UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Oregon State Office
P.O. Box 2965
Portland, Oregon 97208

In Reply Refer to:
1283 (OR_931/955.2) P

June 8, 2000

EMS TRANSMISSION 06/09/2000
Instruction Memorandum No. OR-2000-060
Expires: 9/30/2001

To: DMs, DSDs, Staff and Branch Chiefs

From: State Director

Subject: Noxious Weeds Spatial Data Standard

Attached is the final Noxious Weeds GIS layer data standard. All Noxious Weed data collection is to conform to this standard. Included within the data standard is the data collection and maintenance protocols and the quality control procedures to be used with this layer.

Transactional update tools (master data check in/check out) have been developed. Field offices may begin data updates as soon as a completed library access form (OR9167_5) and the name of the field office data steward have been provided to the State Office (OR955.2). The library access form may be accessed via the OR/WA Geospatial web site at:
http://web.or.blm.gov/gis/docs/maplayer_request.pdf.

If you have any questions about this standard or the update procedures, contact one of the following:

TITLE	NAME	PHONE NUMBER	EMAIL ADDRESS
State Data Steward	Robert Bolton	541_947_6114	rbolton@or.blm.gov
State Data Administrator	Stanley Frazier	503_952_6009	sfrazier@or.blm.gov
GIS Technical Support	Pam Keller Dan Wickwire	541_573_4486 503_952_6272	pkeller@or.blm.gov dwickwir@or.blm.gov

Signed by
Kathy Eaton
Acting Associate State Director

Authenticated by
Mary O'Leary
Management Assistant

1 Attachment

1 - Final Data Standard Attributes (7 pp)
2 - Regions Technical Guidance (3 pp)
3 - Companion User Guide for the Noxious Weeds Data Standard (2 pp)

<u>Distribution</u>
WO500 - C. Ridge (Rm 775, LS)

Noxious Weeds Spatial Data Standard

Date: 6/01/2000

LAYER DESCRIPTION

This is a depiction of Noxious Weed infestations in Oregon and Washington (BLM). The layer is in a Regions coverage. The use of regions (an ArcInfo feature) allows the maintenance, analysis and display of overlapping polygons.

Attributes are provided that give basic information about the weed infestation site such as the species of weed, how many plants there are, when the site was discovered, whether this is a current or historical site, etc.

SECURITY

This layer does not contain any sensitive information that might be withheld under the Freedom of Information Act and is generally considered releasable to the public.

REGIONS

Regions are an ArcInfo "feature" like points, lines, and polygons are features, but built on existing polygons (similarly to how polygons are built on lines and label points). Regions are best described as simply an attribute handling feature, a means to organize overlapping polygons and track which ones go together. A region is a group of one or more polygons and any one polygon may belong to more than one region. The scenario that calls for regions is one in which data belong together on one coverage but the areas have unbounded overlap. The following is how Regions would work for Noxious Weeds:

This coverage holds noxious weed populations (not continuous vegetative cover, but isolated populations) where the attributes leading to overlap are both time (population areas change over time) and also species (an unbounded number of species can occur in each area). Without the use of Regions, we would either have many coverages for each year (if you're content to track change only year to year and not on a finer time interval) and for each species (e.g.,TRLE1980, TRLE1981, ONAC1980, etc.) OR have an unbounded number of attributes most of which will be empty.

STATE DATA STEWARD

The State Data Steward for the Noxious Weeds Spatial Data layer is:

Bob Bolton
Lakeview District
(541) 947_6114

DATA COLLECTION AND MAINTENANCE PROTOCOLS

Accuracy Requirements: A wide range of positional accuracy is acceptable within the WEEDS theme. The ACC field within the region subclass attribute table contains feature level accuracy information stratified by input method and the absolute accuracy (how close, in +/_ feet, the GIS mapped feature is to the actual ground feature). This schema allows for a variety of data to be included within the theme yet allows for lower quality data to be excluded where appropriate for using or sharing the data.

Collection and Input Protocols: The District Data Steward will develop standard field data collection methods and work with the GIS Coordinator to develop corresponding standard GIS input methods. The most common methods of field inventory of weed infestation areas is by manuscripting onto a map base (either paper or on-screen with DRG or DOQ backdrop) or by GPS coordinate files. GPS coordinates may be for polygon area boundaries, lines (e.g., road infestations) or points, but point and line data must be converted to polygons before input into the WEEDS cover. This is easily accomplished with the ARC buffer command. Buffer radius is determined by the data collector to best approximate the extent of the infestation on the ground.

Update Transactions: The unit of processing for updating the WEEDS theme is the district. This means that district-wide transactions will be initiated by editors within the districts to update the theme. Editors will "check-out" their district's WEEDS theme features. They will then add, delete or modify the features prior to "check-in". The district GIS Coordinator will approve update processes and provide assistance and oversight.

Update Frequency: Once the WEEDS theme has been created for a district it is the responsibility of the District Data Steward to ensure that the theme remains current. Bringing the theme up to a current level should take place at least once per year if not more frequently. It is also the responsibility of the Data Steward to ensure that any database external to the GIS be kept current and consistent with the GIS.

QUALITY CONTROL

Transaction Level: This level of quality control occurs during feature update and when a district has completed an update and the resulting WEEDS theme is provided back for inclusion into the GIS corporate library. During update, the new information must be compared to existing data in the WEEDS theme to determine if (a) the new data is truly new and independent of old data; (b) if it completely replaces old data; or (c) if it modifies old data either by improving the accuracy of the old boundary or by changing the old boundary to historical status and adding a new boundary. New feature boundaries are to be brought in and edited as arc features and in such a way as to minimize slivering when intersected with existing features. Attributes are only added to the region feature subclass (to the .patWEEDS). All attributes are required, but old records (prior to the date this standard is published) may have blank fields. All text values are upper case. Detailed descriptions of the attributes is found elsewhere in this standard. SITE_ID is the site record number (integer) assigned by the District Data Steward and/or the GIS Coordinator. This is the linking field to external weed database(s), if any. GIS_ID is assigned when the weed site is input into the WEEDS theme and is simply a sequential integer unique for each new region feature.

Monitoring Level: The State Data Steward in conjunction with the District Data Stewards are responsible for reviewing the WEEDS theme across the state at least once per year. Suggested checks include the following: (1) consistency between districts in attributing (same values used to mean same thing -- data collection methods can be different as long as attributes used consistently), (2) progress toward similar levels of accuracy, (3) areas lacking adequate inventory or currency.

DATA ORGANIZATION/STRUCTURE

This coverage is called WEEDS and has only one subclass, also called WEEDS. All of the attributes are to be attached only to subclass WEEDS (the INFO data file is called .patWEEDS). The .patWEEDS items description should look like the following table. The Arc generated items (AREA, PERIMETER, WEEDS#, WEEDS_ID) are not shown.

Formal Structured Name	Arc/Info Item Name	Type
BLM_DISTRICT_CD	DIST_CD	A2
LOCATIONS_GIS_IDENTIFIER	GIS_ID	I9
LOCATIONS_SITE_IDENTIFIER	SITE_ID	I9
PLANT_SPECIES_TAXONOMIC_CODE	SPECCODE	A8
LOCATIONS_ACCURACY_CODE	ACC	A5
PLANT_SAMPLE_QTY	NUM_PLTS	I9
UNIT_OF_MEASURE_VEGETATION_CODE	UNIT_MEAS	A5
WEED_SITE_OCCUPANCY_CODE	OC_CD	A1
WEED_SITE_DISCOVERY_DATE	DISC_DATE	VA8
WEED_SITE_REVISITATION_DATE	REV_DATE	VA8

BLM_DISTRICT_CD (DIST_CD)

Description

[Required]

A unique identifier for a BLM District within a BLM Administrative Area. Examples of codes:

01 = Lakeview 03 = Vale

FOIA Category = Public

Check

Low Value:	01	
High Value:	13	
Format:	A(2)	
Uppercase:	N/A	
List of Values:	01	Lakeview
	02	Burns
	03	Vale
	05	Prineville
	08	Salem
	09	Eugene
	10	Roseburg
	11	Medford

LOCATIONS_GIS_IDENTIFIER (GIS_ID)

Description

[Required]

GIS assigned numeric (integers only) identifier for every ARC Region feature. GIS_ID is never duplicated in the database. Used in conjunction with SITE_ID to track changes in the extent of a weed population over time. If a site

has increased or decreased in size, the old population extent may be kept for historical reference. The new population extent would be assigned the same SITE_ID value, but a unique GIS_ID value. The OC_CD value of new population extent would be coded 'C' and the old population (region) is changed from 'C' to 'H'.

FOIA Category = Public

Check

Format:	I(9)
Uppercase:	N/A

LOCATIONS_SITE_IDENTIFIER (SITE_ID)

Description

[Required]

Unique number assigned to each new noxious weed site (infestation). When used in conjunction with DIST_CD, the SITE_ID is uniquely identified in OR/WA. This is the linking field to external user databases. SITE_ID may be duplicated in the database. In a scenario where an old population extent is kept for historical reference, the OC_CD Value for that old area (region) is changed from 'C' to 'H', but no other attribute is changed. Initially, SITE_ID = GIS_ID but SITE_ID may be kept the same for different GIS_IDs in order to track the change in a site's areal extent over time. In other words there can be >1 GIS_ID for every SITE_ID but not vice versa.

FOIA Category = Public

Check

Format:	I(9)
Uppercase:	N/A

PLANT_SPECIES_TAXONOMIC_CODE (SPECCODE)

Description

[Required]

An acronym constructed following the Garrison-Skovlin_Poulton system to represent a plant genus/species. Also called a Plant Symbol. Codes are assigned by the USDA National Resource Conservation Service (NRCS) national botanist. The approved symbols can be found at:

USDA, NRCS 1999. The PLANTS database (http://plants.usda.gov/plants). National Plant Data Center, Baton Rouge, LA 70874_4490 USA.

Each different species becomes a separate region even if in exactly the same area.

FOIA Category = Public

Check

Format:	A(8)
Uppercase:	Yes

LOCATIONS_ACCURACY_CODE (ACC)

Description

[Required]

Locational accuracy code which indicates how close to the true geographic location on the ground a GIS entity has been recorded. There are two aspects to accuracy: the tools used to get spatial entities into a GIS (turned into digital representations), and the actual accuracy -- how far off (+ or _ feet) is the digital product. Three types of tools are recognized: GPS (global positioning system), Manuscripting onto a map or photo, and legal descriptions using Township, Range, and Section.

Also note that ACC is NOT a source for polygon overlap. If there is a change in accuracy, the old region is replaced by the new. Only the most accurate regions are maintained on these coverages.

FOIA Category = Public

Annotation

Locational Accuracy Codes:

GPS

- GPS1 = within 3 feet.
- GPS2 = within 30 feet.
- GPS3 = within 300 feet.

Manuscripting

- MAN1 = within 40 feet
- MAN2 = within 100 feet
- MAN3 = within 150 feet.
- MAN4 = within 300 feet.
- MAN5 = within 660 feet (one_eighth mile).
- MAN6 = within 1,320 feet (one_quarter mile).
- MAN7 = within one_half mile.
- MAN8 = best estimate with no distance limit indicated.

Township and Range - The TR accuracy code is different from GPS and MAN. It is ONLY used where the site location is recorded only by a Township/Range/Section AND no attempt to try to locate it on a map is made. For example, a weed siting recorded only by T/R/S may still be locatable along a road going through that section and given the appropriate MAN accuracy (probably MAN4 or MAN5). If, however, no reasonable assumptions are possible, the TR codes are useful. In these cases, a point is placed in the center of the section, ¼ section, etc., and labeled with TR10 for a ¼ ¼ ¼ section (located to with 10 acres); TR40 for a ¼ ¼ section (within 40 acres); TR160 for a ¼ section (within 320 acres) and TR640 for a section record (within 640 acres). These points are buffered to 1 meter to make polygons since regions are built only on polygons.

TR10 = located to within 10 acres (1/4 1/4 1/4 section).
TR40 = located to within 40 acres (1/4 1/4 section).
TR160 = located to within 320 acres (1/4 section).
TR640 = located to within 640 acres (1 section).

PLANT_SAMPLE_QTY (NUM_PLTS)

Description

[Required]

The number of individual plants that infest a particular weed site. Can also represent the number per unit of measure (e.g., 100 plants per acre) when used in combination with UNIT_MEAS (UNIT_OF_MEASURE_VEGETATION_CODE).

FOIA Category = Public

Check

Format:	N(9)
Uppercase:	N/A

UNIT_OF_MEASURE_VEGETATION_CODE (UNIT_MEAS)

Description

[Required]

Standardized abbreviations for length, weight, and area in English and metric units of measure. This attribute will only be used in conjunction with other attributes to modify or explain the precise relationships and meaning of the data.

FOIA Category = Public

Annotation

For Weeds GIS layer, unit of measure must be populated if NUM_PLTS is not null.

Check

Format:	A(5)	
Uppercase:	Yes	
List of Values:	Acre	AC
	Square Meters	SQM
	Square Miles	SQMI
	Hectares	HA
	Total count, no units applied	TOTAL

WEED_SITE_OCCUPANCY_CODE (OC_CD)

Description

[Required]

Defines whether an area is currently occupied by a weed, no longer occupied by a weed, or if a change in the extent of a weed population has occurred. If a site has increased or decreased in size, the old population extent may be kept for historical reference and the OC_CD value for the old population (region) is changed from 'C' to 'H'. The new population extent would be coded 'C' and be assigned the same SITE_ID value, but a unique GIS_ID value.

FOIA Category = Public

Check

Format:	A(1)	
Uppercase:	Yes	
List of Values:	CURRENT INFESTATION	C
	HISTORIC INFESTATION	H

WEED_SITE_DISCOVERY_DATE (DISC_DATE)

Description

[Required]

The date which the site was originally discovered (YYYYMMDD). Enter as much of the date as you know. If only the year is known then enter just the year. Do not guess or make dummy entries for month and day if they are unknown.

FOIA Category = Public

Check

Format:	A(8)
Uppercase:	N/A

WEED_SITE_REVISITATION_DATE (REV_DATE)

Description

[Required]

The most recent date that the site was revisited (YYYYMMDD). Enter as much of the date as you know. If only the year is known then enter just the year. Do not guess or make dummy entries for month and day if they are unknown.

FOIA Category = Public

Check

Format:	A(8)
Uppercase:	N/A

Attachment 2 - REGIONS Technical Guidance
Compiled by Pam Keller, Burns District, 1/25/00

I. Introduction to Regions

Regions are an ARCInfo “feature” like points, lines, and polygons are features, but built on existing polygons (similarly to how polygons are built on lines and label points). Regions are best thought of as simply an attribute handling feature, a means to organize overlapping polygons and track which ones go together. A region is a group of one or more polygons and any one polygon may belong to more than one region. There are, of course, other ways to track groups of polygons and the regions way should only be used when the other ways are too cumbersome. Do not use regions if simply polygons with attributes to handle overlap will suffice because analysis with regions coverages is more difficult and maintenance trickier than simple polygons. The scenario that calls for regions is one in which data belong together on one coverage but the areas have unbounded overlap. I’ll explain further by using the regions coverages on the Burns district as examples:

FIRE:
Wild fire perimeters. Fires will often burn the same areas repeatedly leading to overlapping polygons and the overlap is unbounded because the attribute involved is time, an unbounded variable. Our design choices are 1. Put each year on a separate cover (e.g.,fire1980, fire1981,etc.), 2. One cover with overlapping polygons and add attributes every year (e.g.,attributes fire1980, fire1981) or a very long attribute with concatenated values (e.g.,one attribute, fireyear with values like ‘1980', ‘1980/1981', ‘1980/1981/1992', etc.), or 3. Have one region cover with the overlap managed by a single subclass with a single, bounded set of attributes. We opted for choice 3. Coverage design will be detailed more later.

PLANT:
More complex than FIRE, where overlap occurred only because of time, this coverage holds plant populations (not continuous VEG cover, but isolated populations) where the attributes leading to overlap are both time (population areas change over time) and also species (an unbounded number of species can occur in each area). In this case our non_regions options are even worse than with FIRE. We would either have many many coverages for each year (if you’re content to track change only year to year and not on a finer time interval) and each species (e.g.,TRLE1980, TRLE1981, ONAC1980, etc.) OR have an unbounded number of attributes most of which will be empty.

WILD:
Wildlife distribution. This is our most complex region coverages because overlap occurs in three ways, change over time, multiple species, and different seasons of use. So now our non_region option would be to have coverages (or multiple, repeating attributes) for each species, year and season (e.g.,ELK_WINTER1980, ELK_WINTER1985, ELK_SUMMER1980, ELK_SUMMER1985, etc., etc.). Using the region feature class we can keep all our wildlife on one coverage and have one bounded set of attributes.

Note: How do we decide what data to keep together on a coverage? If the data have similar attributes they probably belong together

II. Designing Regions Coverages

The regions feature is defined by a subclass. These are confusing terms made more confusing by the ESRI documentation, but one way to look at it is that the subclass name serves simply to name the region feature. The reason we have to name the region feature (and we don’t have to name our polygon or arc or point features) is that you can have more than one subclass. The key principle here is keep it simple. Yes, you can make more than one subclass, but why? Yes, you can attach attributes to arc and polygon features as well as to the region features, but why? Remembering that maintenance of and analysis with regions covers is more complex you can minimize that by sticking to one subclass and attributes attached only to that subclass. Back to our three examples:

FIRE:
Has one subclass, named FIRE (keeps it simple and easy to remember!). Subclasses have INFO files just like arcs (the.aat) and polygons (.pat), named .pat*SUBCLASS*, and are manipulated just like any other

INFO file. FIRE.patFIRE has 3 attributes: fire_code (like 'M603'), fire_name (e.g.,'ROCKY POINT') and year (e.g.,'1989'). These 3 attributes go together to define a region (new fire, new region).
Note: ARC automatically updates the area attribute for regions just like it does for polygons, but if you want acres for your fires you must add acres to the .patFIRE and CALC from the areas for the regions.

PLANT:
Has one subclass, PLANT. PLANT.patPLANT includes the following attributes (there are a few others, but these are the most important for illustrating regions):

SITE_ID (unique number for each new site),
GIS_ID (unique number for each region),
SPECCODE (plant species code),
REV_DATE (last revisit date),
ACC (accuracy code) and
OC_CD (occupancy, Current or Historic).

SITE_ID is the unique number identifier assigned to each particular population site. This is the linking field to external databases maintained by the resource specialists. Usually there is one GIS_ID for each SITE_ID (I make them equal initially), but if the user wants to track the site over time you can keep the SITE_ID that same while changing the GIS_ID (since each new region needs a new GIS_ID). In other words, a SITE_ID may have >1 GIS_ID associated with it but not vice versa. Recall the source of overlap described for PLANT in the introduction: time and species. These are the REV_DATE and SPECCODE attributes. When SPECCODE changes there is a new region even if the exact same polygon or group of polygons is used and so there is a new GIS_ID. There is also a new SITE_ID since the specialists usually track by species (differ ent record for different species even if in exact same area) in their external databases. A change in time (REV_DATE) will also result in a new region (new GIS_ID) if the user wants to retain the old area for historical purposes. The new area's polygon(s) is input and turned into a region and attributes filled. Note that all the attributes of the new region will be the same as the old except for GIS_ID and REV_DATE and perhaps ACC. SITE_ID stays the same for scenarios like this where we are tracking the areal extent change of a particular site. The old region's attributes are unchanged except OC_CD is changed to 'H' from 'C'.

Note that ACC is not a source of overlap. A change in accuracy does not create a new region, we replace less accurate regions with more accurate ones.

WILD:
Has one subclass, WILD. WILD.patWILD includes SITE_ID, GIS_ID, REV_DATE, ACC and OC_CD as described for PLANT plus SPEC_CD (animal species code), SEAS_USE (season(s) site is in use) and SPEC_USE (specific use/activities associated with a site during the season of use). New WILD regions are added for the same reasons and in the same manner as for PLANT, but there is one more source of overlap (and hence source of new regions) in WILD and that is the SEAS_USE/SPEC_USE combination. The same specie will use different areas in different seasons and this becomes a new region with new GIS_ID and SITE_ID. SPEC_USE goes with SEAS_USE, it is the activity(ies) that occur in that area during that season(s).

III. Creating/Populating/Maintaining Regions

Creating a region cover is super easy. Try to start with a simple, non_overlapping polygon cover, change the attributes to how you want them in regions, then just issue the ARC command POLYREGION <in_cover> <out_cover> <out_subclass> e.g., POLYREGION FIRE1980 FIRE FIRE

Now you can bring in more data, even if it will overlap the data in the new region cover. If you are starting with one polygon cover that already has overlap, handled by repeating attributes, you can still do a simple POLYREGION and then manipulate the attributes once it's a region cover. When bringing in new and/or editing existing data, the key principle is to work from the bottom up -- from arcs to labels to polygons to regions (if you are removing go from top down, delete the region first, then arcs and labels).

1. EF ARCS: add the arcs (through a GET or by digitizing), but be sure to inspect against the existing arcs first -- Where will the new arcs fall? Can you modify the new arcs slightly to avoid creating lots of

tiny sliver polygons -- maybe use some existing arcs instead of adding a new one that is very close? Set NODESNAP and FUZZY tolerances to 1 or less. When possible, alter new arcs rather than existing arcs. Make sure there are no intersections or dangles and that arc vertices area OK.

2. EF LABELS: labels have no data attached and have no relevance to regions, but there must be a label in every polygon so add labels where needed for the polygons that will be formed from the new arcs. Leave existing labels where they are if possible.

3. BUILD in ARC then back in ARCEDIT, EF POlygon: pick all the polygons for your new region (some of which may have been there already if the new region overlaps an old region) and issue the command MAKEREGION *subclass* , e.g.,MAKEREGION FIRE.

4. EF REGION.*subclass* (e.g.,REGION.FIRE): all you do with editfeature set to the region feature is fill in attributes.

IV. ARCPLOT DISPLAY and QUERY

Regions have their own display commands (REGIONSHADE, REGIONS) just like polygons and arcs and points have their own commands (POLYGONSHADE,POLYS,ARCLINES,etc.). The difference is that you must specify the subclass name since a region coverage may have more than one (even though we do not), e.g.,REGIONSHADE FIRE FIRE 3 (green shade) REGIONS WILD WILD (outlines regions in current linesymbol).

RESELECT works with regions covers just like other covers but again the subclass name has to be included as part of the feature name, e.g.,RESELECT FIRE *region.*FIRE YEAR = '1992' RESELECT WILD *region.*WILD SPEC_CD = 'CEELN' *AND* SEAS_USE *CN* 'WT'. The key to remembering command syntax for regions is that if the ARC command asks for <*feature*>, put in *region.SUBCLASS*, but if the ARC command is specific to regions (e.g.,REGIONSHADE) you'll still need to give it the subclass name as well as the cover name, but just the subclass not *region.subclass.*

V. ANALYSIS

REGIONQUERY does it all... unfortunately. The help for REGIONQUERY is a book in itself. As the name implies you use REGIONQUERY to build complex queries on complex region covers (which we don't have), but you must also use REGIONQUERY to combine attributes as you would expect after a boolean operation with a region cover. Intersection is now a two step process: first INTERSECT then REGIONQUERY. REGIONQUERY produces a new subclass with user defined selected attributes from the two coverages. For example, to intersect FIRE with OWN (polygon ownership cover):

INTERSECT FIRE OWN FIRE_OWN
REGIONQUERY FIRE_OWN # *FIRE_OWN* # # POLY.* FIRE.*
>: res $POLY *AND* $FIRE

Explanation: After the INTERSECT there is a new region cover, FIRE_OWN with the attribute of OWN attached to its .pat and the attributes of FIRE attached to its .patFIRE. REGIONQUERY then links up these two sets of attributes in a new subclass which we call (keep it simple and easy to remember!) FIRE_OWN and we ask for all the POLY attributes (keyword POLY with the wild card *) and all the subclass FIRE attributes to be included in the new sub_class. Then the select expression $POLY AND $FIRE indicates that all POLY features will be intersected with ('AND') all FIRE sub_class region features. Now you can do DROPITEM on the .pat to get rid of the OWN attributes and a DROPFEATURES FIRE *region.*FIRE to get rid of the FIRE subclass region feature so you don't get confused about where your attributes are!

APPENDIX

An easily automated process for bringing in GPS point data that are turned into overlapping polygons (regions) of variable radii.

1. Field staff collect data as points and record a radius in meters for the area's extent along with other attribute data. Each species is a separate point, even if in the exact same spot.

2. Import the GPS file, using GENERATE (set PRECISION DOUBLE first) then BUILD for POINTs and join (JOINITEM) the .PA file (the attribute file created by the GPS software when converted to ARCInfo format) to the .PAT file.

3. Create areas out of points using the radius and turn into regions in one step using REGIONBUFFER. REGIONBUFFER is a great command that buffers points (or lines) and, since it uses regions, keeps the overlap and attributes correctly. It can take a while if you have hundreds of points. Here's the syntax I have used:

REGIONBUFFER GPSWEED *GPSWEED_REG* PLANT RADMETERS # # .05 POINT ## # # GPSWEED#

where GPSWEED is the point cover from step 2, *GPSWEED_REG* is the region cover resulting from this command, RADMETERS contains the radii input by the field folks into the GPS file, .05 is the fuzzy tolerance (must be very small if you have radii of <1 meter) and the only GPSWEED item brought into *GPSWEED_REG* is the GPSWEED#. Immediately follow the REGIONBUFFER with a JOINITEM to add the rest of the items, e.g., JOINITEM *GPSWEED_REG.patPLANT* GPSWEED.pat *GPSWEED_REG.patPLANT* GPSWEED# GPSWEED#

> Tip: Thin out vertices after a buffer (which packs them in very close and can lead to problems in your cover later) – GENERALIZE to 1 meter (.5 or even .1 m if very small buffer areas).

4. Fix the attributes to match the standard (you can always have more attributes, but must match the standard attributes exactly, including order). A relatively painless way to match attributes is to use the ARC ADDITEM and/or INFO ALTER then use ARC PULLITEMS to pull just the items you want and in the correct order.

5. Now you can GET the new region cover into your master cover.

> Tip: If new cover is derived from a BUFFER or REGIONBUFFER you must build for lines (will already have polygons/regions) or the GET will fail.

ATTACHMENT 3

Companion User Guide
for the
Noxious Weeds Spatial Data Standard

BLM districts include many millions of acres, and consequently, large numbers of individual noxious weed sites. An effective weed control program overseeing the numerous weed sites BLM must manage cannot occur without an adequate database, especially one which includes mapping. The GIS ArcInfo application is a spatial database that will meet most of the noxious weed program needs. Two levels of expertise are needed to maintain the database; one in GIS, the other in weed management. As both of these experiences may not be found in the same individual, it is anticipated that the noxious weed program coordinator and GIS specialist will work together closely in the maintenance of the database.

The intent of this guide is to provide explanations of the Noxious Weeds Spatial Data Standard in a manner that is geared toward the noxious weed program coordinator so that it can be implemented and utilized successfully at the District level. This guide will not provide the technical information needed by a GIS specialist. For technical GIS information, see the Noxious Weed Spatial Data Standard.

This data standard defines a GIS layer that will record the most essential data needed for weed control program oversight. All weed infestations are recorded as areas. Point and line records may be collected, but must be buffered to create an area prior to inclusion in the layer. The standard is intended to provide maximum flexibility for local needs in three ways. First, certain attribute fields provided herein will accept a wide range of entries. Second, each District may, at their discretion, add non_standard attributes that will aid them in special circumstances (however, this only applies to a working layer as maintained at the local level; the regional layer will only accept the specified data attributes). Third, an external database (for example Access) may be linked to the layer to provide more extensive site information as needed by the District.

The following is an explanation of the attributes in the order they are attended to appear in the standard. See the Noxious Weeds Spatial Data Standard for the list of values that may be applied to each attribute, and the character width (character width consistency is important if data is collected with a GPS data dictionary and exported to GIS).

DIST_CD Specific to each district, this attribute is used to keep separate two sites with the same site number but from different districts. See the Noxious Weeds Spatial Data Standard for the allowable values.

SITE_ID This attribute is a unique number assigned to each individual weed infestation represented by an area. This is the primary linking field to external databases.

The size of the area representing a site depends on characteristics of the species and good judgment. The intention in defining sites is to allow for someone unfamiliar with the site to easily relocate it in the field. In addition, the area should accurately represent the portion of land occupied by the weed so that the number of acres affected by a weed can be retrieved from the database for planning purposes.

If plants are closely scattered throughout an area, the site should include all the plants. However, if plants are widely scattered, several sites should be identified, even though the separate sites may be managed at the same time for treatment. For example, if several sites were dispersed within a quarter of a section, bounding the site by the quarter section would not provide sufficient information for someone new to the area to be sure they have located all known populations without reviewing the entire area. The convention of grouping sites into project areas for managing treatment is a useful tool. This can easily be accomplished in an externally linked database.

GIS_ID — This attribute is a unique number assigned to each individual record of a weed infestation that has been assigned a SITE_ID number. The GIS_ID cannot be duplicated in the database. This feature allows for tracking changes in an infestation over time. This is the secondary linking field to external databases.

If the extent of a weed population changes (becomes larger or smaller), a new record with a new area is created in the database. The new area will be assigned a unique GIS_ID, but will retain the SITE_ID from the original sighting. The old area extent is preserved as a historical site (See OC_CD following) with the same SITE_ID, but its original GIS_ID (which is different from the new area).

When adding data to the database, it is important to make a decision if: 1) the added data represents a new siting which will receive a unique SITE_ID and GIS_ID; 2) the added data is an improvement in the accuracy of old data in which case an existing SITE_ID and GIS_ID is assigned and the older less accurate data is deleted; or, 3) the added data is an update of a population extent in which case an existing SITE_ID is assigned and a new GIS_ID is assigned.

SPECCODE — This attribute is a code assigned by the USDA National Resource Conservation Service (NRCS) national botanist following the Garrison_Skovlin_Poulton system to represent a plant genus/species. Example: spotted knapweed (*Centaurea biebersteinii*) is coded: CEBI2.

The allowable values are found at the PLANTS database on the internet at: (http://plants.usda.gov/).

ACC — This attribute represents the accuracy in the mapping of the infestation area. The values indicate the method used and the level of accuracy. If the original data sighting was recorded as a point and buffered, the ACC would represent the level of accuracy associated with the buffer. See the Noxious Weeds Spatial Data Standard for the allowable values.

NUM_PLTS — This attribute is used in pair with UNIT_MEAS. NUM_PLTS records the number of individual plants that infest an individual weed site either in total or per unit of measure (see UNIT_MEAS).

UNIT_MEAS This attribute is used in pair with NUM_PLTS. UNIT_MEAS records the units by which plants were measured for NUM_PLTS. See the Noxious Weeds Spatial Data Standard for the allowable values. Example: 5 per SQM, or 5 TOTAL.

OC_CD Defines whether a population extent is current, or historic (C or H). If a population is eradicated a historical reference may be preserved in the database. If a population extent changes (becomes smaller or larger) and a new area is recorded, the old population area is preserved as historic and the new are as current.

DISC_DATE The date the infestation site was first discovered. If a new population area is mapped and a new GIS_ID is assigned, the DISC_DATE of the original discovery is kept for the new record.

REV_DATE The date the infestation was last reviewed.