

NISIMS

Business Rules

recorded: August, 2009

Mark Coca:

Thank you, Kathie. This is Mark Coca, and I will be going over some of the business rules that we have for our NISIMS database. The business rules are used to define a standard protocol for the type of data that we collect, which includes invasive species surveys, invasive species infestations, infestation treatments, the monitoring of infestations, and the evaluation of those infestation treatments.

Business Rules for Surveys: So some of the business rules for the surveys themselves include that all the weed surveys will include the number of acres systematically checked for the presence or absence of nonnative invasive plants and/or noxious weeds. All of the survey boundaries will be collected as polygon-shaped files, and the acres surveyed will be recorded for the BS program element Code Unit of Accomplishments.

Business Rules for Infestations: For the infestations, each infestation will have a computer-generated identification number once it's uploaded into the National Database. All of the infestations that will be recorded are collected as points, lines, or polygons. Now just to let you know that the infestation does not always represent the acres surveyed. Now what this means is that an infestation could occur within a larger area of a survey, so that's why they won't always be equal.

Also remember that each infestation represents only one species. Now if multiple species are identified within an infestation, then multiple infestation records will be generated. The system will use drop-down tables for the species code or species name and common name.

Also remember that infestations can, and they will overlap. Although they may be collected as either a point, line, or polygon, the feature class for all infestations will be

stored as polygon-shaped files. One of the interesting ones that we came up with is, that infestations have to be 40 yards apart to be an infestation upon itself. Now the system will calculate it for us so we don't have to worry about the exact 40 yards.

Now to collect data as a point, or an infestation as a point, the maximum acre size that a point can represent is five acres. Now all the points will be buffered to an estimated acre size, and we have these set up in three groups so that the points may be collected in one of these three groups. If it's less than or equal to a tenth of an acre, it will be buffered to a tenth of an acre. If the point is somewhere in the range of .1 to .5 acres, the infestation record will be buffered to .5 of an acre or half an acre. And, if the record is .5 to 5 acres, it will be buffered to 2.5 acres or 2-1/2 acres.

Now for polygons, any collected infestation can record as a polygon if it is at least one-tenth of an acre in size, and, for a line, remember that all lines will be buffered by the estimated buffer size. The user or the collector defines the buffer direction and the buffer distance in either yards, meters, or feet unit of measurement.

Business Rules for Treatments: These are the business rules for treatments. A treatment will be collected as a point, line, or polygon. A treatment polygon is a separate feature from an infestation polygon, but it is tied to an existing infestation. There are two separate polygons.

All of our acres treated in the JD program element are defined as an infestation treated that is within 20 yards radius, or 40 yards diameter, of each plant or the edge of an infestation rounded up to the nearest acre. Treatments are rounded to a minimum of one acre for reporting purposes. We will round to the nearest acre after summing.

For a treatment, a point defined is a point that is buffered by 20 yards. This will represent a minimum area of .25 or one-quarter of an acre. For polygons, any size represented as collected will be at least one-quarter or .25 acres in size. For lines, lines are defined as a line that is buffered to 20 yards of each plant or the edge of an infestation rounded up to the nearest acre.

A treated acre, regardless of the number of treatments in the year, will be reported as one acre treated. A biological release is counted as one acre of treatment at the time of release. Any expansion beyond one acre the second year or multiple years after that are reported as acres of treatment. The grand total of JD acres or the treated acres will be the sum of all buffered point, buffered line, and all the polygon treatment acres rounded up to the nearest acre.

Evaluations: For evaluations, and this is program element MK, it will be sum of all evaluated buffered points, buffered lines, and polygon treatment acres rounded up to the nearest acre.

Business Rules for Monitoring: Now monitoring is defined as each additional visit to an infestation. Infestations can be tracked over years, and the system will track those changes in size and shape. Any monitoring of new geometries will relate to the original infestation.

Business Rule Changes: Here are some kind of pictorial demonstrations of the changes in our business rules. In the pre-NISIMS database rules, you see the drawing on the upper left corner, we have two musk thistle patches that are within about 15 yards of each other. In the previous system, we would get MIS credit for one acre of JD treatment. Under the new rule, things are a little bit different. If you look on the lower left drawing, there are two patches, and the buffered area of those is shown in red there. And when the system buffers those and puts those together, we now have this combined area shown in white in that middle drawing. So now we will get credit for the calculated area of that polygon in white, and this will be a machine-generated value. The system will calculate that value for us.

Kathie Jewell

So, Mark, do you see the numbers going up or down as far as the overall units?

Mark Coca

I think that our numbers will go down overall.

Kathie Jewell

And is that being addressed within the actual description of the accomplishments?

Mark Coca

Yes, I believe it is. We have taken that into consideration that, in fact, it'll pretty much happen for everyone, that everyone's units will go down accordingly just on a more detailed, exact representation. Does that answer your question, Kathie?

Kathie Jewell

Yes, it does. I wanted everyone to know that, in fact, there are going to be changes in how the PEs are actually defined, and it is in line with what our business rules are.

Mark Coca

Okay. All right.

Business Rule Changes continue: This slide shows another change or another pictorial representation. In this case, we have two separate musk thistle infestations that are about 45 yards apart. In this case, they are greater than that 40-yard rule. In the old system, we would get credit for, in this case, if they were each less than an acre size we would get credit for one acre each. And, if they were greater than an acre each, we would get the actual size or credit for the actual size to the nearest acre rounded up. Under the NISIMS rule, we'll get credit for .25 acres each, if they were collected as a point. Or if they were collected as a polygon, we would get credit for the actual acre size of the polygon as calculated by the system.

Another example: What this shows on the left, we have two patches of hoary cress that are about 15 yards apart. Under the pre-NISIMS system, if they were less than one acre, we'll get credit for a full acre for two combined for one acre of JD treatment.

If they were greater than one acre each, we would get the actual acres rounded up to the nearest acre. Under the new NISIMS system, the polygon is calculated as a combined thing with buffer, which you can kind of see in this orange drawing. So we'll get MIS credit for the JD value of the combined treatment polygon that is represented in orange.

And some more representations: In this case, again, we have two musk thistle infestations that are 45 yards apart. Under the old system, we would get credit for two acres total, one acre of each. Now under the system, as you can see, the point will be buffered as shown in this red-dashed line to a radius of 20 yards so we'll get credit for each infestation or treatment polygon that will be calculated to .25 acres for a total of .5 acres of JD, where each polygon represents a quart of an acre on the ground.

General Business Rules: Some general business rules about the system. The spatial data projection that we have defined will be geographic NAD83 - North American Datum 83 - at this point has been developed using a National Albers Projection. And also the Weed Management Areas will be stored as polygons. These boundaries can change, split, or combine, but the history will be maintained.

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