

MAGIS X APPENDIX A: GIS DATA Dictionary

GIS data for MAGIS eXpress

The area to be modeled is represented by a coverage for polygons (treatment units), and one for road network (see note* below on shapefiles.)

It is important that the polygon and network coverages are similar in extent. The easiest way to insure this is to clip the network coverage to the polygon coverage.

When MAGIS draws them together, the largest coverage will determine the initial size of the map image.

The polygon coverage needs to include information from a related vegetative stand layer. Vegetation assignments for treatment units could be based on preponderance of acres in a particular vegetative state (this is the same as the method used in MAGIS when both a stands layer and a treatment unit layer are present).

There are two kinds of attributes associated with the treatment unit data: attributes that are always required, and attributes that are required because they are included in the user's definition of an activity cost, a management regime, or an effects function. The following are always required (N = numeric C = character or text, L = boolean (T or F):

FIELD	TYPE	WIDTH	Description
(User ID)	N	10	User assigned polygon ID
HBTY_GRP	C	8	Habitat type group
DOM_SP	C	8	Dominant Species
SZ_CLASS	C	8	Size Class (code)
DENSITY	C	8	Density Class (code)
TIME_INC	N	4,0	Time increment (same as time unit number)
PAS_ACT_ID	C	8	Most recent activity
YR_SIN_ACT	N	2,0	Years (not time units) since this activity
AVERAGE	C	8	All values = "AVERAGE"
STARTVOL	N	10,2	Standing (starting) volume per acre in same units as defined in Model Information form.

Field values for hbt_y_grp, dom_sp, sz_class, density, and pas_act_id (same as activity in the pathway file) should match the categories entered in MAGIS eXpress "Attribute Names" (or imported with the pathway file, see below.) All field values in 'AVERAGE' should also be 'AVERAGE' – average is a dummy variable used by internal tables.

Each User-required attribute is either a numeric field (data type FLOAT, short integer, long integer or number), or a text string (character) field.

Field names should not be longer than 10 characters and field values should not be longer than 8 characters (for strings), or 2 decimal places (for numbers). Again, field values for attribute classes or categories should match entries in MAGIS eXpress "Attribute Names". Zones for stratifying effects function calculations (like a management

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compartment) can be added during the import procedure (and do not have to have attribute values entered ahead of time). These fields HAVE to be character/string. Numeric fields in the GIS can be integer, short integer, number, or float, except for the user-defined ID field. This should be integer or character. Field values that are characters (string) should not include the dash ('-') or other (*,%, \$) characters.

FIELD	TYPE	WIDTH	Description
(UserName)	N	10,2	User required attribute for costs
(UserName)	C	8	User required attribute (zone) for resource project generator rules.

Network GIS layer and Attribute Table:

The road network GIS layer should include digitized proposed roads if any. It needs to be pretty clean and include the following:

NO duplicate links (no two links have the same from_node and to_node ID).

NO circular links (a link where the from_node and to_node are the same).

NO unconnected links (gaps need to be snapped).

All links are represented by a from_node,to_node pair. All intersections need a node. Links should be split logically by differences in road surface, maintenance needs, or haul cost variables (i.e. a section of road that is steeper or curvier might need to be a separate link, even if the surface type and other issues are the same). This is dependent on the users desire/need for detail or precision in the haul cost calculations.

If the road layer starts as a shapefile, it is necessary to convert it to a coverage and build the **arc and node topologies**. (note, point topology is NOT necessary). Both the network and polygon coverages need to be **projected** (and in the same projection).

Similar caveats apply for the network attributes as for polygon attributes. There should be a stable user id field for each of the from_node and to_node identifiers (Arc renumbers the links with every build). The following are **REQUIRED** fields:

FIELD	TYPE	WIDTH	Description
(user ID fnode)	N	4	Node at one end of a link
(user ID tnode)	N	4	Node at the other end of a link
HORZ_LEN	N	6.2	Horizontal length of link in miles
CUR_STATUS	C	1	Current status of link. Valid Values: C, E
RD_OPTION	C	8	Road option name for E links

States and Pathways

The background States and Pathways can be imported into MAGIS from tables created by the user. The Import States file (it can have any name) should contain all the vegetative states (and the successional pathway) to be used in MAGIS, and the

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states resulting from treatments.

Table: Pathway/States Import Table

This table contains all the pathway state definitions to be imported into MAGIS; it can be created from data used in SIMPPLLE (which is usually a set of text files) or may be constructed with Access (or other dbaseIV table editing program) or in Excel and saved as a dbf. A text file (.txt) with fields separated by commas can be used instead of the database table (.dbf) to import the state definitions into MAGIS instead of entering them via the MAGIS eXpress screens. Please see the MAGIS eXpress Manual or online help for a more detailed discussion of pathway construction.

FIELD	TYPE	WIDTH	Description
HBTY_GRP	C	20	Habitat type group;
DOM_SP	C	20	Dominant Species;
SZ_CLASS	C	20	Size Class
DENSITY	C	20	Density
TIME_INC	N	4	Time Increment
ACTIVITY	C	20	Treatment that changes the state
R_DOM_SP	C	20	Resulting dominant species
R_SZ_CLASS	C	20	Resulting Size Class
R_DENSITY	C	20	Resulting Density
R_TIME_INC	N	4	Resulting Time Increment

NOTE: Time increment numbers need to correspond to time unit numbers; one time increment in the pathway vegetation growth projection method is the same as one time unit as defined by the user in MAGIS. The table name can be any legal file name without spaces, i.e., AngelesForest_ImportStates.dbf'

Note on Shapefiles. MAGIS and MAGIS eXpress currently allow import of shapefiles for stands (MAGIS only), roads, and treatment units. Since these shapefiles need to have been made from coverages by ArcInfo or the ArcTools utilities, it is simpler to use the coverages. If you are working primarily with shapefiles, they will need to be converted to coverages, projections added, and topology constructed (Build polygons and build LINE and NODE topology for roads) for import into MAGIS eXpress. ArcView shapefiles will not work directly. IF you do wish to convert the coverages back to shapefiles, use ArcInfo or ArcTools for the conversion. The ArcView coverage-to-shapefile function does not preserve the projection information, nor does it generate the needed topology.