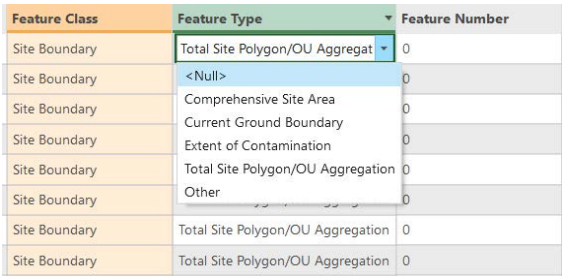
Subtypes in the Superfund Data Schema

Version 5.3 of the Superfund data schema leverages the subtypes functionality of ArcGIS databases. Subtypes are subgroupings of records in a feature class or table that share the same attributes. Esri offers subtypes as a part of geodatabase design tools in ArcGIS.

Advantages

Subtypes constrain data inputs in one field, based on the value of another field. In this case subtypes in the SITE_FEATURE_CLASS field limit the range of values in the SITE_FEATURE_TYPE field down to a predefined subset of possible field domains. Constraining the SITE_FEATURE_TYPE enforces a logical relationship between the two fields when entering new data. This increases the accuracy of the dataset by minimizing the potential for erroneous records at the data entry stage. Additionally, subtypes could be used to distinguish separate categories of data within one feature class by enforcing the use of the SITE_FEATURE_CLASS field to organize data at a high level.

Data Entry

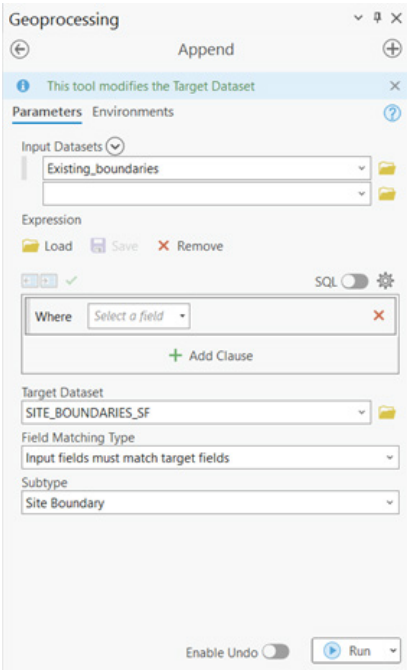


Once subtypes are implemented in a feature class, choosing a subtype in the SITE_FEATURE_CLASS field will be the same for users as choosing a domain from the drop down. However, the selection for the SITE_FEATURE_CLASS domain will dictate what appears in the domain options dropdown for SITE_FEATURE_TYPE. Therefore, available SITE_FEATURE_TYPE values are limited to those that are attached to the corresponding subtype. For example, the Site Boundary subtype contains five possible SITE_FEATURE_TYPE options: Comprehensive Site Area, Current Ground Boundary, Extent of Contamination, Total Site Polygon/OU Aggregation and Other.

Implementation

Template geodatabases

The recommended process to implement subtypes is to migrate existing data to a recommended feature class in the Superfund_Recommended_FeatureClasses_v5.3 geodatabase, in the latest version of the Superfund Schema Starter Kit. The Append tool in the Data Management Toolbox (also known as the Load Data tool) can be used to migrate data into a copy of one of these recommended feature classes. The 'Subtype' parameter of the Append tool will dictate the SITE_FEATURE_CLASS field value for all features loaded into the feature class. Note that loading data into the recommended feature class does not alter the existing SITE_FEATURE_TYPE for loaded records, even if the data breaks subtype rules.



Non-template geodatabases

To implement without using a template geodatabase, first import the different potential SITE_FEATURE_TYPE domains from SITE_FEATURE_CLASS_subtypes.xlsx in the starter kit. Then, use the Set Subtype Field tool to set SITE_FEATURE_CLASS as the subtype field. Reference the 'Subtypes' tab of SITE_FEATURE_CLASS_subtypes.xlsx and use the Add Subtype tool to add subtypes using the codes and descriptions in that tab. Optionally, reference the code snippet on the ArcGIS Set Subtype Field tool page for help automating subtype creation.