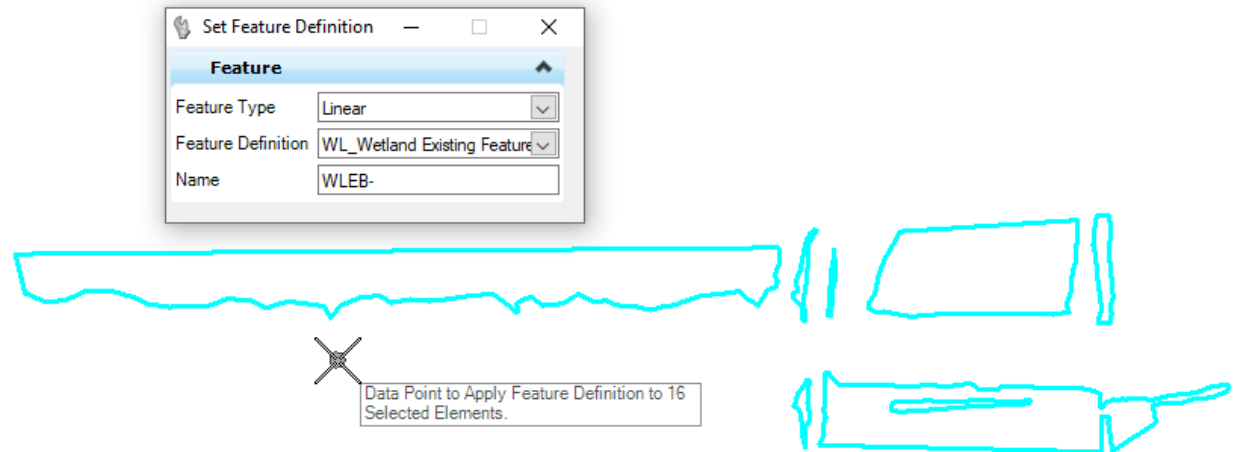

Now we will assign a *Feature Definition* to the wetland areas.

7. Using *Element Selection*, **drag** a box around all the wetland areas to select them.

8. From *Tasks* under *General Geometry*, **select** the *Set Feature Definition* icon.

9. **Set** the *Feature Type* to *Linear*, the *Feature Definition* to *MDT_Environmental > WL_Wetland Existing Feature* , and **left-click** any-where in the view. Depending on how many elements are selected, this might take some time to process.

10. All the wetland areas should be assigned the *WL_ Wetland Existing Feature Definition*.

11. The *WL_ Wetland Existing Feature Definition* has the custom line style to dis-play the wetlands for plan production assigned to it. The display of custom line styles is controlled by the *Annotation Scale*. To set the *Annotation Scale*, go to *Settings > Drawing Scale*. This will load the *Drawing Scale* tool box, from here **set** the scale to **1'=100**".

This completes the referenced section from the Ordinary High Water Mark workflow for **Step 3**.

Use link to return – OHWM Workflow

12. Now we will add a 3D aspect to the wetland areas by draping them over the existing surface.
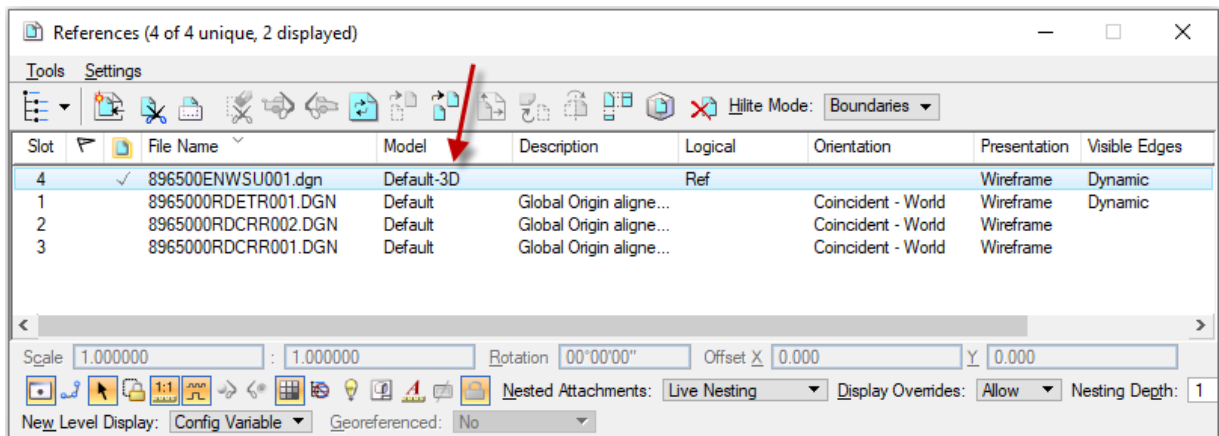
13. An active terrain is needed before we can drape the wetlands over it. In the *References* dialog, turn *ON* the display of the existing terrain file. Using *Element Selection*, *select* the terrain boundary, nudge the cursor away from the boundary, and the context menu will display. From the context menu *select Set AS Active Terrain Model*. This will set the existing surface as the active terrain.

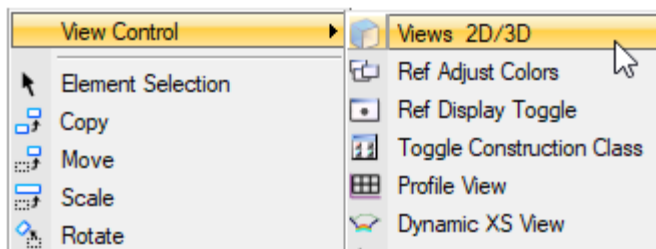14. This step will automatically create the 3D model. In the *References* dialog, you will see the name of the active dgn file listed. This is the 3D model referenced back to the 2D plan view. It is listed in the *References* dialog as a reference with the same name as the active dgn file, and listed as **Default-3D** under the *Model* tab.
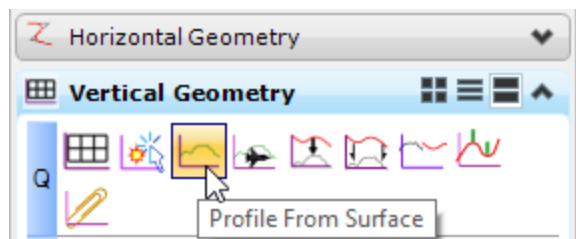

15. Turn off the display of the 3D model following Section II, Step 1.

16. **Right-click** anywhere in View 1, and from the pop-up menu **select**
    View Control > Views > Views 2D/3D. This will open the 3D view in View 2.

17. In the 2D plan view, using ***Element Selection,*** **drag** a box around all the wetland
    areas to select them, and from the ***Task bar*** under ***Vertical Geometry***, **select**
    the ***Profile From Surface*** icon.

18. **Left-click** to accept when asked from the heads-up prompt to ***Data Point to Apply DTM profile to 79 Selected Elements***. Note that the number of elements
    selected will vary between projects.

Important Note: If you are working with more than one Terrain Model you will need to left-click the reference surface instead of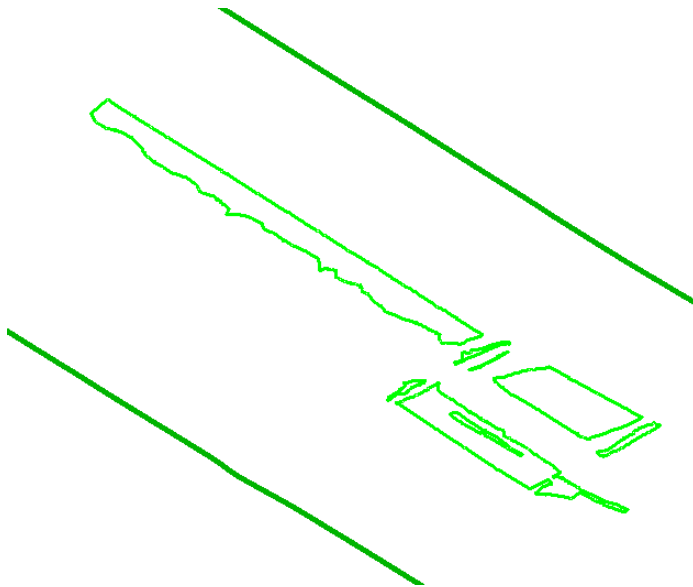 right-clicking for the active Terrain Model. This would be something like several curves on a project that are separated by several miles, non-continuous project areas where more than one **ETR** file was referenced in.

19. **Left-click** to locate ***Reference Surface*** or **Right-click (Reset)** for the ***Active Terrain Model*** that was set in a previous step.

20. **Set** the options in ***Tool Settings*** to match the image above, and **left-click** in the 2D plan view 5 additional times to go through the remaining questions asked at the ***Heads-Up Prompt*** before the command is completed. This should only be completed once, and the command will exit when choosing the next command. Processing may take a little time due to the number of selected elements. When completed the wetlands will be displayed in the 3D view. The wetlands are displayed very faintly, so you may need to zoom in to a known site to see them in the 3D view.

Important Note: If the terrain model is ever updated, for example, to include pickup survey data for void areas, the ENWSU file will simply need to be reopened with the current updated ETR file accessible. If a new terrain or new terrain file was created for the updated data, the wetlands will need to be draped again referencing the new ETR file/terrain (Section I, Steps 3-4 and Section II, Steps 12-20).

This completes the referenced section from the Ordinary High Water Mark workflow for **Step 4**.
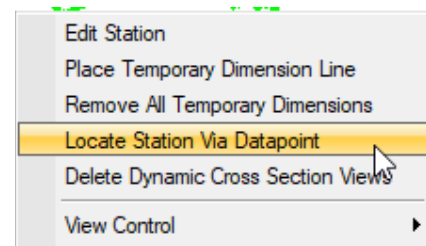
Use link to return – OHWM Workflow

Section III.   Cross Section Wetland Labels
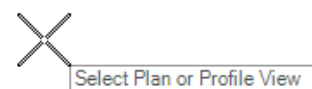
Workflow – Review Cross Section Wetland Labels

1. Now that the wetlands have a *Feature Definition* assigned, and have been draped onto the terrain, they can be viewed in the *Dynamic Cross Section View*.

2. The display of the wetlands in the *Dynamic Cross Section View* is controlled by the *Annotation Scale* set in the 3D view. From the 3D view, set the *Annotation Scale*, by navigating to *Settings > Drawing Scale* on the menu. This will load the *Drawing Scale* tool box. From here **set** the scale to **1'=20"** so the wetlands cells will be displayed correctly.

3. In View 1 (2D plan view) and View 2 (Default-3D view), turn on the display of the corridor reference file(s).

4. **Click** on the *Open Cross Section View* icon on the *Corridor Modeling* tab, **select** the corridor, open a view, and **left-click** in that view to display the Cross Sections.
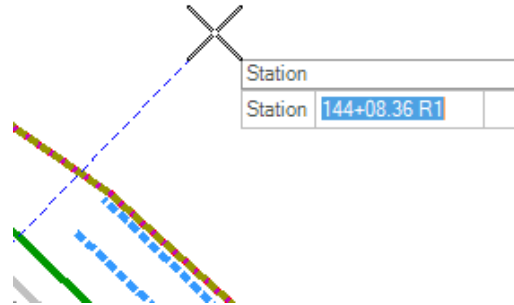

5. Use *Locate Station Via Datapoint* to locate the wetlands from the 2D plan view by **right-clicking** in the Cross Section view and selecting *Locate Station Via Datapoint* from the pop-up menu.

6. You will be prompted from the heads-up prompt at the cursor to *Select Plan or Profile View.*

7. **Select** the 2D plan view, and this will display a dynamic dashed line perpendicular to the corridor alignment with the option to key in a station at the heads-up prompt.
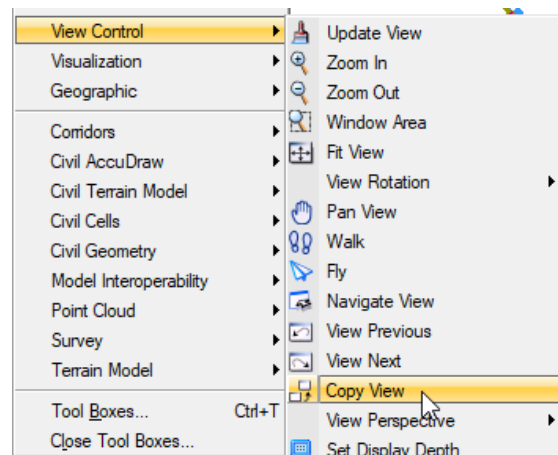

8. From there you can move the cursor over one of the wetland areas, and left click. Or a station value can be keyed in. Both methods will display the cross section in the dynamic cross section viewer at the cursor's location in the 2D plan view.

9. Notice the wetland boundary cells that are displayed in the Cross Section view.

10. To close out of the cross section view, from the menu bar **go** to **Tools > View Control > Copy View**.

11. **Select** the View 1 (2D plan view) as the source view, and **click** in the cross section view. **Select** the "**X**" in the upper right corner to close the Cross Section view.
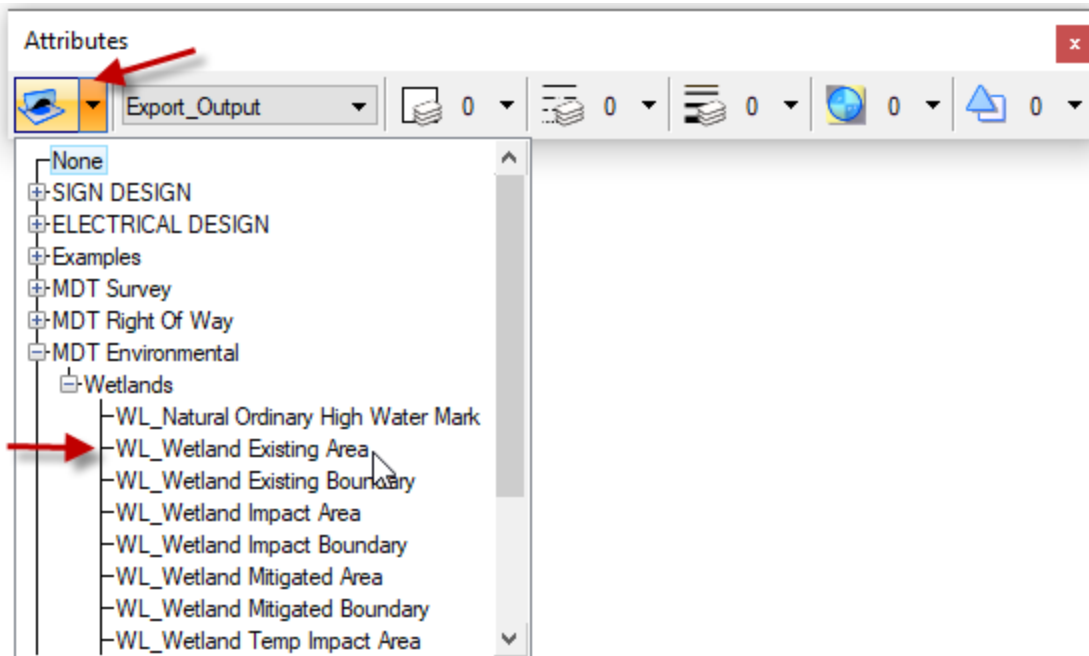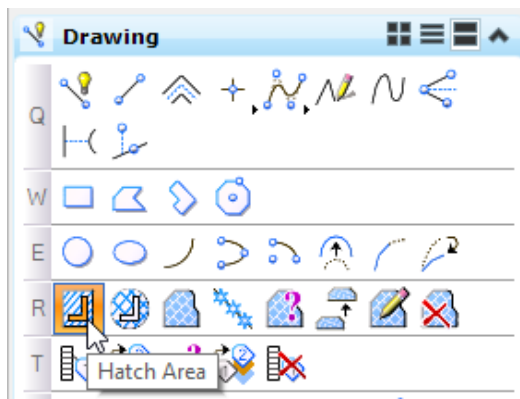
Section IV.   Hatching Wetlands

Workflow – Hatching Wetlands

The final step to prepare the wetlands for plan production is to hatch the wetland areas.
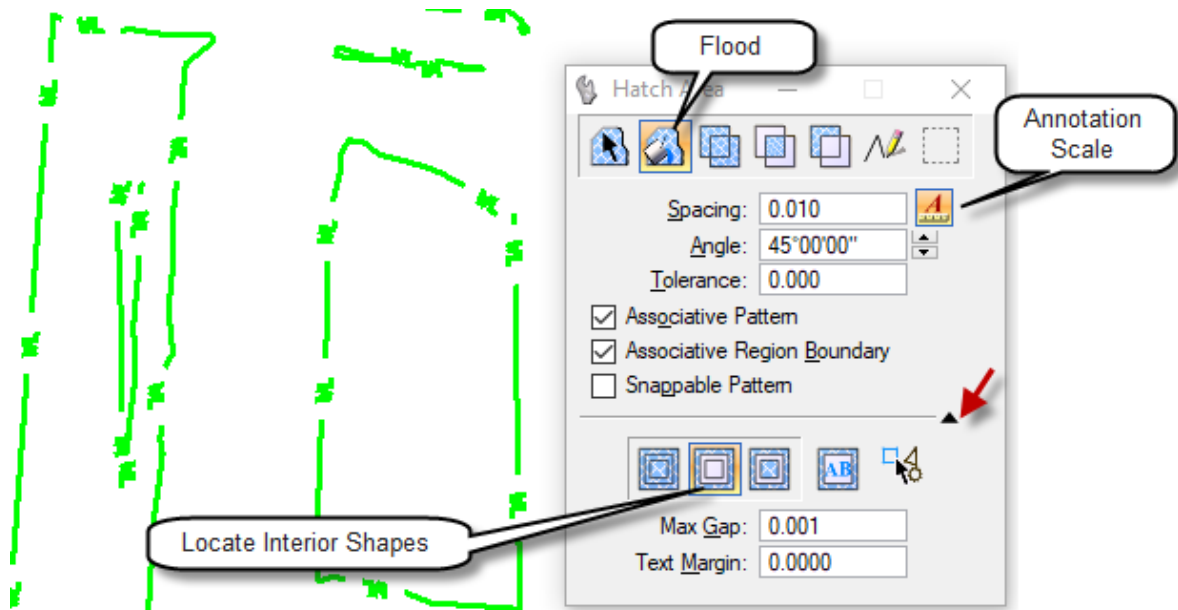
1. Turn off the display of all references in the View 1 (2D plan view).

2. Set the *Element Template* to *WL_Wetland Existing Area.* From the *Attributes* toolbar, **click** the drop down on the *Element Template* icon. **Navigate** to *MDT-Environmental > Wetlands*, and select *WL_Wetland Existing Area*.

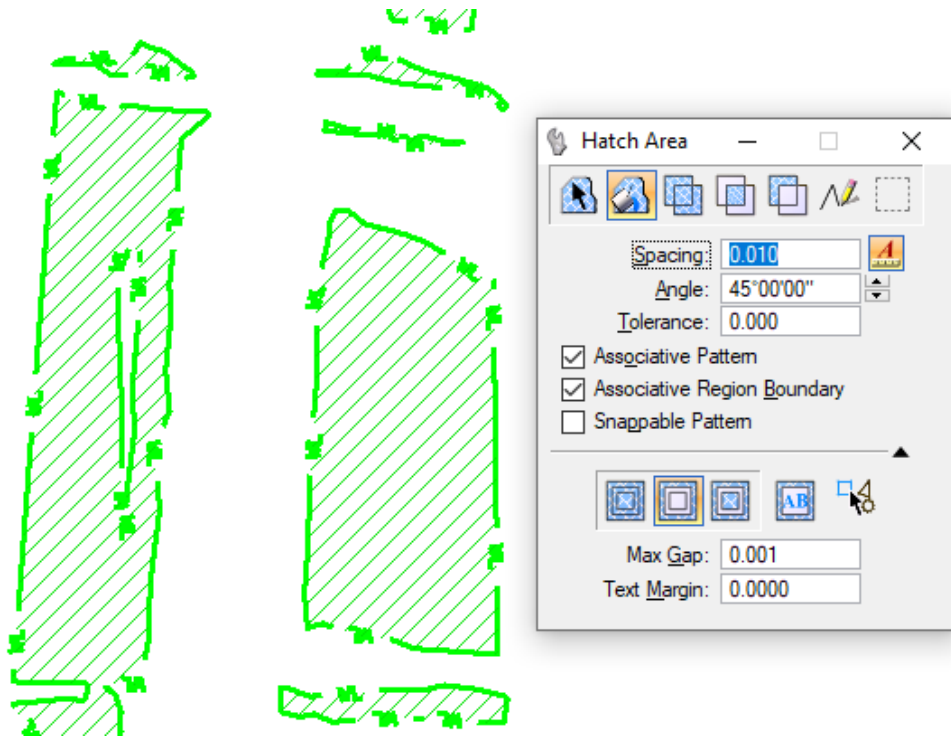3. From the Drawing tab on the Task bar, select the Hatch Area command.

4. ***Tool Settings*** will now show the options for the ***Hatch Area*** command. **Set** the following settings to match the image below.

5. Set the ***Method*** to ***Flood***. ***Flood*** will find an enclosed region defined by the wetland boundary, and hatch that area. Note that ***Flood*** may fail to find an enclosed region if the entire wetland is not visible in the view window.

6. **Set** the ***Spacing, Angle***, and ***Tolerance*** as shown, and check on the ***Annotation Scale Toggle***. This will allow the hatch spacing to be controlled by the Annotation scale settings.

7. **Toggle** on ***Associative Pattern*** and ***Associative Region Boundary***, these will associate the hatch to the wetland, and allow the hatch to adjust if the wetland boundary is modified.

8. The options below the line are accessed by clicking the triangle in the lower right. This will expand the ***Tool Settings*** window to allow access to the Interior Shapes settings. **Click** on ***Locate Interior Shapes***. This setting will automatically detect any shapes that exist inside the wetland, and hatch around the interior shape.

9. **Max Gap** is set by default to 0.001, this value is the largest gap between elements allowed before the command is not able to find an enclosed region. This setting will be sufficient for this workflow.

10. Now that all the options are set, **left-click** twice (once to highlight, and once to flood) inside each wetland boundary to hatch them.

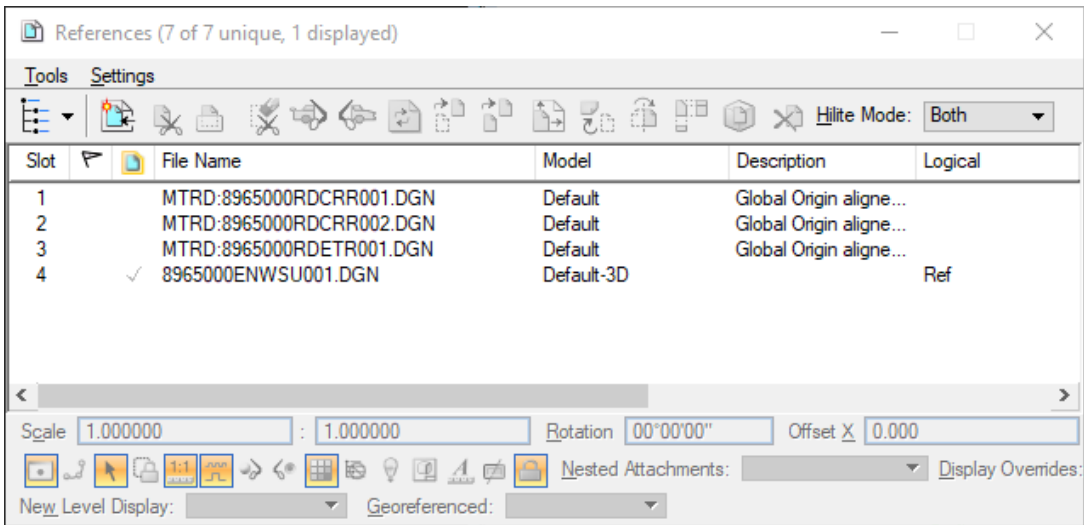11. Now the wetlands are prepared for plan production.

Associated Workflows

Reference File Logical Prefix

Adding a Reference File Logical Prefix

A reference file prefix is required for MDT's Document Management System (DMS) and plotting solution (Docuplot) to locate any files referenced into a dgn file from the network. Further information on reference file logical prefixes can be found on the CADD Info website under CADD Memos & Guidance – MDT Reference File Logical Prefixes.

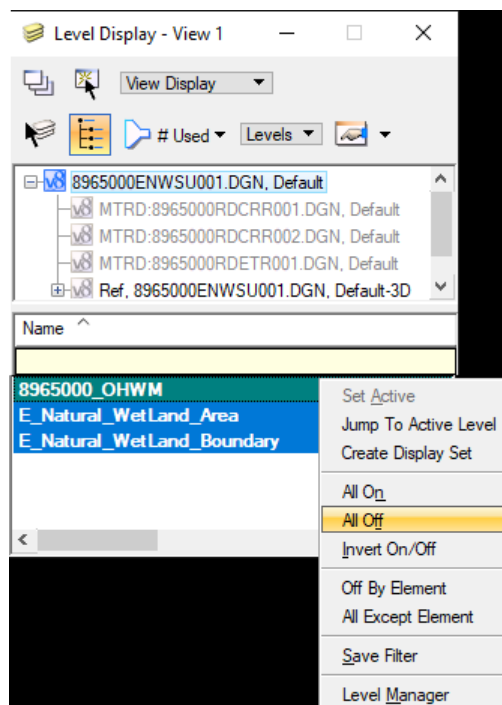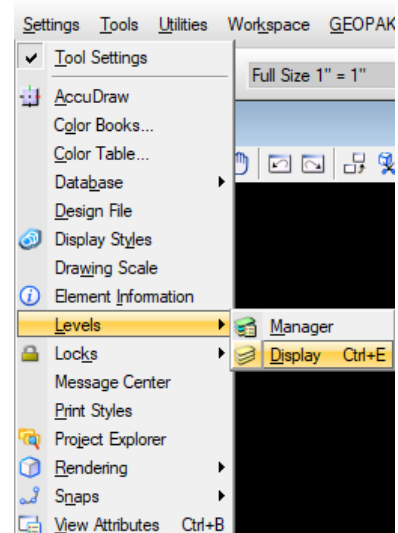**Note:** The 3D Model reference does not need the **MTRD** prefix.

Ordinary High Water Mark (OHWM)

Workflow – Draping the Ordinary High Water Mark

The ENWSU file is used to drape the ordinary high water mark following the same process described for draping the wetland areas. The ordinary high water mark won't require shapes to be broken with the break shapes vba and a different feature definition is used.
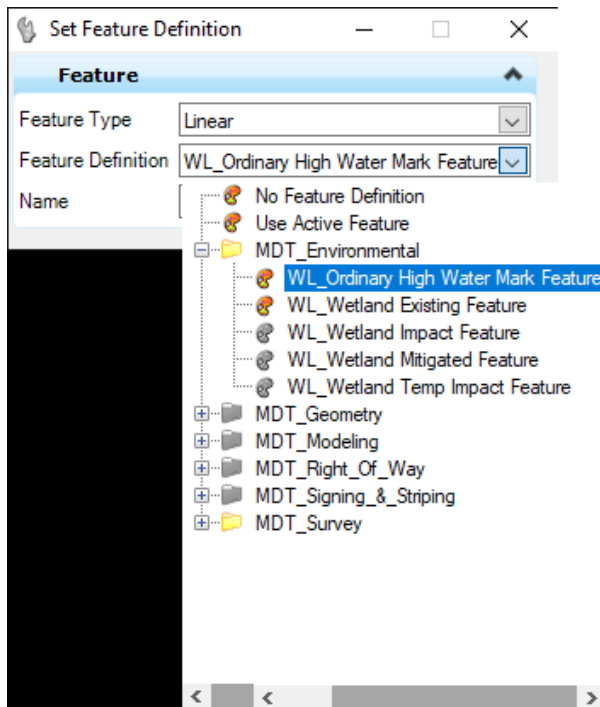
1. The ordinary high water mark shape file will need to be merged into the ENWSU using an ordinary high water mark shape file following the processes used for wetlands in Section I. The ENWSU file will not need to be recreated and the RDCRR and RDETR file will not need to be referenced in if these steps have already been completed.

2. For ease of viewing and selecting the ordinary high water marks, see Section II, Step 1. Additionally, turn off the wetland area levels as follows:

    a. To open the Level Display, from the menu bar **go** to **Settings > Levels > Display**.

    b. From the Level Display window, **double-click** the level having the OHWM lines to set as active, then **right-click** on any of the levels and choose **All Off**.

Note: Levels may be turned on and off individually using a **left-click**.

3. Set the feature definition using ***WL_Ordinary High Water Mark Feature*** for the definition. See Section II, Steps 7-11 to review the process.

4. Draping the ordinary high water mark can now be done using the same procedures outlined for draping the wetland areas in Section II, Steps 12-20.