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# Atlas Boundary .BNA File Description

**Surfer** imports and export Atlas Boundary files .BNA.

The Atlas Boundary File .BNA is an ASCII format file used to store spatial information including areas, curves, ellipses and points. Spatial information is only concerned with the location of objects in space (i.e., their coordinates) and not with their attributes (such as line or fill style, marker symbol used, text labels, etc.).

## File Format

The general format of the file is:

```
"Pname 1", "Sname 1", type/length
x1, y1
x2, y2
...
xn, yn
"Pname 2", "Sname 2", type/length
x1, y1
x2, y2
...
xn, yn
```

### Pname

*Pname* is the name of the primary ID. The primary ID is used to link the object to external data.

### Sname

*Sname* is the name of the secondary ID. The secondary ID is optional.

### Type/Length

The *type/length* is an integer which identifies the object as an area, curve, ellipse or point.

### X, Y

Following the *type/length* are the actual X,Y coordinate pairs that make up the object. These can be integers or real numbers, and are stored 1 pair per line.

The *type/length* field indicates the number of coordinate pairs to follow and also indicates the type of object as follows:

- Areas have a *type/length* value greater than 2. The value indicates the number of coordinate pairs to follow. Islands and lakes are concatenated to the coordinate list.
- Curves have a *type/length* value less than -1. The absolute value is the number of coordinates to follow for the curve.
- Ellipses have a *type/length* value 2. The first pair of coordinates describe the center of the ellipse. The major and minor radii are stored in the second pair of coordinates. If the minor radius is 0, the ellipse is a circle.
- If the *type/length* field is 1, the object is considered a point. One coordinate pair follows.

## Attributes

The first two ID attributes for all polyline, polygon, and symbol objects are automatically exported to all .BNA files. For [contour maps](#), the elevation is exported as the "STD\_ID1" attribute for all polylines in the contour map. If other attributes are desired instead of the first two, rename those attributes to "STD\_ID1" and "STD\_ID2". These named attributes will be used instead of the first and second attributes listed on the [Info](#) tab. The color, size, symbol shape, width, and other properties are not exported.

## Simple and Compound Areas

Two kinds of areas exist, simple and compound. A simple area contains a starting point, a series of points specifying the area's boundary and a closing point with the same coordinate as the starting point. A compound area contains one or more subareas, such as islands or lakes. Atlas Boundary files use a special technique to specify the subareas comprising compound areas.

### Example 1

A simple area with 5 points is shown in the Atlas Boundary file format:

```
"name" "attrib" 6
2.15, 3.25
3.75, 5.15
6.5, 4.3
5.5, 1.7
4.25, 3.4
2.15, 3.25
```

### Example 2

A compound area consisting of a closed outer area and two islands. Here is how the coordinates should be specified in an Atlas Boundary file:

```
AX1,AY1 Starting point of area "A"

AX2,AY2 Points specifying boundary of area "A"

.

.

AXn,AYn Ending point of area "A"

BX1,BY1 Starting point of subarea "B"
```

BX2,BY2 Points specifying boundary of subarea "B"

.

.

BXn,BYn Ending point of subarea "B"

AX1,AY1 Starting point of area "A" (Flag Point)

CX1,CY1 Starting point of subarea "C"

CX2,CY2 Points specifying boundary of subarea "C"

.

.

CXn,CYn Ending point of subarea "C"

AX1,AY1 Starting point of area "A" (Flag Point)

Each area's ending point must have the same coordinate as its starting point. The starting point of area "A" is used as a marker (called a Flag Point) to indicate the end of each subarea. This means the first area point's coordinate must be unique and cannot appear as a coordinate within any subarea.

And, an example of what the actual file may look like:

```

""pname"" ""attrib"" 13
48 99
52 20
57 19
56 8
29 0
27 71
48 99
40 70
50 60
48 55
34 40
40 70
48 99

```

## Import Options Dialog

No import options dialog is displayed.

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### See Also

[Atlas BNA Examples](#)

[Atlas Boundary .BNA Export Automation Options](#)

[Atlas Boundary .BNA Export Options Dialog](#)

[Atlas Boundary .BNA Import Automation Options](#)

[File Format Chart](#)

