

EXERCISE 2

Editing – Attribute Edits

Introduction

In this exercise you will create and modify values stored in a layer's attribute table. Your goal in this scenario is to produce a proposed timber sale feature class that includes attribute information to be used during the NEPA analysis, then later for entering into the Forest Service Activity Tracking System (FACTS) national database.

In the first exercise you jumped right in and started digitizing. In this exercise you will step back and do some planning first. The first exercise may seem quick and easy, but with a little planning your project not only ends up being easier and quicker in the long run, but also yields data with better attribute integrity and improved integration with National databases.

Objectives

- Verify that all attributes all have a value
- Edit Values from the Attribute Table
- Edit Values using the Calculate Fields window
- Edit Values from the Attributes Dialog window
- Create a Frequency Table

Required Data:

- **ArcGISProEditing.zip**– zipfile containing all data for the course.

Prerequisites

- Install ArcGIS Pro on local computer.
- Completed the GTAC “Arc Pro for ArcMap Users” class or equivalent experience.
- Copy the data to your workspace and unzip.



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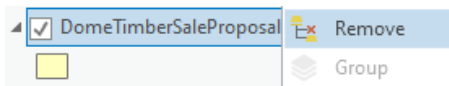
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DISCLAIMER: The goal of these exercises is to provide various editing techniques to help you become familiar with the ArcGIS Pro interface. The data management techniques used in the exercises provide examples of how to plan, create, edit, and document any type of resource data to improve effectiveness, efficiency, and data integrity. Neither the data nor the workflows in these exercises represent actual Timber Sale protocols used in the Forest Service. The exercise scenarios use original data from an actual past timber project on the Black Hills National Forest, however it has been manipulated for this training.

Part 1: Explore the Attribute Table

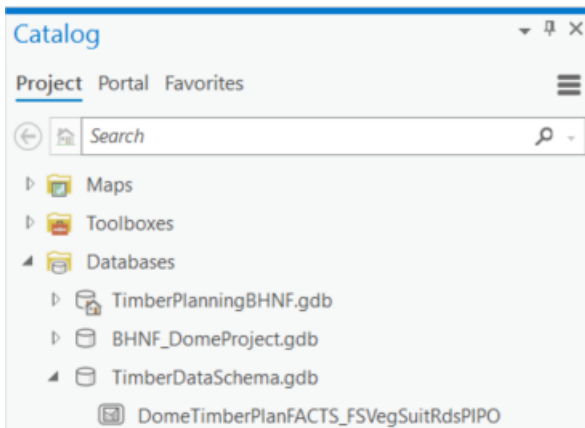
In this exercise, you will use various methods to examine and edit a dataset's attributes. In this scenario you have worked with your GIS Specialist to filter out the FSVeg polygons within the Dome project boundary that meet your criteria for logging. You have also decided on an attribute Schema and Domains that you want to use in all your future timber sales. We will begin by examining your new Timber Data Schema.

1. If necessary, navigate to your course Data folder and open the **TimberPlanningBHNH.aprx**.
2. In the Contents Pane, right-click and **Remove** the **DomeTimberSaleProposal** layer.

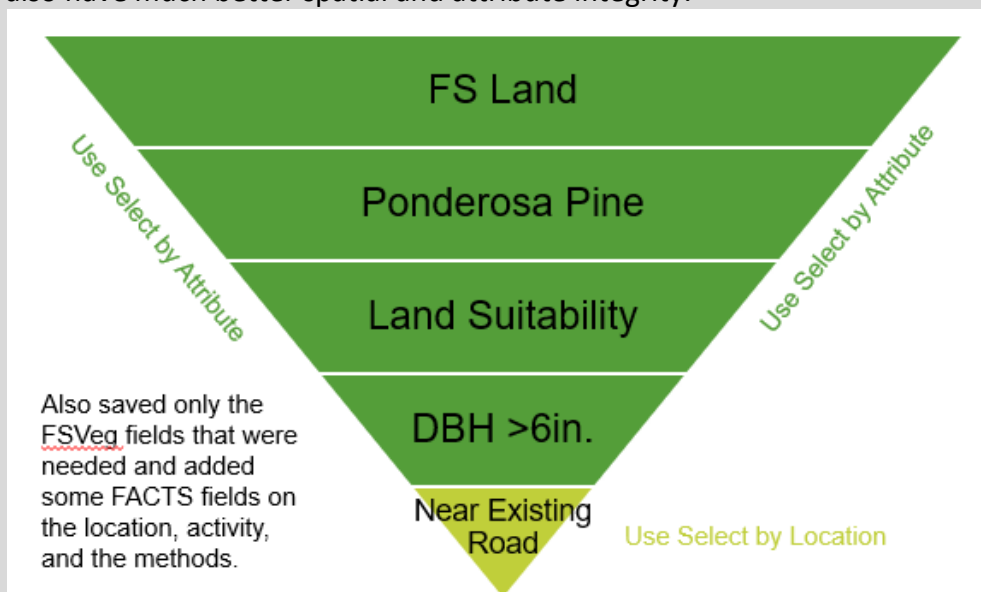


We can delete the Feature Class we created in Exercise 1 because in this scenario, we now have a working subset of the FSVeg data that has all the relevant polygons, plus useful FSVeg attributes, and attributes to be used later in FACTS.

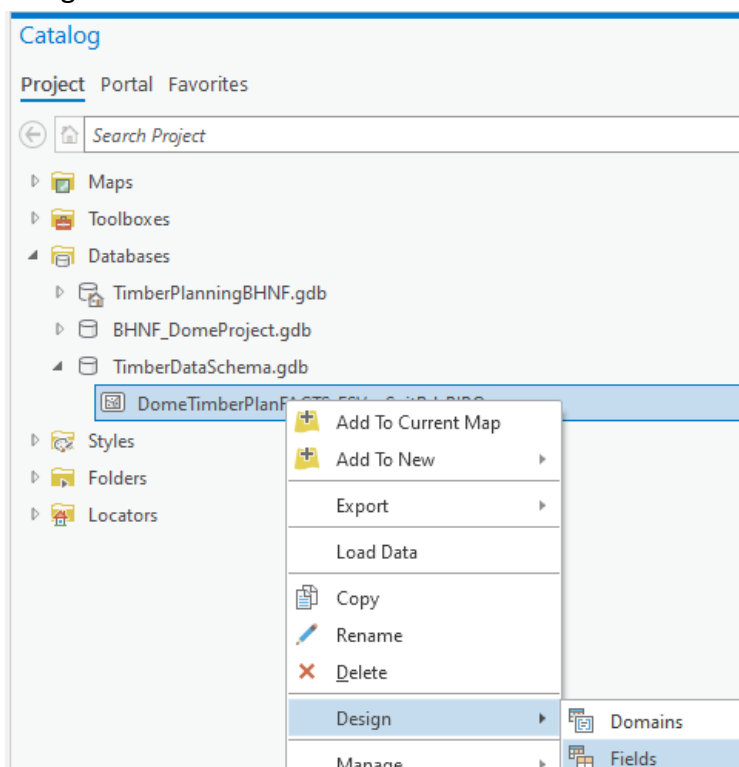
3. Open the Catalog pane, expand the Databases folder then the TimberPlanningBHNH.gdb. **Right-click on your DomeTimberSaleProposal** feature class and click **Delete**.
4. Expand the **TimberDataSchema** geodatabase.



Below is a reminder of how the new data template was created for the timber goals of this project, and also to assist in future database entry requirements. There are still data editing tasks to be completed, but this template gives us a much better head start than trying to start from scratch by manually digitizing and entering attributes. The resulting final data will also have much better spatial and attribute integrity.



- Right-click on the **DomeTimberPlanFACTS_FSVegSuitRdsPIPO** feature class and select Design then Fields.



- A Fields table tab will pop up next to your Map tab. Scroll down to see that there are 56 fields in this Schema. If you scroll right, you will see that two fields have Domains.

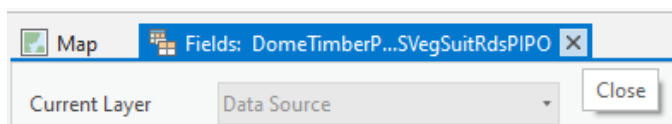
Map Fields: DomeTimberP...SVegSuitRdsPIPO X					
Current Layer		Data Source			
Field Name	Alias	Data Type	Allow NULL	Domain	
OBJECTID	OBJECTID	Object ID	<input type="checkbox"/>		
SHAPE	SHAPE	Geometry	<input checked="" type="checkbox"/>		
ADMIN_FOREST_CODE	ADMIN_FOREST_CODE	Text	<input checked="" type="checkbox"/>		
ADMIN_REGION_CODE	ADMIN_REGION_CODE	Text	<input checked="" type="checkbox"/>		
ADMIN_FOREST_NAME	ADMIN_FOREST_NAME	Text	<input checked="" type="checkbox"/>		
PROCLAIMED_FOREST_CODE	PROCLAIMED_FOREST_CODE	Text	<input checked="" type="checkbox"/>		
ADMIN_DISTRICT_NAME	ADMIN_DISTRICT_NAME	Text	<input checked="" type="checkbox"/>		
ADMIN_DISTRICT_CODE	ADMIN_DISTRICT_CODE	Text	<input checked="" type="checkbox"/>		
ACTIVITY_UNIT_ORG	ACTIVITY_UNIT_ORG	Text	<input checked="" type="checkbox"/>		
SALE_NAME	SALE_NAME	Text	<input checked="" type="checkbox"/>		
UNIT_ID	UNIT_ID	Text	<input checked="" type="checkbox"/>		
ACTIVITY_CODE	ACTIVITY_CODE	Text	<input checked="" type="checkbox"/>		
ACTIVITY_NAME	ACTIVITY_NAME	Text	<input checked="" type="checkbox"/>	Dom_TimberActivity	
FY_PLANNED	FY_PLANNED	Text	<input checked="" type="checkbox"/>		
METHOD_DESC	METHOD_DESC	Text	<input checked="" type="checkbox"/>	Dom_MethodDesc	

Geodatabase Benefits, Concepts, and Vocabulary

Schema: A schema defines the physical structure of the geodatabase along with the rules, relationships, and properties of each dataset in the geodatabase. Users often share their schemas with others. Data templates exist for many GIS application domains.

Attribute Domain: Fields stored in a geodatabase feature class can be linked to a range of numbers or a pre-defined list of values (LOV) called an attribute domain. Attribute domains have an important advantage of ensuring values entered in the table are consistent. When editing a cell linked to an attribute domain, you can only select a value from the LOV.

- Click the X to close the Fields table tab.



8. In the Catalog pane, **right-click** on **TimberDataSchema.gdb** and click **Domains**. A new pane will open up describing the Domains created to help speed up your data entry process as well as enforce acceptable values that prevent typos and other mistakes.

When copying or importing data that has a Domain attached to it, the Domain will automatically be added to the Geodatabase. A Domain is created at the Geodatabase level and assigned to Fields within the Feature Classes. Once assigned, during attribute editing a list of values will appear as a dropdown, to enforce the acceptable values. To learn more about Domains, consider signing up for the Geodatabases class.

9. **Click on the Dom_MethodDesc row** to highlight it. To the right you will see the acceptable list of values to use for the FACTS Method Description field. When you edit and click on the assigned field you can simply click from a dropdown instead of typing.

Map Domains: TimberPlanningBHNH X								
Domain Name	Description	Field Type	Domain Type	Split Policy	Merge Policy		Code	Description
Dom_MethodDesc	Describes planned logging method using FACTS codes.	Text	Coded Value Domain	Default	Default		1	Highlead
							2	Logging Methods
							3	Manual
							4	Mechanical Pile
Dom_TimberActivity	Describes FACTS activity for Timber projects	Text	Coded Value Domain	Default	Default		5	Multispan Highline
							6	Single Span Highline
							7	Tractor Logging

10. **Click on the Dom_TimberActivity row** to highlight it. To the right you will see the acceptable list of values to use for the FACTS Activity field for timber projects. During attribute editing you click on the assigned field you can simply select from a dropdown instead of typing this long description.

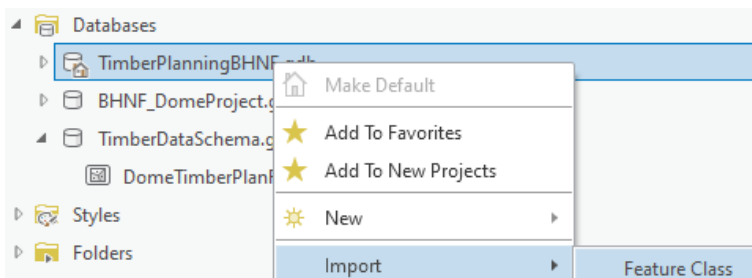
Map Domains: TimberPlanningBHNH X								
Domain Name	Description	Field Type	Domain Type	Split Policy	Merge Policy		Code	Description
Dom_MethodDesc	Describes planned logging method using FACTS codes.	Text	Coded Value Domain	Default	Default		4111	4111 - Patch Clearcut (EA/RH/F; 4111 - Patch Clearcut (EA/RH/FH)
							4121	4121 - Shelterwood Preparatory Cut (EA/NRH/NFH)
							4131	4131 - Shelterwood Establishment Cut (with or without leave trees) (EA/RH/NFH)
Dom_TimberActivity	Describes FACTS activity for Timber projects	Text	Coded Value Domain	Default	Default		4132	4132 - Seed-tree Seed Cut (with and without leave trees) (EA/RH/NFH)
							4141	4141 - Shelterwood Removal Cut; 4141 - Shelterwood Removal Cut (EA/NRH/FH)
							4143	4143 - Overstory Removal Cut (from advanced regeneration) (EA/RH/FH)
							4145	4145 - Shelterwood Removal Cut (w/ leave trees) (EA/

11. Click the X to **close the Domains pane**. To learn more about how to create and assign Domains you can take the Geodatabases class.

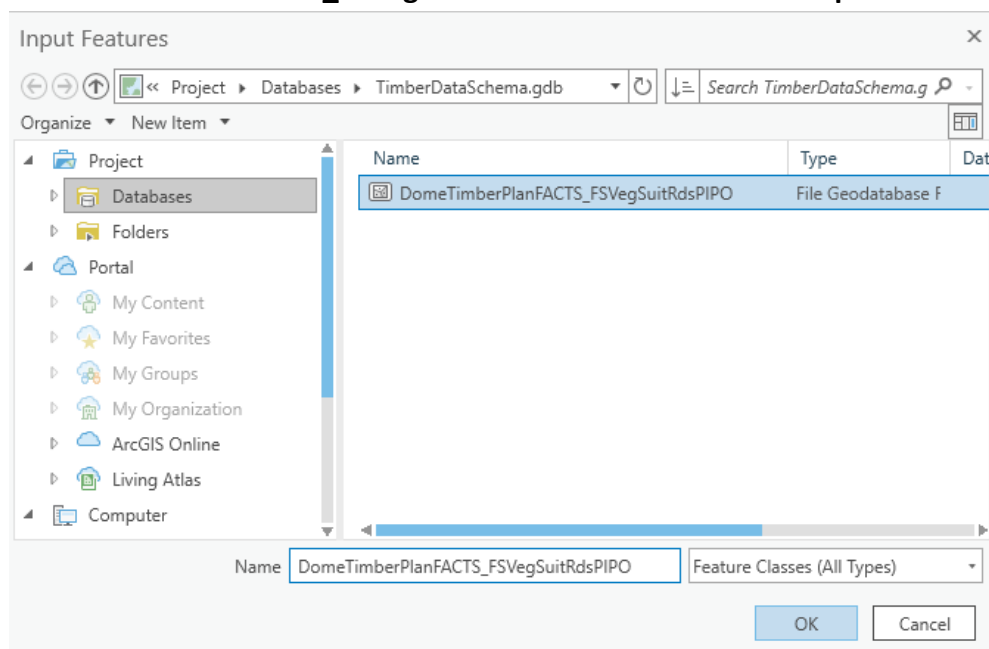
We will edit attributes using these Domains later in the lesson.

When editing a dataset, it is a good idea to save a copy of the original. Once the edits are completed and proofed to be correct, the back-up can be deleted.

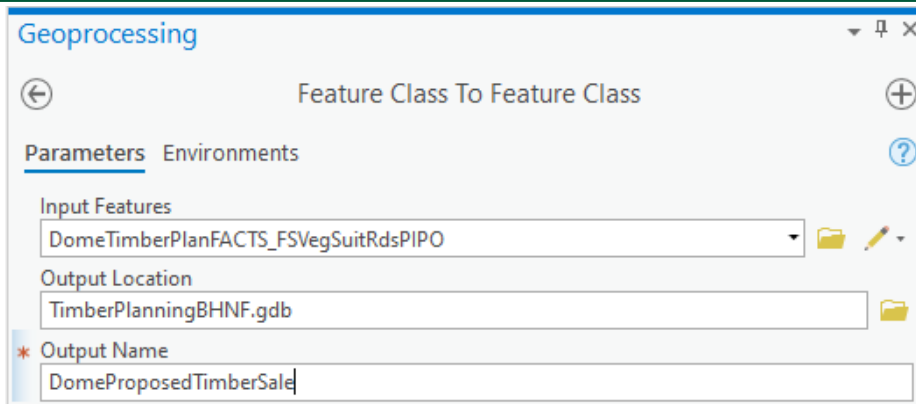
12. Right-click on the **TimberPlanningBHNH.gdb** and click **Import** and **Feature Class**.



13. In the Input Features window navigate to and select the **DomeTimberPlanFACTS_FSVEgSuitRdsPIPO** feature class to Import. Click **OK**.

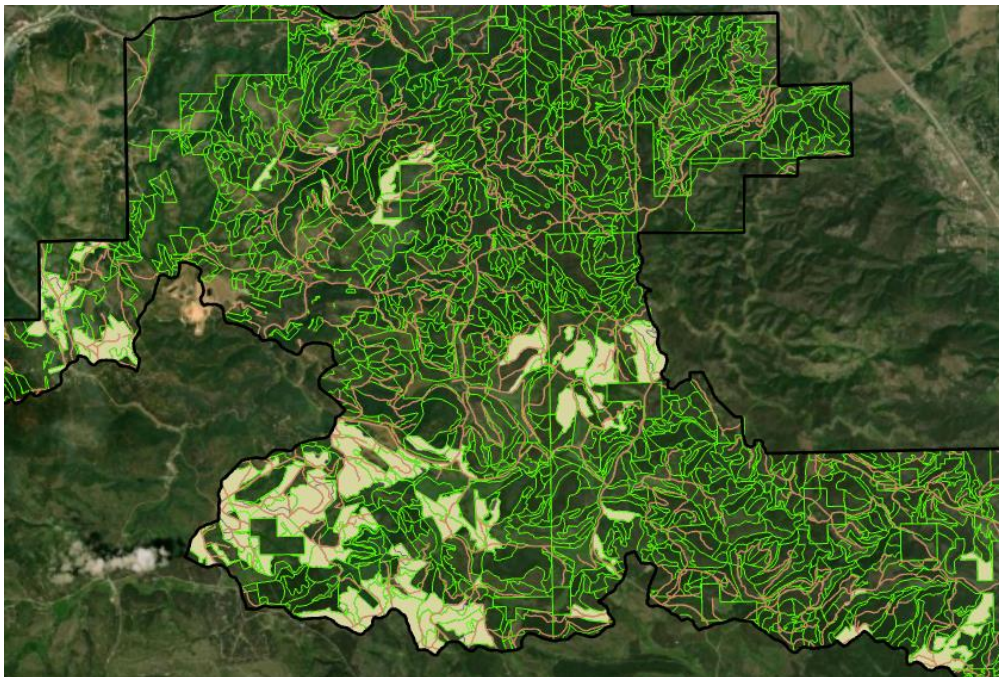


14. For the Output Name enter **DomeProposedTimberSale**. Leave the rest of the options and click **Run**.



15. The **DomeProposedTimberSale** layer will automatically be added into your **Contents** pane. Move it below the domeFSVegSpatial layer. Change the symbol to a color of your choosing.

16. Right-click and **Zoom to layer**.

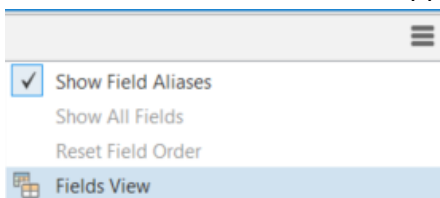


17. Right-click on the DomeProposedTimberSale layer and **open the Attribute table**.

18. **Scroll over** to see that the first seven user-defined fields are **pre-populated FACTS codes** for the BHNH and the Northern Hills District, populated in this scenario by your GIS Specialist.

ADMIN_FOREST_CODE	ADMIN_REGION_CODE	ADMIN_FOREST_NAME	PROCLAIMED_FOREST_CODE	ADMIN_DISTRICT_NAME	ADMIN_DISTRICT_CODE	ACTIVITY_UNIT_ORG
03	02	Black Hills National Forest	0203	Northern Hills District	08	020308
03	02	Black Hills National Forest	0203	Northern Hills District	08	020308
03	02	Black Hills National Forest	0203	Northern Hills District	08	020308
03	02	Black Hills National Forest	0203	Northern Hills District	08	020308
03	02	Black Hills National Forest	0203	Northern Hills District	08	020308
03	02	Black Hills National Forest	0203	Northern Hills District	08	020308

19. Click on the **menu icon** in the upper right side of the table and select **Fields View**.



This will open a new pane next to your attribute table where you can manage certain properties like the visibility and Aliases for all the Fields. There are other Field properties that cannot be changed such as Data Type, Number Format or Length.

20. The data for these fields in this project will be the same for every polygon. In order to simplify your table **turn off** the visibility of the following fields by unchecking the box in the Visible column next to:

SHAPE

ADMIN_FOREST_CODE

ADMIN_REGION_CODE

ADMIN_FOREST_NAME

PROCLAIMED_FOREST_CODE

ADMIN_DISTRICT_NAME

ADMIN_DISTRICT_CODE

Visible	Read Only	Field Name	Alias	Data Type
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	OBJECTID	OBJECTID	Object ID
<input type="checkbox"/>	<input type="checkbox"/>	SHAPE	SHAPE	Geometry
<input type="checkbox"/>	<input type="checkbox"/>	ADMIN_FOREST_CODE	ADMIN_FOREST_CODE	Text
<input type="checkbox"/>	<input type="checkbox"/>	ADMIN_REGION_CODE	ADMIN_REGION_CODE	Text
<input type="checkbox"/>	<input type="checkbox"/>	ADMIN_FOREST_NAME	ADMIN_FOREST_NAME	Text
<input type="checkbox"/>	<input type="checkbox"/>	PROCLAIMED_FOREST_CODE	PROCLAIMED_FOREST_CODE	Text
<input type="checkbox"/>	<input type="checkbox"/>	ADMIN_DISTRICT_NAME	ADMIN_DISTRICT_NAME	Text
<input type="checkbox"/>	<input type="checkbox"/>	ADMIN_DISTRICT_CODE	ADMIN_DISTRICT_CODE	Text

21. **Scroll over to the Domain Field** and scroll down to see that the Dom_TimberActivity domain is assigned to the ACTIVITY_NAME field, and the Dom_MethodDesc domain has been assigned to the METHOD_DESC fields.

Fields: DomeProposedTimberSale X

DomeProposedTimberSale

Field Name	Alias	Data Type	<input checked="" type="checkbox"/> Allow NULL	<input type="checkbox"/> Highlight	Number Format	Domain
SALE_NAME	SALE_NAME	Text	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
UNIT_ID	UNIT_ID	Text	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
ACTIVITY_CODE	ACTIVITY_CODE	Text	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
ACTIVITY_NAME	ACTIVITY_NAME	Text	<input checked="" type="checkbox"/>	<input type="checkbox"/>		Dom_TimberActivity
FY_PLANNED	FY_PLANNED	Text	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
METHOD_DESC	METHOD_DESC	Text	<input checked="" type="checkbox"/>	<input type="checkbox"/>		Dom_MethodDesc

22. **Close the Fields pane** by clicking the X. Click Yes to **Save**.
23. **Return to the DomeProposedTimberSale attribute table.** Scroll over to explore the rest of the fields in the table that relate to the timber stand evaluations from FSVeg.

In this scenario, these are the FSVeg fields that you decided would be useful to keep for future analysis. Some of the fields may be too narrow to read. You can **adjust the width to see the field names by grabbing the divider with your mouse** and when you save the project it will save your settings.

24. **Scroll over to Density Index Type** and if necessary, expand the columns to display the timber metrics of Merch Board Gross, Merc Cubic Gross, Canopy Closure Trees, Site Index, Site Index Species. PIPO is the code for Ponderosa Pine (*Pinus ponderosa*).

DomeProposedTimberSale X

Field: Add Calculate Selection: Select By Attributes Zoom To Switch Clear Delete Copy

	D	T	B	C	Density Index Type	Merch Board Gross	Merch Cubic Gross	Canopy Closure Trees	Site Index	Site Index Species
	4	58	56	05	SDI	5417.4407	1103.9737	30	74.9	PIPO
	2	57	50	28	SDI	5728.8594	1156.1488	20	72.1	PIPO
	6	44	32	57	SDI	3046.791	872.8826	55	97.2	PIPO
	9	31	20	53	SDI	717.5348	189.4863	10	94.7	PIPO
	4	46	44	04	SDI	3077.6921	662.0221	15	62.8	PIPO
	1	54	75	38	SDI	3232.2615	645.3343	25	97.6	PIPO
	2	71	34	13	SDI	11961.8191	2287.561	25	85.2	PIPO

1. **Save your project** from the quick tools at the top left of the window.



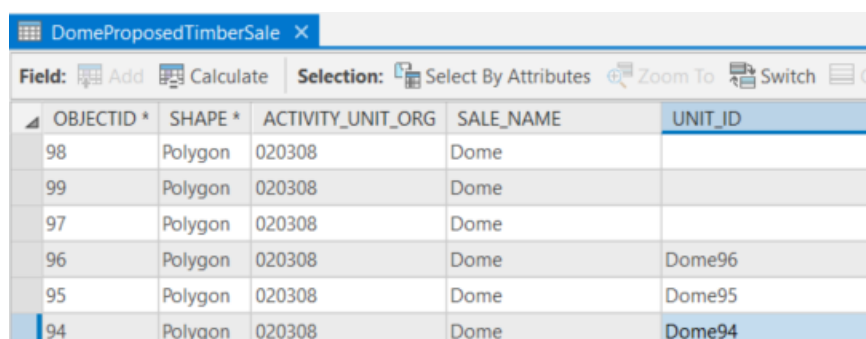
Part 2: Edit Within the Attribute Table

There are three different places we will edit attribute data in this Exercise.

- Edit values directly in the table window
- Edit values with the Field Calculator tool
- Edit values using the Attributes window

Remember, in ArcPro you don't need to be in an Edit session to edit data. In this section we will edit within the attribute table. Simple editing in a Pro table is similar to working with an Excel spreadsheet. You can type the attribute value in the cell, copy and paste, and select data from a dropdown list of values.

1. **Right-click on the UNIT_ID field name and Sort Ascending.** Blank or Null values will show up on top.



OBJECTID *	SHAPE *	ACTIVITY_UNIT_ORG	SALE_NAME	UNIT_ID
98	Polygon	020308	Dome	
99	Polygon	020308	Dome	
97	Polygon	020308	Dome	
96	Polygon	020308	Dome	Dome96
95	Polygon	020308	Dome	Dome95
94	Polygon	020308	Dome	Dome94

The UNIT_ID field has an individual name for each unit, and every Unit must have a name. In this case Dome1, Dome2, Dome3, etc. One way to check for missing data in a field is to Sort it alphabetically/numerically.

2. There are three missing values in the UNIT_ID field. Find the record with OBJECTID = 97, **click in the cell under UNIT_ID**, and type **Dome97**.
3. Use your mouse to highlight **Dome97** and **<Ctrl>C** to copy.
4. Place your mouse in the **next blank cell** and **<Ctrl>V** to paste.

- Change Dome97 to **Dome98**.

INIT_ORG	SALE_NAME	UNIT_ID
Dome		Dome97
Dome		Dome98

- Highlight **Dome98** and right-click to choose **Copy** this time.

INIT_ORG	SALE_NAME	UNIT_ID
Dome		Dome97
Dome		Dome98
Dome		

- Click into the last empty cell and **right-click and Paste**.

INIT_ORG	SALE_NAME	UNIT_ID	ACT
Dome		Dome97	
Dome		Dome98	
Dome			
Dome		Dome1	
Dome		Dome10	

- Change Dome98 to **Dome99**.

- Click Save on the Edit ribbon, and Yes to save all edits.

Next, we will manually edit the ACTIVITY_NAME field in the table, which will be populated based on what was entered into LAND_SUITABILITY_CLASS_DESC during the stand exam.

- Scroll over to the **LAND_SUITABILITY_CLASS_DESC** field, right-click on the field name and select **Sort Ascending**.

BILITY_CL	LAND_SUITABILITY_CLASS_DESC	PRODUCTIVITY_CLASS	PROD
	Converting pine to meadow		

11. **Scroll down** to see how many suitability classes there are. (There are 6 different suitability classes).

Investigating data manually is fine for smaller datasets, but it is not practical for larger datasets. Using the Summarize tool you can get an output table of all the different types, a count of how many there are of each, and even do calculations of acres or any other numerical field.

12. Right-click on **LAND_SUITABILITY_CLASS_DESC** and select **Summarize**.
13. In the Summary Statistics window under **Statistics Field(s)** click the left dropdown and select **GIS_ACRES**. Under Statistic Type select **Sum**. Leave the default Output Table name. Click OK.

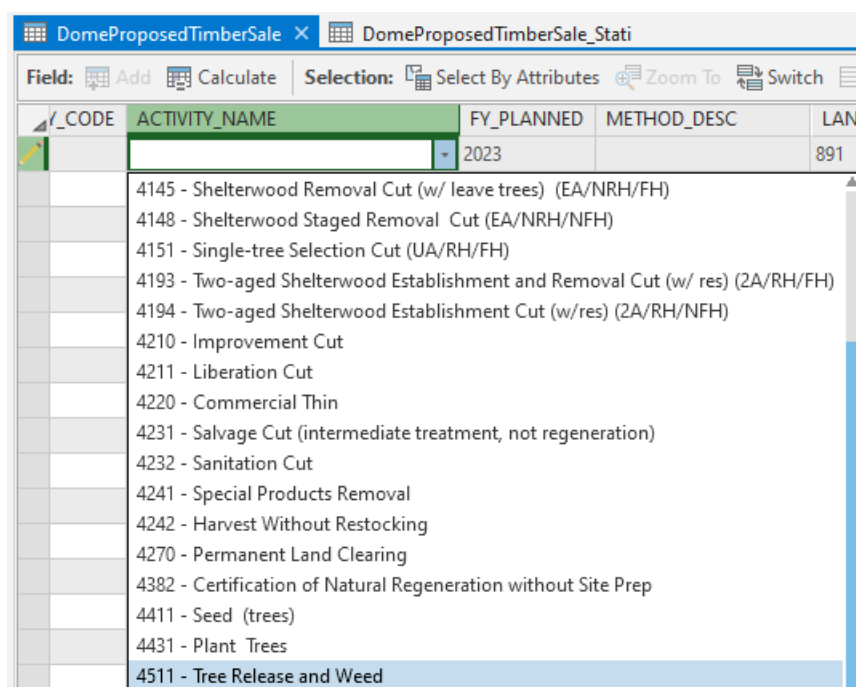
The screenshot shows the 'Summary Statistics' dialog box. The 'Input Table' is 'DomeProposedTimberSale'. The 'Output Table' is 'DomeProposedTimberSale_Stati'. Under 'Statistics Field(s)', the 'Field' dropdown is set to 'GIS_ACRES' and the 'Statistic Type' dropdown is set to 'Sum'. The 'Case field' dropdown is set to 'LAND_SUITABILITY_CLASS_DESC'.

14. The new table will automatically show in the Contents pane. Right-click the DomeProposedTimberSale_Stati under Standalone Table in the Contents pane and select **Open**.

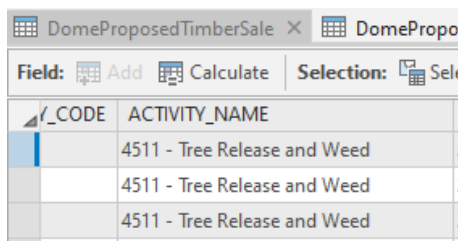
OBJECTID *	LAND_SUITABILITY_CLASS_DESC	FREQUENCY	SUM_GIS_ACRES
1	Converting pine to aspen	11	326.961873
2	Converting pine to meadow	7	80.795915
3	Old burns reduced productivity	15	536.348284
4	Roaded tractor logging area	117	2899.92258
5	Unroaded cable logging area	6	194.908837
6	Unroaded tractor logging area	31	749.850296

You can now easily see how many Suitability classes there are, how many of each, and the total acres of each. In the DomeProposedTimberSale table, wherever the suitability is “Converting Pine to Aspen” we will make the ACTIVITY_NAME value be “4511-Tree Release and Weed”.

- Since the LAND_SUITABILITY_CLASS_DESC is already sorted in alphabetical order, the **Converting pine to aspen** fields are at the top. Click on the first cell under ACTIVITY_NAME and it will activate a dropdown list of values, **select 4511-Tree Release and Weed**.

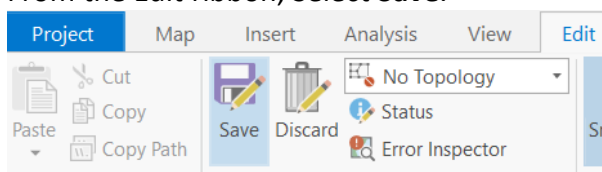


- Select two more cells with the suitability “Converting pine to aspen” and **select 4511-Tree Release and Weed** from the list of values dropdown.



While having the list of values of all the acceptable FACTS codes saves time compared to typing the long descriptions, it will still take a long time to populate 187 records. In the next section we will use the global editing function of the Attribute pane to populate all of the selected records at once.

17. From the Edit ribbon, Select **Save**.

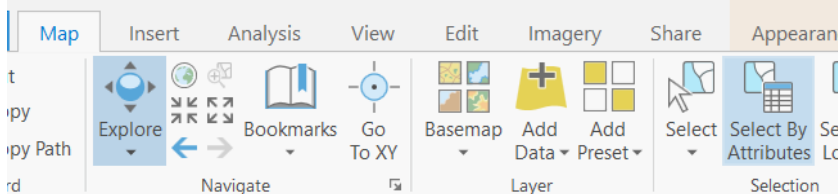


18. Choose **Yes** when asked if you would like to save your edits.

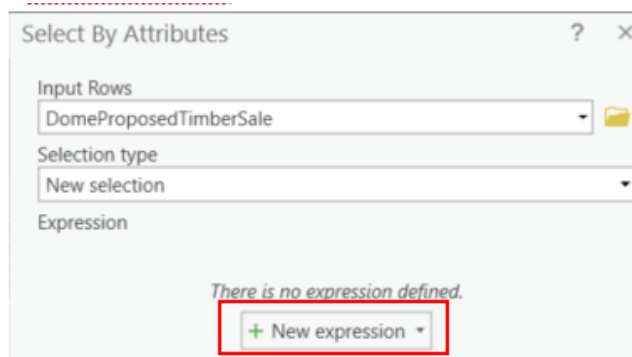
Part 3: Edit Values using the Attributes Pane

Using the Global Editing option in the Attributes Pane, you can make changes to all or many selected records at a time. This method can save you a lot of time over manually editing one cell at a time. In this Step we will select each Land Suitability Class using the Select by Attributes window, and then calculate the correct Activity Code for each.

1. Under the **Map** tab in the Selection Group, click on **Select by Attributes**.

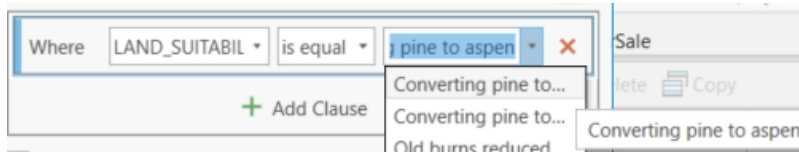


2. In the Select by Attributes window make sure that under Input Rows it says DomeProposedTimberSale. Leave the Selection type as New selection. **Click the +NewExpression button.**

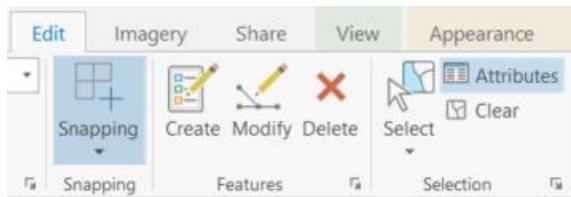


3. Click the down arrow by OBJECTID and **select LAND_SUITABILITY_CLASS_DESC**.
4. Leave **"is equal"** in the next box.

- Click the down arrow in the last box and **select “converting pine to aspen”**, click OK to select and close the window.

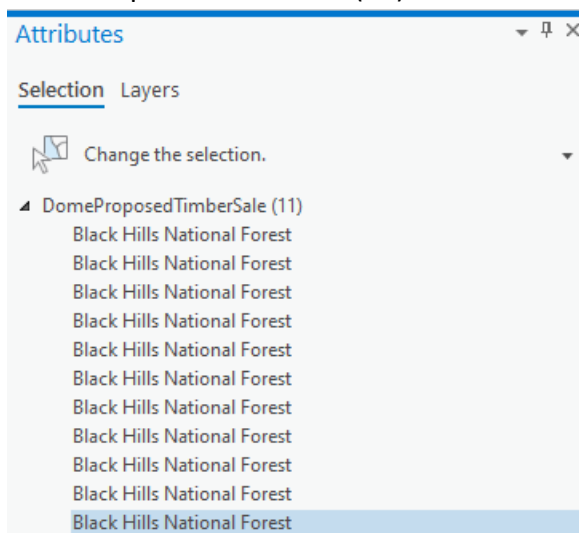


- If needed, **open the DomeProposedTimberSale table**. There are 11 records selected.
- In the Edit ribbon, **click the Attributes button** in the Selections group. When the Attributes pane opens pin it to the side.



Only selected features show up in the Attributes pane. You can click on one of the selected features and edit an attribute, or you can select the layer name at the top of the selected list to make a global edit of all the selected features. Caution: whatever edits you make will overwrite any existing attributes.

- Select the last ‘Black Hills National Forest’** listed under the DomeProposedTimberSale(11). You have already added attributes to the first few records.



9. Choose **4511 – Tree Release and Weed** from the list of values. Click Apply.

ACTIVITY_NAME	<Null>
FY_PLANNED	4194 - Two-aged Shelterwood Establ
METHOD_DESC	4210 - Improvement Cut
LAND_SUITABILITY_CLASS_CODE	4211 - Liberation Cut
LAND_SUITABILITY_CLASS_DESC	4220 - Commercial Thin
PRODUCTIVITY_CLASS_CODE	4231 - Salvage Cut (intermediate trees)
PRODUCTIVITY_CLASS_DESC	4232 - Sanitation Cut
OWNERSHIP_CODE	4241 - Special Products Removal
OWNERSHIP_DESC	4242 - Harvest Without Restocking
STATE_ABBR	4270 - Permanent Land Clearing
	4382 - Certification of Natural Regen
	4411 - Seed (trees)
	4431 - Plant Trees
	4511 - Tree Release and Weed

10. The method above only edited that one feature. Go back to the top section and **click DomeProposedTimberSale(11)**. If you get a window that says “There are uncommitted attribute edits. Do you want to apply them?” Click the Apply button.

Go back down to ACTIVITY_NAME and notice it says (Different Values). This is because most are <Null> except for the ones we edited above.

11. Click where it says (Different Values) next to ACTIVITY_NAME and **select 4511 – Tree Release and Weed** from the list of values again. This time it will populate all the selected features’ attributes.

12. Click next to METHOD_DESC and **select Logging Methods**.

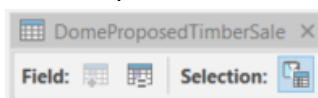
METHOD_DESC	<Null>
LAND_SUITABILITY_CLASS_CODE	<Null>
LAND_SUITABILITY_CLASS_DESC	Highlead
	Logging Methods

13. Click the **Apply** button.

14. Go back to your table to see that the attributes were edited correctly.

UNIT_ID	ACTIVITY_CODE	ACTIVITY_NAME	FY_PLANNED	METHOD_DESC	LA
Dome1		4511 - Tree Release and Weed	2023	Logging Methods	891
Dome39		4511 - Tree Release and Weed	2023	Logging Methods	891
Dome62		4511 - Tree Release and Weed	2023	Logging Methods	891
Dome64		4511 - Tree Release and Weed	2023	Logging Methods	891
Dome123		4511 - Tree Release and Weed	2023	Logging Methods	891
Dome146		4511 - Tree Release and Weed	2023	Logging Methods	891
Dome164		4511 - Tree Release and Weed	2023	Logging Methods	891

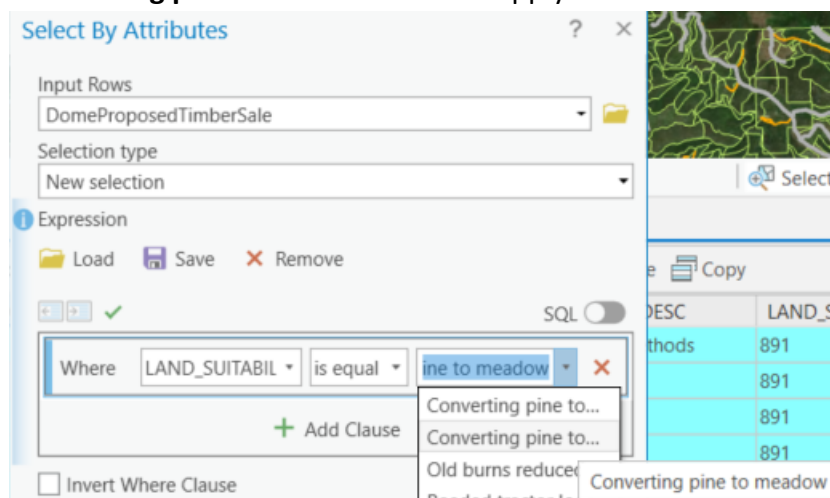
15. In the top left side of the table **click the Select by Attributes** button.



16. In the Select by Attributes window **select New Expression**.

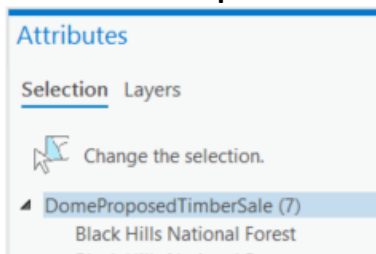
17. Click the dropdown next to OBJECTID and **select LAND_SUITABILITY_CLASS_DESC**.

18. Leave the next box "is equal", then click the dropdown in the last box and **select "converting pine to meadow"**. Click Apply.

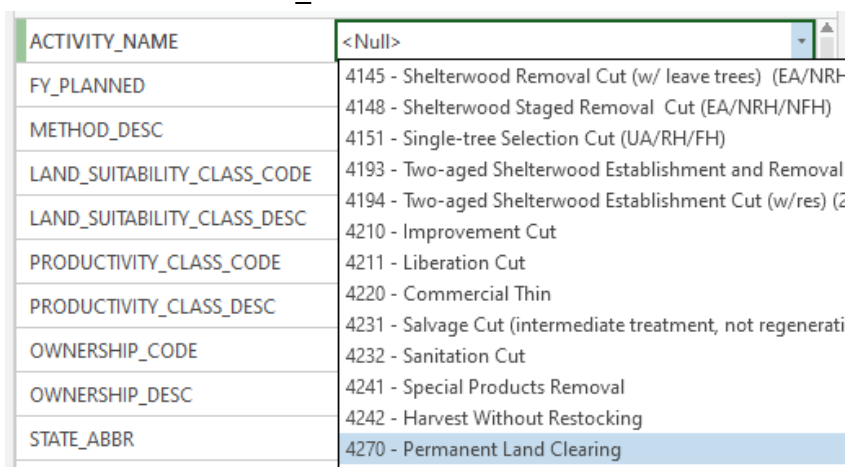


Clicking Apply does not close the window. It stays open so you don't have to re-select a whole new Expression. Move the Select by Attributes window aside so you can see the (Editing) Attributes pane.

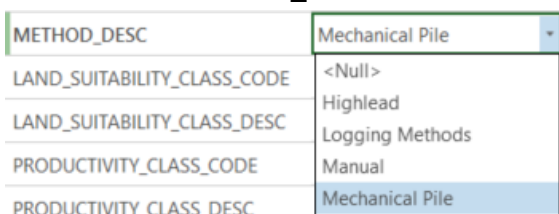
19. Select **DomeProposedTimberSale(7)** at the top of the pane.



20. Click next to **ACTIVITY_NAME** and select **4270 – Permanent Land Clearing**.



21. Click next to **METHOD_DESC** and choose **Mechanical Pile**. Click **Apply**.



22. Use the steps above to select for the rest of the **LAND_SUITABILITY_CLASS_DESC** values according to the table below:

LAND_SUITABILITY_CLASS_DESC	ACTIVITY_NAME	METHOD_DESC
Old burns reduced productivity	4231 – Salvage Cut (intermediate treatment, not regeneration)	Mechanical Pile
Roaded tractor logging area	4111 – Patch Clearcut (EA/RH/FH)	Tractor Logging
Unroaded cable logging area	4241 – Special Products Removal	Single Span Highline
Unroaded tractor logging area	4210 - Improvement Cut	Tractor Logging

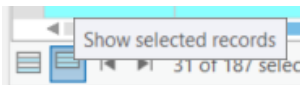
23. Click **Save** on the Edit ribbon to save your data and Yes to save all data.

24. Close the Select by Attributes window and the Attributes pane.

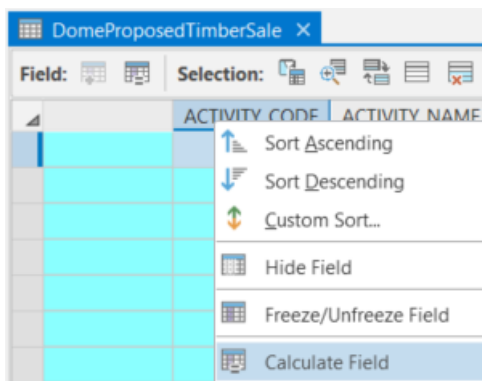
Part 4: Edit from the Calculate Field Window

Our final task in this exercise is to assign the ACTIVITY_CODE using the Calculate Field window. Using the Calculate Field option, you can make changes to all or many selected records at a time. This method can save you a lot of time over manually editing one cell at a time.

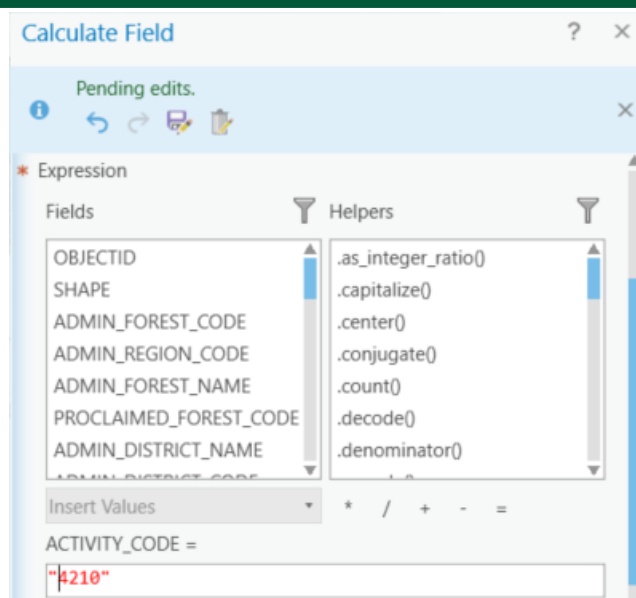
1. Hopefully your last selection using the Select by Attributes window is still selected, if not select them again. There should be 31 Improvement Cut features selected. At the bottom of your table **click Show Selected Records**.



2. Right-click on ACTIVITY_CODE and select Calculate Field.



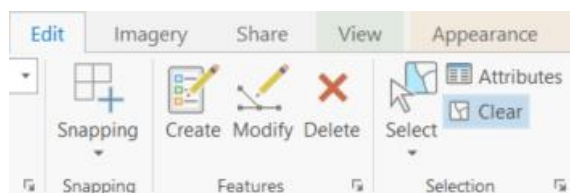
3. Scroll down the Calculate Field window until you see ACTIVITY_CODE =. Click in the box and type **"4210"** (include the quotes). Click OK.



- Click on the **Show all Records** button at the bottom of the table. You can see that only the selected records were populated.

In order to save ourselves the hassle of selecting all the ACTIVITY_NAMES again, we will use the Calculate Field tool in a different way.

- Click Clear on the Edit ribbon in the Selection group.



- Right-click on the ACTIVITY_CODE field heading and select **Calculate Field**.

In the Calculate Field window you will see that the Expression Type is Python 3. We are going to use a simple line of code to generate all the activity codes at once.

- In the Fields box scroll down and **double click on ACTIVITY_NAME**.

Scroll down the Calculate Field window to the ACTIVITY_CODE = box and see that it has been populated with the ACTIVITY_NAME with an exclamation point on either side. That is Python's way of delineating a field name.

8. Click in the box to the right of !ACTIVITY_NAME! and type [0:4]

Calculate Field

Pending edits.

Field Name (Existing or New)
ACTIVITY_CODE

Expression Type
Python 3

Expression

Fields

- ACTIVITY_DISTRICT_NAME
- ADMIN_DISTRICT_CODE
- ACTIVITY_UNIT_ORG
- SALE_NAME
- UNIT_ID
- ACTIVITY_CODE
- ACTIVITY_NAME
- FY_PLANNED

Helpers

- .as_integer_ratio()
- .capitalize()
- .center()
- .conjugate()
- .count()
- .decode()
- .denominator()

Insert Values

ACTIVITY_CODE =

!ACTIVITY_NAME![0:4]

Enable Undo ☒

Apply OK

9. Click OK and the ACTIVITY_CODE magically populates all the records!

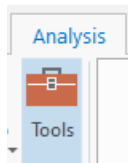
DomeProposedTimberSale						
Field:	Add	Calculate	Selection: Select By Attributes Zoom To Switch Clear Delete Copy			
	ACTIVITY_CODE	ACTIVITY_NAME	FY_PLANNED	METHOD_DESC	LAND_SUITABILITY_CLA	LAND_SU
	4270	4270 - Permanent Land Clearing	2023	Logging Methods	892	Convertin
	4111	4111 - Patch Clearcut (EA/RH/F; 4111 -	2023	Tractor Logging	511	Roaded tr
	4231	4231 - Salvage Cut (intermediate treat	2023	Mechanical Pile	591	Old burns
	4511	4511 - Tree Release and Weed	2023	Logging Methods	891	Convertin
	4111	4111 - Patch Clearcut (EA/RH/F; 4111 -	2023	Tractor Logging	511	Roaded tr
	4210	4210 - Improvement Cut	2023	Tractor Logging	521	Unroaded
	4111	4111 - Patch Clearcut (EA/RH/F; 4111 -	2023	Tractor Logging	511	Roaded tr

The Python 3 code told Pro to take the first 4 characters of the ACTIVITY_NAME for each record and populate the ACTIVITY_CODE field. Python code is a very powerful tool but is beyond the scope of this course. Most one-line calculations can be generated using the Helpers, operators, and double-clicking the Field names. Google is your best friend when it comes to Python code.

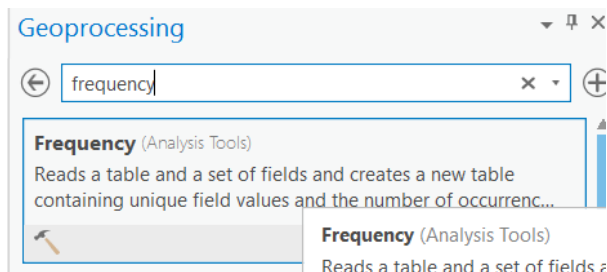
Part 5: Challenge - Create a Frequency Table

It is easy enough to visualize how many and which different Activity Codes are in the project. It is more difficult to determine the number of polygons with a specific Activity Code that fall within a particular Productivity Class. For example, how many (if any) polygons are “4210 – Improvement Cut”, with “Tractor Logging”, and “120-164 cubic feet per acre per year”? Through ArcToolbox’s Frequency tool, we can count the number of times a PRODUCTIVITY_CLASS_DESC value repeats for each ACTIVITY_NAME polygon.

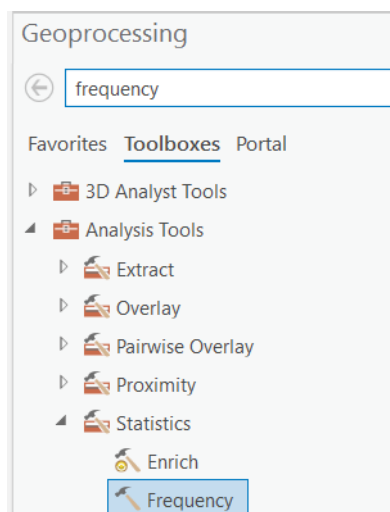
1. Activate the **Geoprocessing** pane by clicking the Analysis ribbon and clicking on the Tools button.



2. **Search for frequency.** Click to launch Frequency (Analysis Tools).



OR: From the Toolboxes tab, **launch the Frequency (Analysis) tool** from the Analysis toolbox and the Statistics toolset.



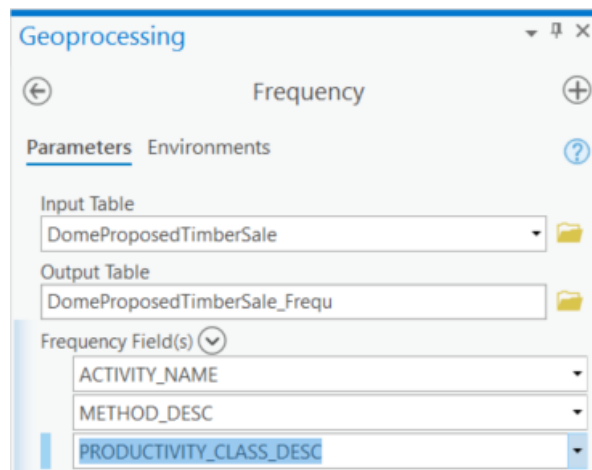
We will create a Frequency table that compares ACTIVITY_NAME, METHOD_DESC, AND PRODUCTIVITY_CLASS. We want to know the frequency of each separate instance. Another word used to describe this process is a Pivot Table.

3. Select the following options from the dropdown menus to generate a Frequency table:

Input Table – DomeProposedTimberSale

Output Table – DomeProposedTimberSale_Frequ (this is the default)

Frequency Field(s) – ACTIVITY_NAME, METHOD_DESC, PRODUCTIVITY_CLASS_DESC



4. **Click Run** to run the Frequency tool. The Frequency Table is automatically added to the Contents pane.

5. Open the Frequency table from the Contents pane **examine it**.

DomeProposedTimberSale_Frequ				
Field:	Add	Calculate	Selection: Select By Attributes	
			Zoom To	Switch
			Clear	Delete
				Copy
OBJECTID *	FREQUENCY	ACTIVITY_NAME	METHOD_DESC	PRODUCTIVITY_CLASS_DESC
1	13	4111 - Patch Clearcut (EA/RH/F; 4111 - Pat	Tractor Logging	120-164 cubic feet per acre per year
2	12	4111 - Patch Clearcut (EA/RH/F; 4111 - Pat	Tractor Logging	165-224 cubic feet per acre per year
3	24	4111 - Patch Clearcut (EA/RH/F; 4111 - Pat	Tractor Logging	20-49 cubic feet per acre per year
4	27	4111 - Patch Clearcut (EA/RH/F; 4111 - Pat	Tractor Logging	25 or more cubic feet per acre per year
5	22	4111 - Patch Clearcut (EA/RH/F; 4111 - Pat	Tractor Logging	50-84 cubic feet per acre per year
6	6	4111 - Patch Clearcut (EA/RH/F; 4111 - Pat	Tractor Logging	85-119 cubic feet per acre per year
7	13	4111 - Patch Clearcut (EA/RH/F; 4111 - Pat	Tractor Logging	Less than 20 cubic feet per acre per year
8	2	4210 - Improvement Cut	Tractor Logging	120-164 cubic feet per acre per year
9	5	4210 - Improvement Cut	Tractor Logging	20-49 cubic feet per acre per year
10	10	4210 - Improvement Cut	Tractor Logging	25 or more cubic feet per acre per year
11	5	4210 - Improvement Cut	Tractor Logging	50-84 cubic feet per acre per year

QUIZ: How many “4210 – Improvement Cut” polygons have a Productivity Class of “25 or more cubic feet per acre per year”?

NOTE: Because the Frequency table is non-spatial, you cannot select a record in the Frequency table and expect a polygon to highlight in the Map.

Congratulations! You have successfully completed this exercise.