



National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science

NPS I&M Standard Operating Procedure: Creating HUC12 AOAs for use with Landscape Dynamics

Version Draft #2.0

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Summary

Using the Watershed Boundary Dataset (WBD) HUC12 watersheds as a source, all HUCs that are within or intersect IMD park boundaries are used to create Areas of Analysis for use with Landscape Dynamics.

Version History					
Previous Version No.	Date of Revision	Changes	Made by	Reason	Updated Version No.
xx.xx	YYYYMMDD	What	Who	Why	xx.xx

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Overview

This SOP documents how areas of analysis representing HUC12 watersheds, are created from watershed boundary data obtained from the Watershed Boundary Dataset (WBD). All HUC12 watersheds that are within and/or intersect an IMD park boundary are included in the HUC12 AOA dataset. NPS/IMD related attribute fields are added to the AOA features, and features are projected to match standard required spatial extents for various geographical regions. HUC12 AOAs are otherwise unaltered from the source.

WBD Overview

The WBD is produced by 3 federal agencies, USDA, USGS, and EPA. The dataset was created from digitizing 1:24,000 K USGS Topographic Maps. The date range for original source data is 1884 to 2006. (<http://nhd.usgs.gov/wbd.html>)

Requirements

Users of this SOP are required to have:

- ArcGIS 10.2.2+
- Mapped drive, and read/write permissions (*inp2300fcsisro1\IMD_Data*)
- WBD HUC12 data download
- Remote desktop permissions and access to GIS Server to publish Map Services (*inp2300fcvhafo1*)
- **Local connection to code repository**
- *Optional: IDE for Python (i.e. Pyscripter) with .pyt extension recognition – this is only necessary if editing the python toolbox; access limited to IMD Central Office GIS staff.*

AOA Processing – HUC12 AOAs

- Create a temporary workspace on a local drive (i.e. D:\ProjectWorkspace\HUC12_Scratch).

- Copy to local temporary workspace Landscape Dynamics AOAs and Terrestrial Areas geodatabases:
 - o X:\ProjectData\LandscapeDynamics\SourceData\Boundary\LandscapeDynamics_AOA.gdb
 - o X:\ProjectData\LandscapeDynamics\SourceData\Boundary\LandscapeDynamics_Geographical_Boundaries.gdb

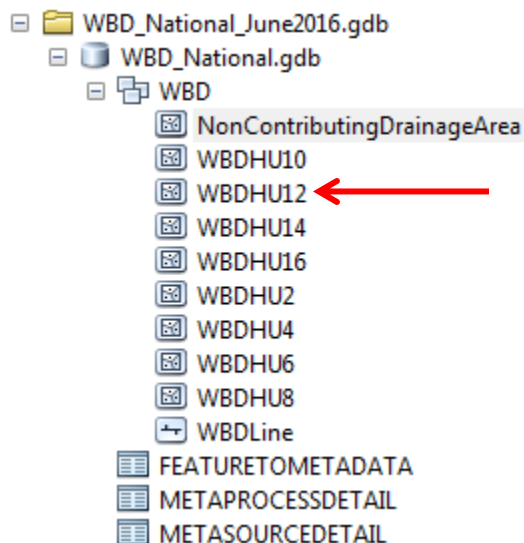
Step 1: Download data

- In X:\ProjectData\LandscapeDynamics\SourceData\Hydrology\HUC12_WBD, create new date-stamped folder (use most recent LRD boundary release date) and move existing WBD_National database/zip file into that folder. Also move the existing WBD_HUC12.gdb, and National_WBD.xml.
- Download new WBD National data to X:\ProjectData\LandscapeDynamics\SourceData\Hydrology\HUC12_WBD, from <http://prd-tnm.s3-website-us-west-2.amazonaws.com/?prefix=StagedProducts/Hydrography/WBD/>
- Download .xml and save to X:\ProjectData\LandscapeDynamics\SourceData\Hydrology\HUC12_WBD, this will be uploaded to data store as metadata link

For additional information about the source data, consult the website, <http://nhd.usgs.gov/wbd.html>

- Extract and preview data in ArcMap.

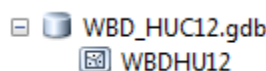
Database should look similar this:



When viewed at the full extent the HUC12 feature class should look similar to this (outlying Pacific Islands are to the far right):



- Create a new file geodatabase and export the HUC12 feature class, X:\ProjectData\LandscapeDynamics\SourceData\Hydrology\HUC12_WBD



- Copy WBD_HUC12.gdb to local workspace before running the AOA tool.
- In ArcCatalog, check field names in WBDHU12 haven't changed from how they are referenced in script tool. *Except "Intersect_Parks"; Intersect_Parks is not part of WBDHU12 feature class.* Note, not all fields in the feature class attribute table are listed.

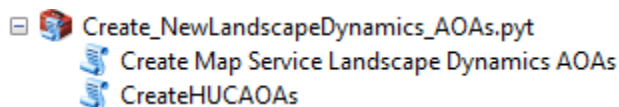
```
fields = ["METASOURCEID", "SOURCEDATADESC", "SOURCEORIGINATOR", "SOURCEFEATUREID", "LOADDATE",
          "GNIS_ID", "AREAACRES", "AREASQKM", "STATES", "NONCONTRIBUTINGACRES",
          "NONCONTRIBUTINGSQKM", "Intersect_Parks", "HUMOD"]
```

Table 1: HUC12 data download history tracking.

Year	Date of Modification	Date of Download	Download Link
2016	Unknown	20161011	http://prd-tnm.s3-website-us-west-2.amazonaws.com/?prefix=StagedProducts/Hydrography/WBD/
2017	20171102	20171113	http://prd-tnm.s3-website-us-west-2.amazonaws.com/?prefix=StagedProducts/Hydrography/WBD/National/GDB/

Step 2: Run HUC12 AOA Tool

In ArcMap, from **Create_NewLandscapeDynamics_AOAs.pyt**, run tool **CreateHUCAOAs** (X:\ProjectData\Data_Processing\Bounds_Processing)



Based on the LandscapeDynamicsAOA.gdb input, geographies are defined by feature classes present in the database (Alaska_AOA_Park, CONUS_AOA_Park, etc).

This tool will take four to five days to run. Make sure to update Source and Metadata links if they have changed. **Go to Step 3 while the tool runs.**

Source WBD HUC12 Feature Class
X:\ProjectData\LandscapeDynamics\SourceData\Hydrology\HUC12_WBD\HUC12.gdb\WBDHU12

AOA File Geodatabase

Terrestrial Area Geodatabase

Output Folder

Date Data Accessed
YYYYMMDD

Source Link
<http://prd-trm.s3-website-us-west-2.amazonaws.com/?prefix=StagedProducts/Hydrography/WBD/>

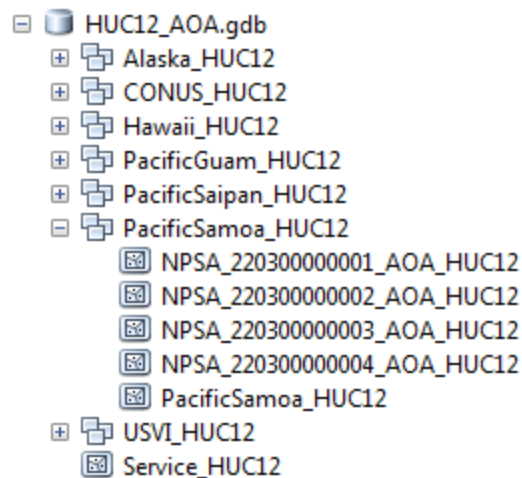
Metadata Link
https://prd-trm.s3.amazonaws.com/StagedProducts/Hydrography/WBD/National/GDB/National_WBD.xml

OK Cancel Environments... Show Help >>

General Processing steps:

For the spatial extent of each geography (Alaska, Conus, Hawaii, American Samoa, Guam, Saipan, USVI), the HUC12 data is reprojected to the standard spatial reference (see Appendix xx). From the input AOA feature class, a list of Parks is created (4-digit park codes) and for each park code, all intersecting HUC12 watersheds within that park boundary are extracted. Various attributes are added to the data and the selected features are inserted into a new feature class. This repeats for each park code on the list for a specific geography. When all HUC12s for all AOAs have been added, the new HUC12 list is used to create individual feature classes for each HUC on the list. Additional field changes are made and the final result is a single HUC12_AOA.gdb with Feature Datasets, by geography, which contain feature classes for each individual HUC12 that intersects/is within a park, as well as a combined feature class of all HUC12s for that geographical region. Finally, a HUC12 webmercator feature class and a HUC12 albers feature class is created, both to be used as map services. See Appendix 2 for list of fields in each feature class.

The final geodatabase will look like this:



Within each geographically defined feature dataset will be multiple feature classes: one feature class for each unique HUC12 watershed, and one combined feature class (list) that includes ALL HUC12s for the respective geography/dataset.

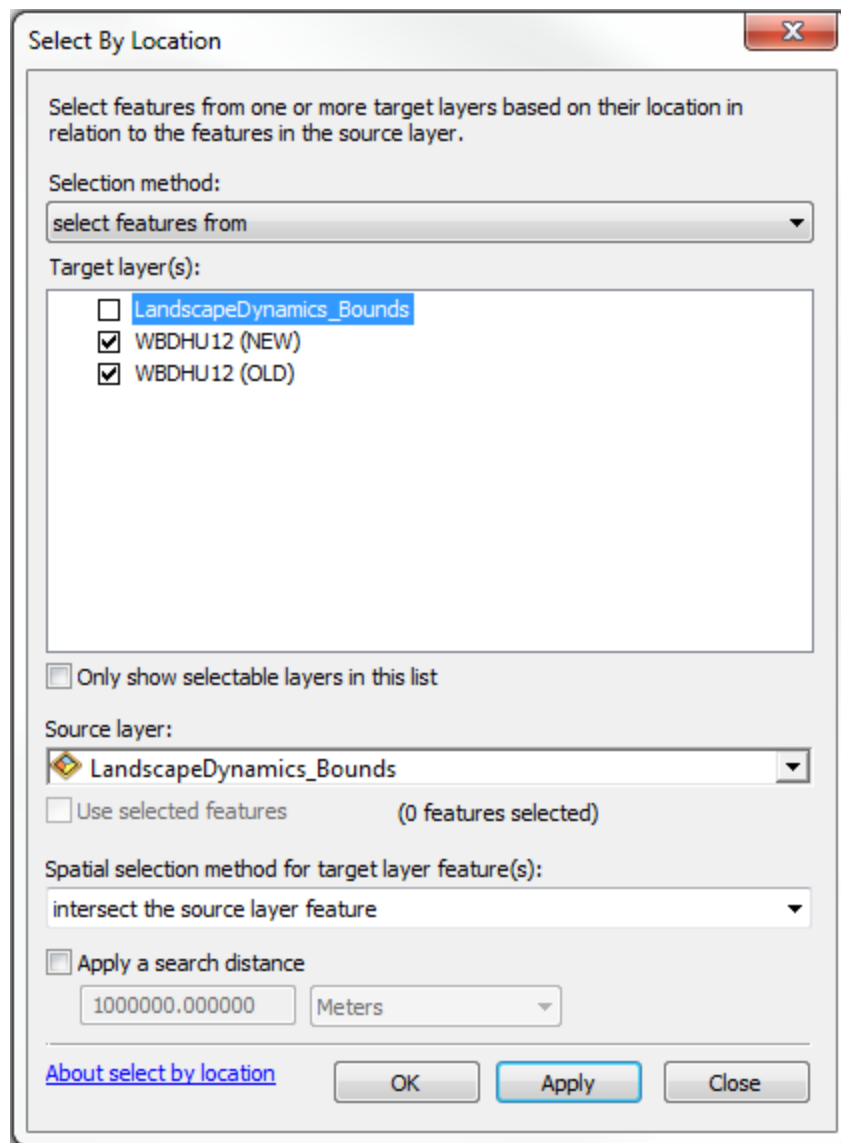
Go to Step 3 while the tool runs.

Step 3: Find New/Updated HUCs

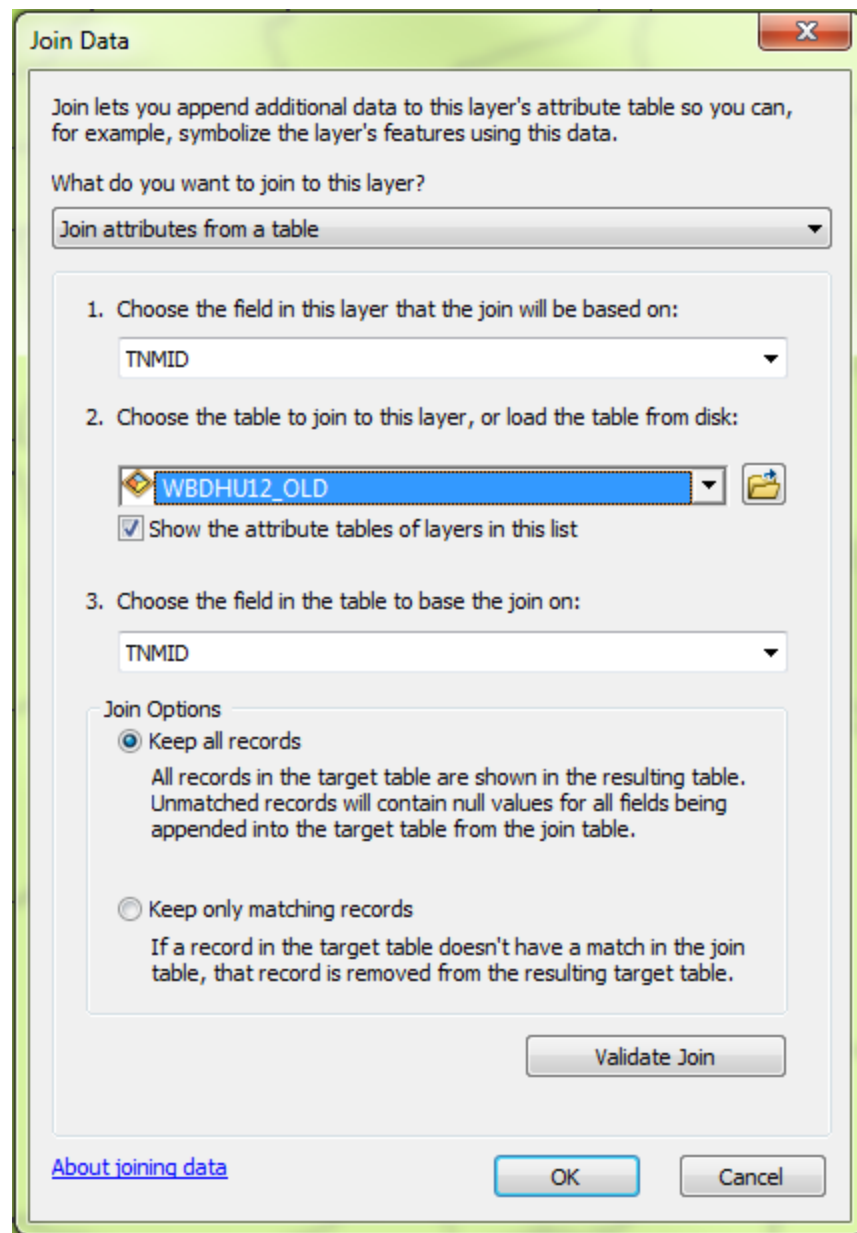
This step can be accomplished concurrently with Step 2. Work on this while the tool runs to create new HUC12 AOAs.

Watershed boundary data is constantly changing, and each annual release of HUC12 watershed AOAs requires a closer examination of new or altered/updated HUC12 boundaries.

1. For current and previous source downloads of WBDHU12, Select by Location all HUCs that intersect Landscape Dynamics parks (LandscapeDynamics_Bounds_Albers_Dissolved).

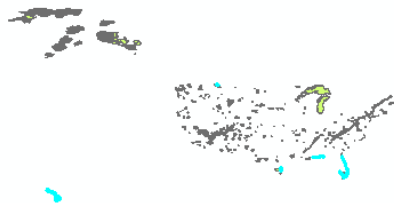


2. From resultant selections, export data for both “new” and “old” to a temp location (or use Default.gdb).
 - a. For old, name feature class WDBHU12_OLD
 - b. For new, name feature class WDBHU12_NEW
3. Join WDBHU12_OLD to WDBHU12_NEW using TNMID. Keep all records.
 - a. Right click on WDBHU12_NEW → Joins and Relates → Join...

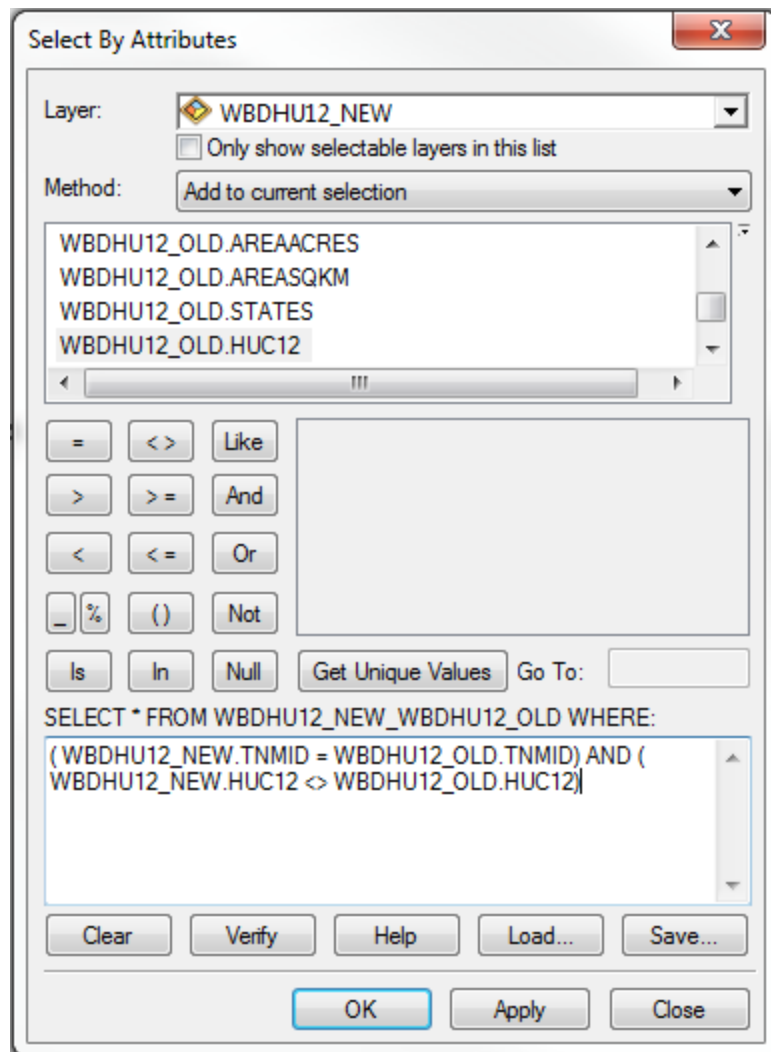


4. Sort resulting Attribute table by field TNMID from the “_OLD” feature class. Select all <NULL> features.

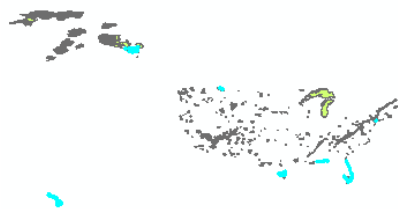
Example selection results:



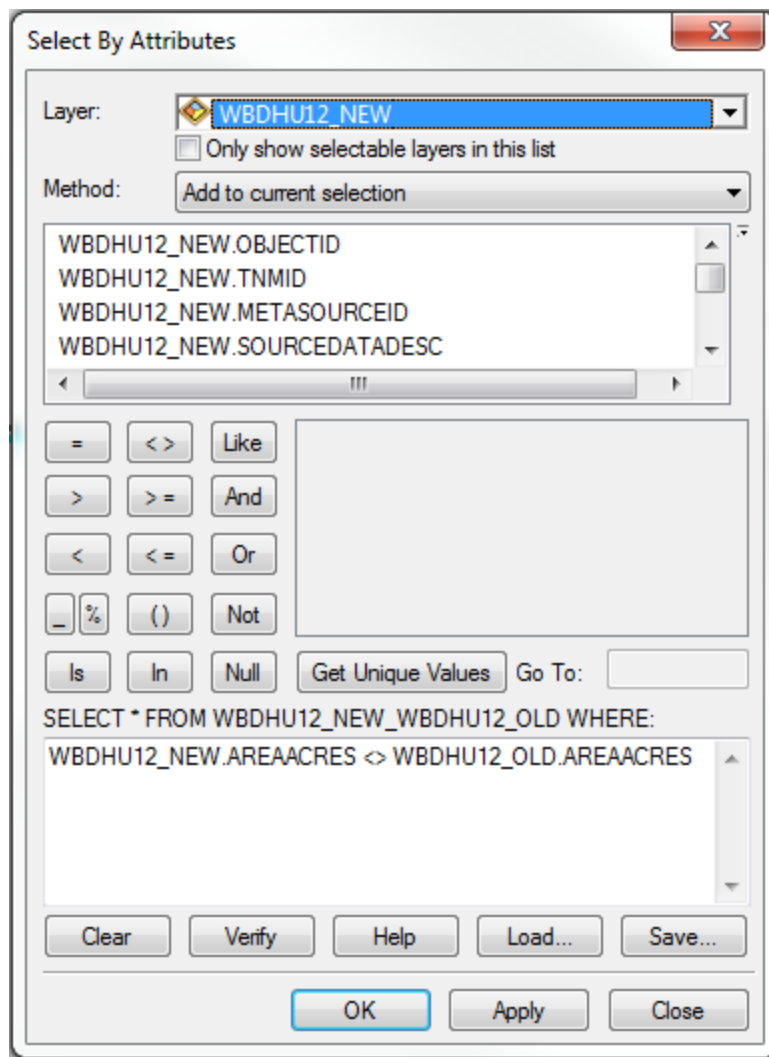
- From WBDHU12_NEW, Select by Attributes (Method: Add to current selection) WHERE (TNMID = TNMID) AND (HUC12 <> HUC12).



Example selection results:



- From WBDHU12_NEW, Select by Attributes (Method: Add to current selection) WHERE AreaAcres <> AreaAcres.



Example selection results:



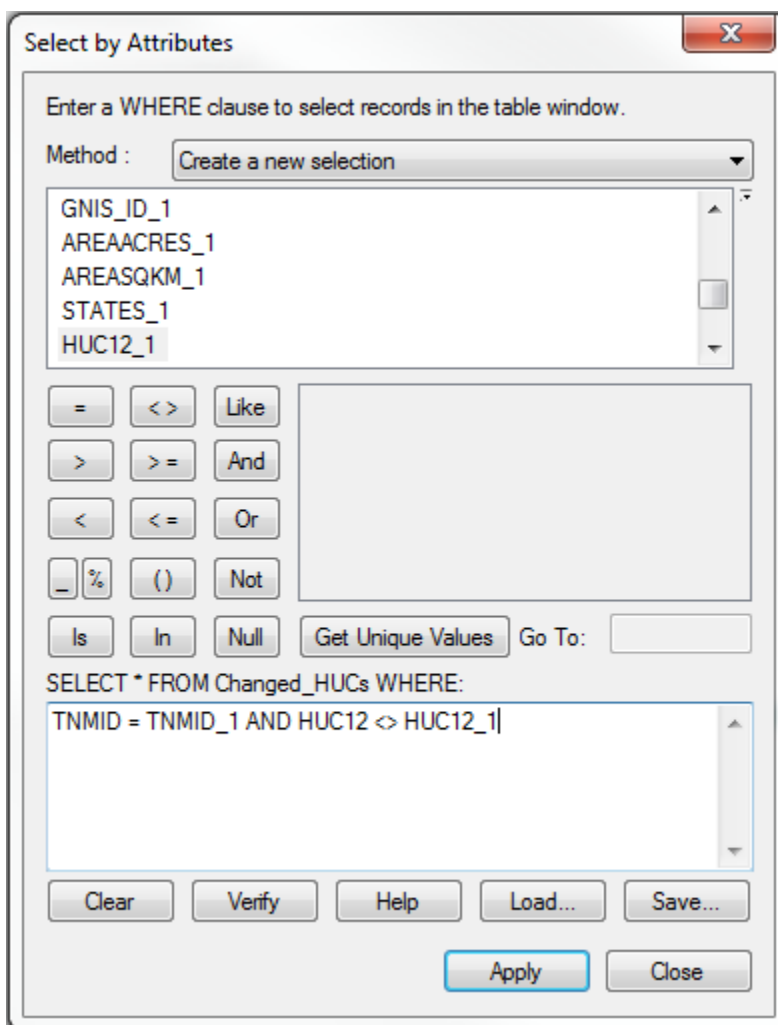
Example of selection:

AreaAcres	AreaAcres *
7697.44	7698.53
24550.42	24619.81
50502.1	48906.7
152832.79	153765.61
138631.03	138906.42
506276.76	504313.65
13009.93	12940.55
34307.34	34314.32
15127.23	15107.51
31624.45	31617.46
36281.96	36281.99
22059.86	22062.97
23954.81	23971.95
36048.89	36054.95
28518.13	28375.26
30719.67	30758.8
32632.13	32524.16
26663.22	26616.71
21971.79	22079.76
338535.2	338535.18
35810.69	35709.21
32746.11	32737.52

7. Export all selected HUCs into a new feature class named "Changed_HUCs". Save to temp location, or Default.gdb.
8. Remove Join from WDBHU12_NEW.

Identify HUCs with a hydrologic unit code change

1. From Changed_HUCs, Select by Attributes WHERE TNMID = TNMID AND HUC12 <> HUC12



2. Check result selection is correct;

NEW "TNMID", "HUC12" on left; OLD "HUC12(_1)", "TNMID(_1)" on right

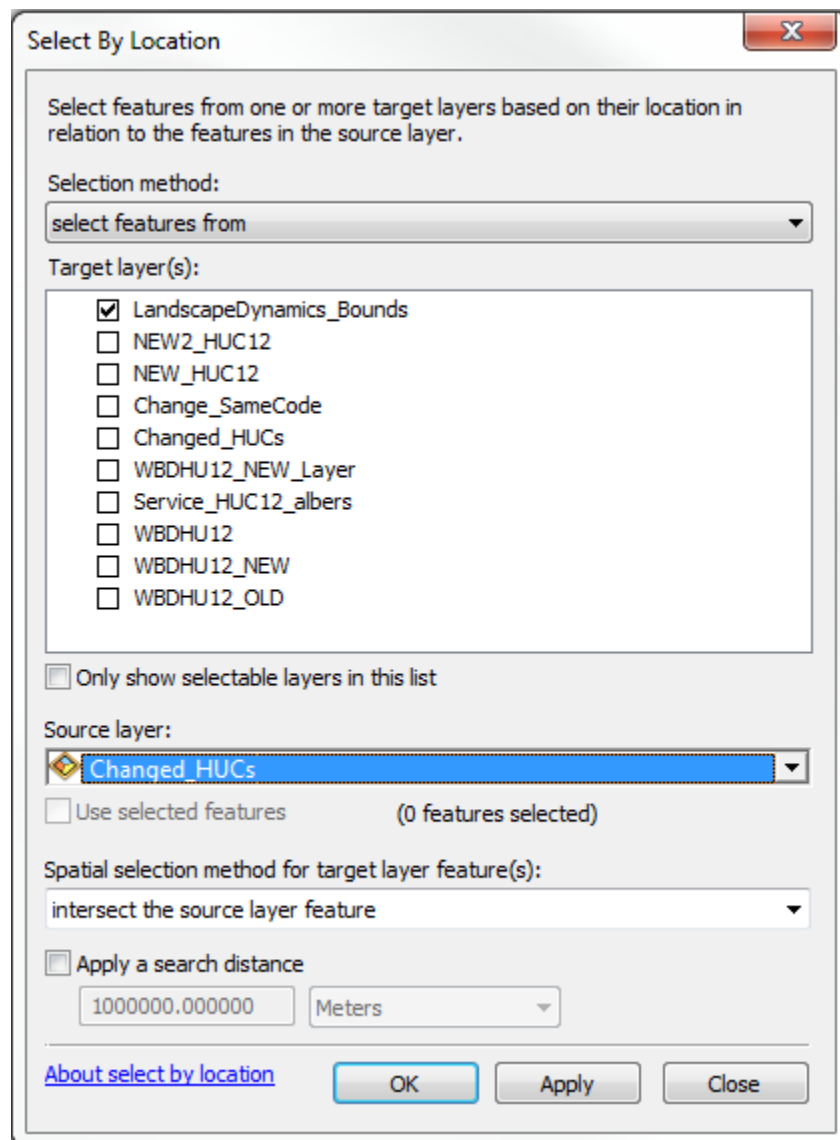
TNMID	HUC12	HUC12	TNMID
{45683F05-1E4C-43C2-A2FA-3DA12F5FE96F}	010801010801	010801010801	{45683F05-1E4C-43C2-A2FA-3DA12F5FE96F}
{8F0EDBFB-4AFF-478E-8F76-9F299787DE0A}	010802060201	010802060201	{8F0EDBFB-4AFF-478E-8F76-9F299787DE0A}
{EADA58C5-5897-4900-85F7-ADBAEA3DAA95}	010900010702	010900010702	{EADA58C5-5897-4900-85F7-ADBAEA3DAA95}
{D845D154-81F0-4A59-970C-DC29B6182091}	011000050103	011000050103	{D845D154-81F0-4A59-970C-DC29B6182091}
{EC3CA62D-AC4E-4220-A8C3-7732D59F5770}	020301040502	020302020102	{EC3CA62D-AC4E-4220-A8C3-7732D59F5770}
{49E21081-2850-419A-B99E-B4FEF971F97C}	020301040503	020302020103	{49E21081-2850-419A-B99E-B4FEF971F97C}
{F1AB7122-7DAB-4960-A929-DD394844F888}	020301040504	020302020104	{F1AB7122-7DAB-4960-A929-DD394844F888}
{A0F73DEE-46C5-4FAC-8AE0-A481506532CB}	020802011101	020802011101	{A0F73DEE-46C5-4FAC-8AE0-A481506532CB}
{F476023B-7CB0-468D-B1FE-FA1061021B13}	030401010701	030401010701	{F476023B-7CB0-468D-B1FE-FA1061021B13}

3. Export a table/list of these selected HUC12 codes (from the NEW set) (to temp location, or Default.gdb). Name table "ListHUCs_SourceNameChange"

- a. These HUCs will have ChangeReason = "Source name change" in the final AOA set.
4. Switch Selection and export the results to a different list (to temp location, or Default.gdb). Name table "ListHUCs_SourceUpdate"
 - a. These HUCs (from the NEW set) will have ChangeReason = "Source update"

Create a complete list of Parks with one or more changed HUCs

1. Select by Location the intersection of Changed_HUCs and LandscapeDynamics_Bounds_Albers_Dissolved.
 - a. All HUCs for the list of selected parks will have Landscape Dynamics statistics rerun.



Example Results:



2. Export a table of the selected park codes to a temp location, or Default.gdb. Name table "HUCs_Parks"

Create a list of new HUCs

HUCs that are brand new (no match for HUC12 code or TNMID in previous HUC12 AOA feature class) will have an edited CreateDate, but will not have a ChangeReason.

Join the previous Service_HUC12 feature class to Changed_HUCs, by TNMID. Sort "Ascending", and export the NULL rows to a new table, "List_NewHUCs".

Step 4: Make Final Edits to HUC12 AOAs

After HUC12 AOAs are created, edit "ChangeReason" field for all HUCs that have changed. Use "ListHUCs_SourceUpdate" and "ListHUCs_SourceNameChange" to identify the HUCs of interest.

1. For all feature classes, make sure field "CreateDate" has value for each row. There should be no **NULL** values.

For the **Service_HUC12** feature class in HUC12_AOA.gdb, edit ChangeReason and CreateDate for any changed HUC12. *HINT: To more quickly find all affected unique feature classes, use the Park list created in Step 3.*

2. HUC Codes in "ListHUCs_SourceNameChange" indicate HUCs that changed because the Source (USGS WBD) altered the 12-digit code that identifies the hydrologic unit:
 - a. Join "ListHUCs_SourceNameChange" to **Service_HUC12**, on field "HUC12". Keep all records.
 - b. Sort by joined HUC12 (descending). Select all records that are not NULL.
 - c. For the selected records, edit field "ChangeReason" to "Source name change".
 - d. For the selected records, edit "CreateDate" to match "DATE_EDIT".
 - e. Remove Join from Service_HUC12.
3. HUC Codes in "ListHUCs_SourceUpdate" indicate HUCs that changed because the source changed (area in acres):
 - a. Join "ListHUCs_SourceUpdate" to **Service_HUC12**, on field "HUC12". Keep all records.
 - b. Sort by joined HUC12 (descending). Select all records that are not NULL.
 - c. For the selected records, edit field "ChangeReason" to "Source update". You must do this manually, row by row. Do not use Field Calculator.
 - i. **NOTE: HUC12 AOAs that are NEW will be captured in this list. NEW HUC12 AOAs should NOT have a ChangeReason. Do not edit ChangeReason for any NEW HUC12 AOAs.**
 - d. For the selected records, edit "CreateDate" to match "DATE_EDIT".
4. Edit **Service_HUC12_albers** to match **Service_HUC12**.
 - a. Add Join, Service_HUC12 to Service_HUC12_albers on HUC12.
 - b. Calculate Field CreateDate for "_albers" from Service_HUC12. Do the same for Change Reason.
 - c. Remove Join and check Service_HUC12_albers in ArcCatalog/Map for the updated field values.

For all other feature classes in the geodatabase, edits can be done one of two ways. Take into consideration the proportion of HUCs that are changed versus the total number (by geographical area), to determine which method should be used.

1. Manually edit each changed HUC12 AOA feature class in ArcMap.
 - a. CreateDate = "DATE_EDIT"
 - b. ChangeReason = "Source name change" OR "Source update" only. See list tables created earlier for distinction ("ListHUCs_SourceNameChange", "ListHUCs_SourceUpdate")
2. Run a python script to populate "CreateDate" and "ChangeReason" for all feature classes in a feature dataset. In the python window in ArcMap/Catalog, edit datasets array as needed:

```
arcpy.env.workspace = r'D:\HUC12_Nov2017\HUC12_AOA_new.gdb'
... datasets = ['Alaska_HUC12']
...
... for ds in datasets:
...     for fc in arcpy.ListFeatureClasses(feature_dataset=ds):
...         path = os.path.join(arcpy.env.workspace, ds, fc)
...
...     arcpy.JoinField_management(path, "HUC12", r'D:\HUC12_Nov2017\HUC12_AOA.gdb\Alaska_HUC12\Alaska_HUC12_AOA_HUC12', "HUC12", ["CreateDate", "ChangeReason"])
...
...     arcpy.CalculateField_management(path, "CreateDate", "!CreateDate_1!", "PYTHON_9.3")
arcpy.CalculateField_management(path, "ChangeReason", "! ChangeReason_1!", "PYTHON_9.3")
...     arcpy.DeleteField_management(path, "ChangeReason_1")
...     arcpy.DeleteField_management(path, "CreateDate_1")
```

Quality Control

Using ArcMap, visually check the merged HUC12 feature class with the source Landscape Dynamics Bounds polygons to check for spatial congruency. Spot check specific parks.

- Check for any known new or changed AOAs from last AOA update.
- From a random selection of feature classes, check that basic metadata is populated.
- Additionally, for individual feature classes as well as the combined feature class, check that all required attribute fields are present (Appendix xx), and that all fields are populated.
 - Make sure specifically, CreateDate and ChangeReason are populated
- Cross check the number of HUC12 features in the Service feature class with the number of HUC12 features in the config.HUC12Parks table in NPScene_Stats. Edit the latter as needed so the number of features is equal.

Post-Processing

Data Management

After QA/QC, manually **COPY** HUC12_AOA.gdb from local drive to
 X:\ProjectData\LandscapeDynamics\SourceData\Boundary AND
 X:\ProjectData\Data_Processing\Bounds_Processing\Data

- In Bounds_Processing\Data:
 - Manually date stamp previous version HUC12_AOA.gdb and delete any older date stamp versions
- In SourceData\Boundary:
 - Manually date stamp previous version HUC12_AOA.gdb and delete current HUC12_AOA.gdb

Upload to Data Store

Zip the file geodatabase HUC12_AOA.gdb using 7-zip.

Go to the existing data store record for HUC12s, <https://irma.nps.gov/DataStore/Reference/Profile/2235998?Inv=True> (Note: you must use Internet Explorer to upload to Data Store)

- **Actions → Edit.**
- From **Version History** tab, click **Add**
 - o click “Yes”
 - o “Clone this Reference to Create a New Version”
 - o Add ***Notes** to identify the update as from an update of Watershed Boundary Dataset from USGS
- Update Date of Issue/Publication to the DATE OF RELEASE of the WDB dataset on the website (see table at start of this SOP).
- Make sure **Permissions** are marked “Public” for Reference Access, “Public” for File Access.
- Under Files and Links, upload .zip of HUC12_AOA.gdb, and pdf of the current version of this SOP.
- **Activate** the reference when all files and links have been uploaded
- Post as product of Project Areas of Analysis and Stations, <https://irma.nps.gov/DataStore/Reference/Profile/2246159>
- Update Landscape Dynamics AOAs cross-reference Link

Manage Python Toolbox

- If any code changes or updates were made to the Python toolbox script for AOAs – update the repo with the new script.

Create New Temp Feature Classes

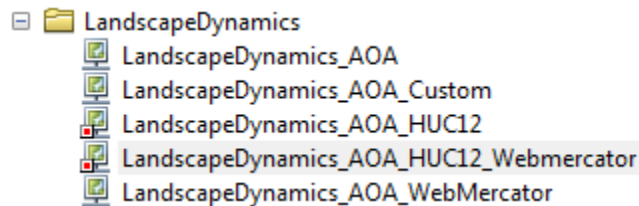
After HUC12 AOAs are created and checked, create temporary HUC12 feature classes for new/updated HUCs, for use in running new Landscape Dynamics summary statistics.

Make sure the geodatabase has been uploaded to Data Store before this.

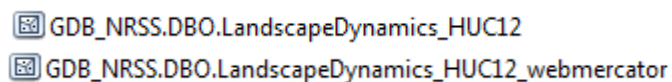
AOA Map Services – Creation and Publication

After HUC12 AOAs are created, all edits and changes are made to ChangeReason and CreateDate, and all QA checks are done, copy the HUC12 services feature classes (webmercator, albers) to SDE.

1. Stop the HUC12 AOA map services



2. Copy into GDB_NRSS.DBO.INPNISCVBDBNRSST_IMDGIS.sde the updated versions of:



3. From ArcGIS Server connection:
 - a. STOP HUC12AOA map services from the LandscapeDynamics folder

- b. Open:
 - i. X:\ProjectData\Data_Processing\Bounds_Processing\MapServices\LandscapeDynamics_HUC12Boundaries.mxd (Albers prj)
 - ii. X:\ProjectData\Data_Processing\Bounds_Processing\MapServices\LandscapeDynamics_HUC12Boundaries_WebMercator.mxd (webmercator prj)
- c. For both - confirm any new/changed AOAs are reflected
 - i. Edit Data Frame Properties (Description, add new date)
 - ii. Edit Data Layer Properties (Description, add new date)
 - iii. Edit Map Doc Properties (Description, add new date)
- d. Publish updated IMD_Boundaries_WebMercator service to IMDData folder
 - i. File → Share As → Service → Overwrite an existing service
 - 1. Select the Service to overwrite
 - ii. In Service Editor → Parameters → Output Directory change Directory to “proxy output”
 - 1. In Feature Access and make sure only Query and Extract are allowed
- e. Log in to ArcGIS Online and make sure Landscape Dynamics Map Viewer is working and AOAs are showing in the app.
- f. See SOP_How_To_Update_LandscapeDynamics_Viewer.doc

Literature Cited

U.S. Geological Survey and U.S. Department of Agriculture, Natural Resources Conservation Service, 2013, Federal Standards and Procedures for the National Watershed Boundary Dataset (WBD) (4 ed.): Techniques and Methods 11-A3, 63 p., <https://pubs.usgs.gov/tm/11/a3/>. (Accessed Dec 5 2017)

Appendices

Appendix 1: Known Issues and Other Information

HUC12 AOAs are updated annually, around September/October. They reflect the accuracy and currency of HUC12 source boundary data as provided by <http://nhd.usgs.gov/wbd.html> at that time.

Spatial References:

All AOA data must be in the following spatial reference, based on represented geography:

- North America (US, Canada, Mexico) = USA Contiguous Albers Equal Area Conic USGS (NAD83) (WKID: 102039)
- CONUS = USA Contiguous Albers Equal Area Conic USGS (NAD83) (WKID: 102039)
- Puerto Rico and USVI = USA Contiguous Albers Equal Area Conic USGS (NAD83) (WKID: 102039)
- Alaska = Alaska Albers Equal Area Conic (NAD83) (WKID: 3338)
- Hawaii = UTM Zone 5N NAD83 (WKID: 26905)
- American Samoa = NAD_1983_HARN_UTM_Zone_2S (WKID: 2195)
 - If necessary, when re-projecting use Transformation = WGS_1984_(ITRF00)_To_NAD_1983 + NAD_1983_HARN_To_WGS_1984_2
- Guam = WGS_1984_UTM_Zone_55N (WKID: 32655)
 - If necessary, when re-projecting use Transformation = "WGS_1984_(ITRF00)_To_NAD_1983"
- CN Mariana Islands = WGS_1984_UTM_Zone_55N (WKID: 32655)
 - If necessary, when re-projecting use Transformation = "WGS_1984_(ITRF00)_To_NAD_1983"

Tracking changes in HUC12s

HUC12 watersheds are dynamically edited and change throughout the year, including boundary alterations and in some cases the creation of new HUC12 watershed. In some cases, when a new HUC12 is created, an existing HUC12 is given a new 12-digit hydrologic unit code. These types of changes cannot be explicitly linked in the AOA-level HUC12 data. Instead, to track a HUC12 through time and potential changes, use field TNMID.

"TNMID (short for The National Map Identification) is a unique 40-character field that identifies each element in the database exclusively. TNMID is an automatically assigned code that stays with each element. When an element is updated or changed, TNMID links the element to the metadata record and documents the change. TNMID is also used to maintain relationship classes in the normalized data model. When an element is deleted or split, TNMID stays with the original element and is not used again. When an element is split, new permanent identifiers are assigned to the resultant parts." (USGS and USDA, 2013)

Appendix 2: Required Attribute Fields

The following fields should be present and populated with meaningful values for each feature class within HUC12_AOA.gdb. No fields outside those listed here should be included in any feature class.

- *OBJECTID – unique id, index field, auto generated
- *Shape – point, line, polygon, auto generated
- HUC12 – 12-digit HUC code
- NAME - WBD assigned name of watershed
- HUType – WBD defined type of watershed
- HUMOD – ?
- TOHUC – downstream HUC12
- AOA_NAME - <PARK_CODE> <HUC12>
- PARK_CODE – NPS 4-letter park code
- FULL_NAME – WBD assigned name of watershed

- Unit_Name – NPS Park Unit Name
- Network_Code – NPS Network Code
- Network_Name – NPS Network Name
- Region_Name – NPS Region Name
- DSLink – Link to the Data Store reference for HUC12 AOAs.
- RedactReason – If the HUC12 AOA is sensitive, see table below for more.
- ChangeReason – If a HUC12 AOA changes, this is the reason. See table below for more.
- CreateDate – Date the HUC12 AOA was initially created. Date only changes when a HUC12 AOA changes.
- DATE_EDIT – date the AOAs were created
- SOURCE – source url for WDB data
- CREATED_BY – who/where created the source data
- AREA_SQKM – calculated Area after all processing is complete
- Data_DateAccessed – date the WBD data were accessed and downloaded for use
- *Shape_Length – auto-generated, meters
- *Shape_Area – auto-generated, meters

Redact Reason

- None
- Sensitive
- Restricted
- Requested

Change Reason

	Code	Label	Summary
▶	A	New Unit	New park unit
	B	Spatial change (Lands)	from LRD - update/correction to park unit spatial data
	C	Requested	Park/Network/other requested change for their use
	D	Exclusion	Excluding part of an AOA; i.e. Admin parcel
	E	Datum-driven	
	F	Station add	New monitoring station (hydro, climate only)
	G	Station delete	Removal of monitoring station (hydro, climate only)
	H	Logic change	Methods for deriving Bounds/AOAs changed
	I	Source release	New version of data, supercedes all previous releases
	J	Source correction	A release correcting an error in the current version
	K	Source update	A change in dynamically edited data (updated continually); no released versions.
	L	None	No change in AOA
	M	Source name change	Source changed identifying name/code of AOA.

New Unit = new park unit from Lands

Spatial change (Lands) = existing park has changed

Requested = park/network requesting alternate polygon for a park

Exclusion = for things like excluding Admin parcels from an AOA area

Datum-driven = correction for projection issues

Station add =

Station delete =

Logic change = AOA or Bound processing script logic changed

Source release = new release of data

Source correction = if a release is corrected (i.e. NLCD rerelease in Oct 2014 of their 2011 products, initially released April 2014)

Source update = for dynamic datasets that are under revision/alteration year-round (i.e. NHD)

None = No change in AOA

Source name change = Source changed identifying name/code of AOA