

JOHNSON MAPPING SOFTWARE & PLOTTING SEMINARS

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Deed Plotter+for Windows (by Greenbrier Graphics)& the All Topo Maps (by iGage Mapping Co.)

"Computer Plotting of Legal Descriptions for the Layman[®]" Seminar

"Real Estate Mapping Computer Tools[®]" Seminar

Inserting parts of Sections directly into All Topo Maps (ATMs) with the PLS add-on tool from your Word Processor works well for the Aliquots part types of entries. If Aliquot parts, put in the correct syntax format, like the S $\frac{1}{2}$ NW $\frac{1}{4}$, Section 21, Township 12 South, Range 34 West, 5th PM, can be read by the All Topo Maps and draw over a background topo maps.

Lots and Tracts are a little different story, but many lots can be IF you understand which of the normal Aliquot parts that the Lots are being used instead for instead of the Aliquot part. Aliquots parts and Lots are typically part of the original survey system. In reality, the word "Lot" means that this parcel of land is a NON-Aliquot parcel.

Tracts (and some other classifications) are typically found as parts of Resurvey work done over the original surveys, and they can be anywhere in the Section. You need the BLM map.

Let's see how to handle these different land description parcels.

Inserting Section Aliquot parts directly into All Topo Maps from your Word Processor.

If you will type out Aliquot parts INDIVIDUALLY in your word processor, you can then paste the contents of the file into the All Topo Maps (ATMs) Annotation Source Editor file and draw those Aliquots parts out, if you follows some simple rules.

Let's say you can a simple description, like follows:

Township 50 North, Range 82 West, 6th PM, Johnson County, WY.

Section 11: E $\frac{1}{2}$ E $\frac{1}{2}$, W $\frac{1}{2}$ SE $\frac{1}{4}$

Section 12: SW $\frac{1}{4}$, SW $\frac{1}{4}$ NW $\frac{1}{4}$

Section 13: N $\frac{1}{2}$ N $\frac{1}{2}$ NW $\frac{1}{4}$

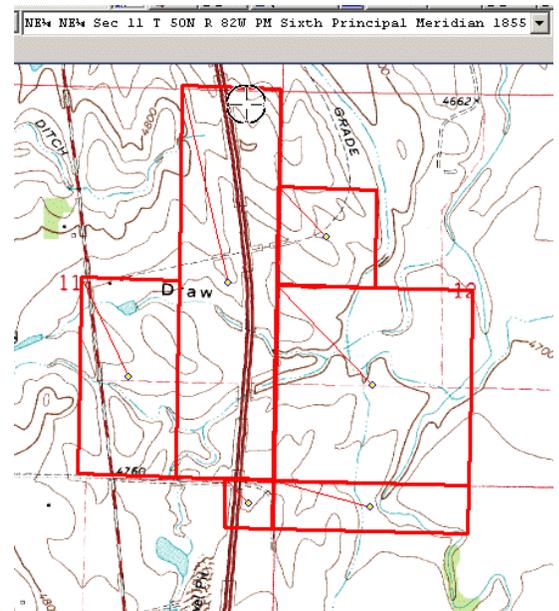
Section 14: NE $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$

The most important thing to keep in mind, is that EVERY aliquot part MUST be on its own line. Sections 11 and 12 have multiple aliquot parts and therefore each part MUST be place on individual lines. So, there are 6 aliquot parts in 4 sections, you need to input 6 lines.

Below is how the inputs should look to automatically have the ATMs draw these parcels.

e $\frac{1}{2}$ e $\frac{1}{2}$ SEC 11 T50N R82W PM6 Draw;
W $\frac{1}{2}$ Se $\frac{1}{4}$ SEC 11 T50N R82W PM6 Draw;
sw $\frac{1}{4}$ sec 12 t50n r82w pm6 draw;
sw $\frac{1}{4}$ nw $\frac{1}{4}$ SEC 12 T 50 N R 82 W PM6 Draw;
N $\frac{1}{2}$ N $\frac{1}{2}$ NW $\frac{1}{4}$ SEC 13 T 50 N R 82 W PM6 Draw;
NE $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$ SEC 14 T 50 N R 82 W PM6 Draw;

So, with the above entries "pasted" into the Annotation Source file, it would draw the image seen here. How? Because the program is using the underlying GCDB.



What is GCDB? That stands for the “Geographic Coordinate Data Base”. This is a system of database files that the BLM has constructed, which details the locations of sectional corners in geographic coordinates (Latitudes / Longitudes, UTM’s - Universal Trans Mercators or State Plane coordinates). It is the GCDB database (for each state) that is driving the power of the PLS tool (Public Land Survey Tool - unique for each state). When you enter some Aliquot part names, the PLS tool is using the GCDB points to draw around the outside of your parcel.

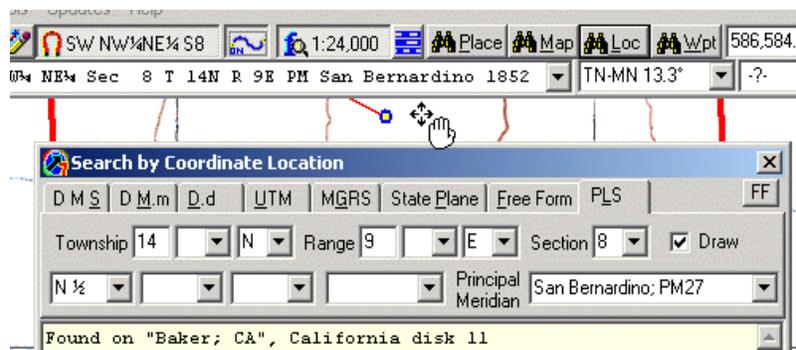
Here are some important things to note.

1. For the first two lines, there are no spaces between the “E” and the “½” or the T50N, etc. BUT on the other lines there are spaces in those places, IT DOES NOT MATTER, your choice. However, you must put in spaces between the different elements of each line.
2. Also, it is not case sensitive. See line 3 that is all in lower case, again it does NOT matter.
3. Elements MUST be in the order as shown: Aliquot part, Section number, Township Number North/South, Range Number East/West, and the PM (Principle Meridian) Number.

Here are some shortcuts for putting in some of the useful symbols into your word processor. In all three cases, it is the same, be sure your NUM LOCK ON, then Press and Hold the ALT key. If you inputted 0188 on the Key Pad, the release the ALT key, the “¼” symbol will appear. Same for the “½”, Press and Hold ALT 0189 and release. Even for a degree symbol (°), when you need it is the same. Press and Hold ALT 0176 and release.

Every PM has a number, even though it may be typically referred to by name. The above example was in the part of Wyoming under the influence of the 6th PM, but say you are in the San Bernardino PM area of California. What is the correct PM number there.

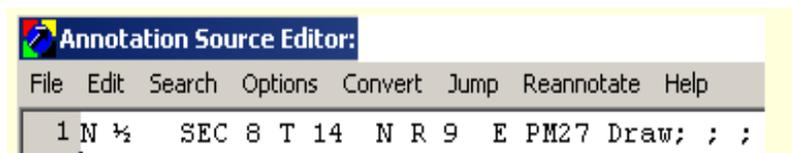
When you have your PLS tool installed for your state and it is active, it is always tells you the PM name and number in the BinoLOC (Search by Coordinate Location). See the next graphic.



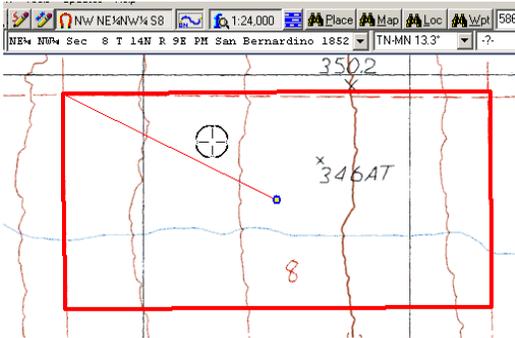
Here, I wanted to draw the N ½, Section 8, T14N, R9E, in the San Bernardino PM, in California.

I had clicked on the “BinoLoc”, and the data into the correct windows tiles, selected the correct one of the three PMs in CA, AND click on the DRAW box to get the check mark.

The All Topo Maps drew the parcel and reported, what you see below in the Annotation Source file.

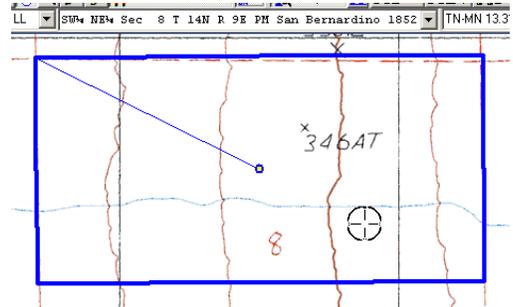


Point here is, you can see in multiple places that the San Bernardino PM is number PM27. I suggest that you can get the PM number you want in the same way.



If you want to have the outside lines of the Aliquot parts be different colors, you simply add a color to the end of the "Draw" part of the command. (Default is Red).

Say you wanted to make a parcel of State leased lands in blue, you would add an underscore and Blue after the Draw, to look like this: Draw_Blue

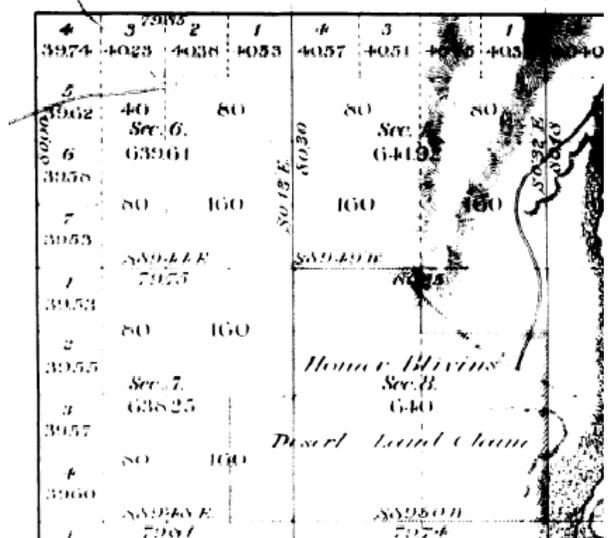


Also note on the Red colored image, the "bombsight" was located in the west 1/2 of the box, which is in the NW 1/4. Then you can see that it is also located in the NE 1/4 of the NW 1/4. Therefore that NE 1/4 NW 1/4 cursor location is reported in the 2nd Coordinate location box about the cursor. Here in the Blue image the cursor location is being reported as in the SW 1/4 NE 1/4 of Section 8.

Straight forward Aliquot part entry is quite easy, and IF standard "Lot" number is still being used in this section for the NON-Aliquot parts, for visual purposes you can actually use Aliquot part names for standard Lot number and get a realistic image.

Inserting NON-Aliquot Section LOTS directly into ATMs from your Word Processor.

We first must have an understanding of the basic "Standard Lot Numbering". Here is a portion of T.33 N. R. 108 W., 6th PM, Sublette County WY., just south of the town of Pinedale, WY. This graphic is showing Sections 5, 6, 7 & 8 in the NW corner of the township. This is showing the standard Lot numbering as part of the original surveys. Look at Section 5. There are 4 lots along the north side of the section, numbered 1 - 4 going east to west. It then follows that Lot 1 is actually where the NE 1/4 NE 1/4 would be IF it were an Aliquot part. Therefore, Lot 2 would have been the NW 1/4 NE 1/4, Lot 3 would have been NE 1/4 NW 1/4 and Lot 4 would have been the NW 1/4 NW 1/4, again IF these Lots had been Aliquot parts. In fact these 4 lots could have been referred to as N 1/2 N 1/2. Again, this numbering pattern is the "standard Lot numbering" for Section 1 - 5. When you look at Section 6, for first 4 lots are the same, but then Lots 5, 6 and 7, are running down the west side. Note that Lot 5 would have been the SW 1/4 NW 1/4, Lot 6 would have been the NW 1/4 SW 1/4 and Lot 7 would have been the SW 1/4 SW 1/4, IF they had been Aliquot parts.



Note on Section 7 (and also Sections 18, 29 30 and 31 all along the west side of the township), the Lots 1- 4 are numbered down (north to south) from the NW ¼ corner.

The whole secret to your success for substituting in Aliquot names for Lot numbers, is to know where the Lots are really located. You MUST look at the BLM survey maps to really know for sure. Where do you find BLM survey maps? At any BLM office and / or your local county Assessor's mapping department usually has them.

However, to save you a trip to the court house or BLM office, you can first look to see if the BLM survey maps you want to see are on the BLM Web Site.

The graphic below shows, if you are in Wyoming, here's the place to go. By using the link shown, the first screen as a shown.



Updated April 26, 2004

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GLO & BLM Survey Plats and Field Notes

This page contains links to images of the Public Land Survey System for Wyoming. This information consists of survey plats and, for some townships, field notes. The plats are organized by county and then by township and range.

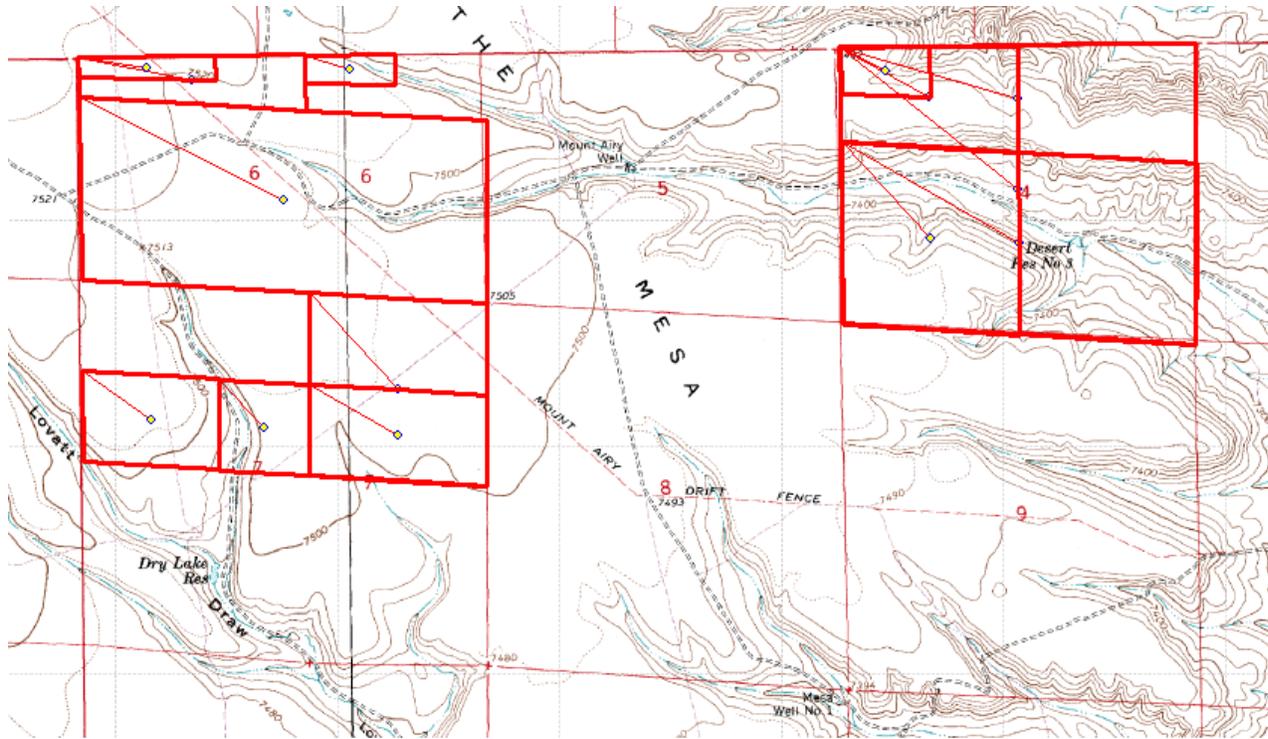
The individual county maps with links to the plats may be viewed by clicking the different counties on the map or by clicking the corresponding text links at the bottom of the page.

If field notes are available for a plat, there will be a label/link on the plat. Click on the label/link to view the field notes. Some of the field note files are quite large and may result in long load times depending on the speed of your internet connection.



**Plat images are NOT official records.
Official records are maintained at the BLM Wyoming State Office.**

I then clicked on Sublette County on this map and the map on the next page opened.



Let's talk first about the fine lines from the NW corners to the centers of each of the parcels being described.

For example there are 6 such lines in Section 4. (Two are on top of each other, the one to the center of the NW¼ and the one to the center of the N½ are the same line through the NW¼). You can see that the shapes of the N ½ and S ½ are NOT the same size, because the N ½ is up against the Township line and is therefore not a full ½ acreage. HOWEVER, it is all of the N ½ that is remaining. From the previous graphic, we can see that technically, legal descriptions speaking, there is NO S½ or N½. Instead the Lots shown as 5-8 make up the remaining lots in the north part, and Lots 9 - 16 make up what is usually the S½ .

Having said all of that, the two shapes representing the N½ and S½ were drawn by the program using the inputs.

```

2      n ½   SEC 4 T 32  N R 109  W PM6 Draw; ;
3      s ½   SEC 4 T 32  N R 109  W PM6 Draw; ;
    
```

I think that we MUST keep in mind that (for the most part) the typical All Topo Maps user is not a surveyor and it was not created as a surveying tool. But, say the legal description we are trying to draw for ALL of Section 4, T32N, R109W, 6th PM. By looking at the BLM survey map, I can see that Section 4 really has 12 Lots, numbered 5 - 16. But for graphic visualization if, I were to enter what was on Line one above, I'm going to get it all. Why? Because this Annotation Source file entry is going to use the GCDB and draw from the corners.

Staying with Section 4 of this example, look at the "height shortened" parcel that was drawn

```

1      SEC 4 T 32  N R 109  W PM6 Draw; ;
    
```

when the NW¹/₄NW¹/₄ was asked for. So, obviously, when you are dealing with Lots, they are NOT going to be the nice squares and rectangles that you have in section that do not have Lots. But for drawing purposes, this can be very useful.

Recently, I was mapping some lands where the descriptions had many ¹/₄ ¹/₄ and ¹/₂ ¹/₄ Aliquot parts. Because I had the display set to reference the center of the parcels like you see above, I could see that a part have been included because of the reference line. What I noticed was one ¹/₄ ¹/₄ had no line. This parcel was NOT included in the legal description, but everything around it was included. I later found out that this 40 acres was a "landlocked" parcel without any access. Simply by reading the descriptions, you are NOT going to identify such problems.

I'm going to jump ahead before talking about mapping "Tracts from Resurvey", to stay with this example.

Now, after entering the Aliquot parts, I would like to draw the outside of the whole parcel and hide the interior Aliquot lines.

That is easily done by first being sure that the red slash is NOT showing like this, on top of the over the PLS Magnet tool. If it is, left click on it and it will turn off.



Now select the Point to Point (P2P) cursor, on the left side of the PLS Magnet.



Move the cursor near the NW Corner of the Section and you can see that the PLS Magnet tool is now telling you that it is sensing the NW Corner of the ¹/₄NW¹/₄. Now I want to start "snapping" a line around all of the Aliquot parts in Section 6 & 7.

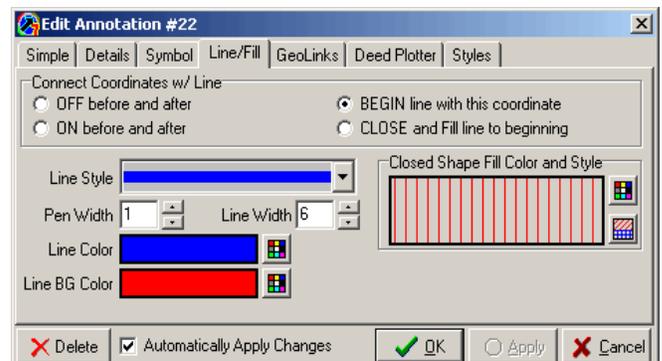
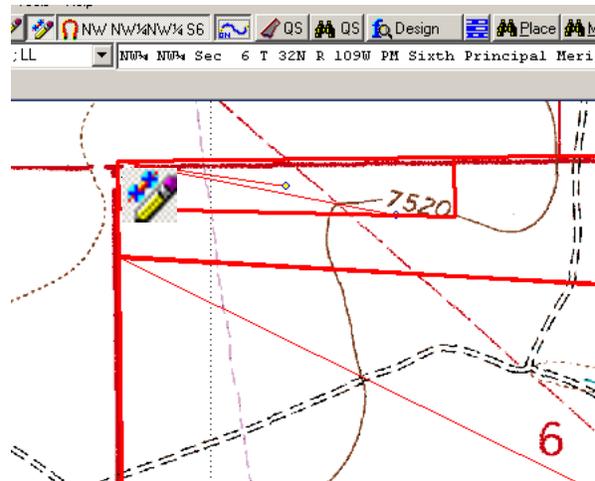


With the cursor located as shown (with the PLS Magnet ON & confirming it's location), I would Right click and select "Begin New Line".

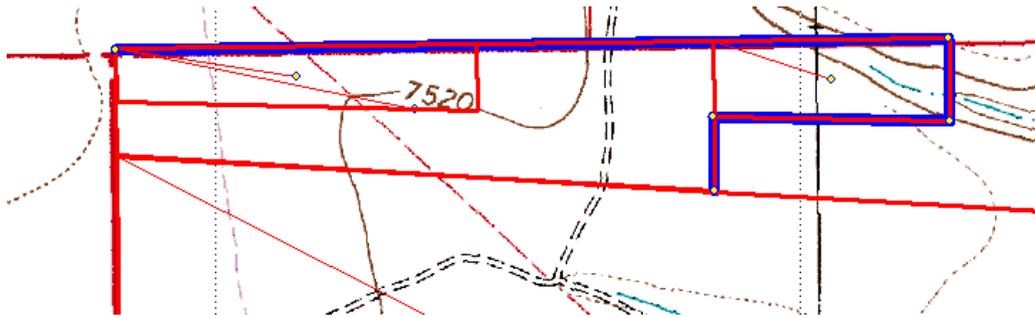
A small symbol circle will appear in the corner. For illustration sake, I would now move the cursor to the symbol circle, Right click over it and select Edit WP (whatever number it is).

When the Edit Annotation # XXX opened, I clicked on the Line / Fill tab and selected a Line Width of 6, so I could see it behind the original Aliquot part Red line.

Click Apply and OK back out to the background topo map.

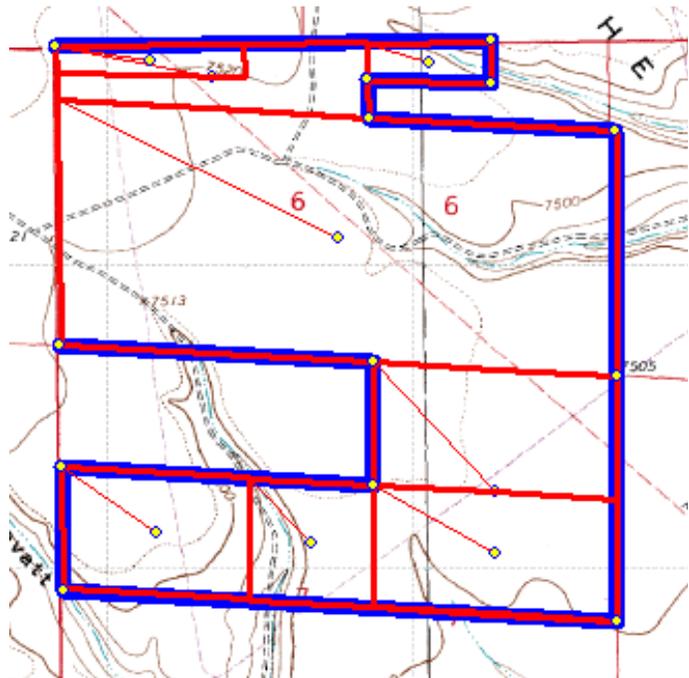


What you see below is the result of moving the P2P cursor (with the PLS Magnet tool ON) near some of the other Aliquot part corners and Left Clicking each. Now the blue line is being draw between each of the Aliquots corners that I “snapped” to.



After “snapping” around the corners, I stopped JUST BEFORE going back to the beginning point.

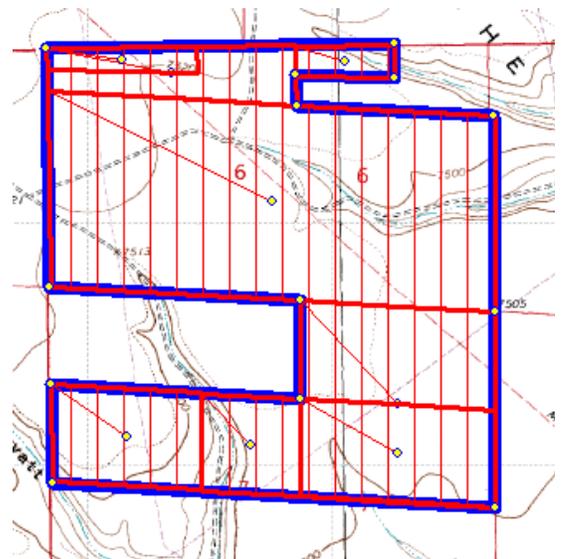
Now when I move the P2P cursor back over the last symbol and Right click, the menu (used before) opens and I selected: “Close Current Line.”



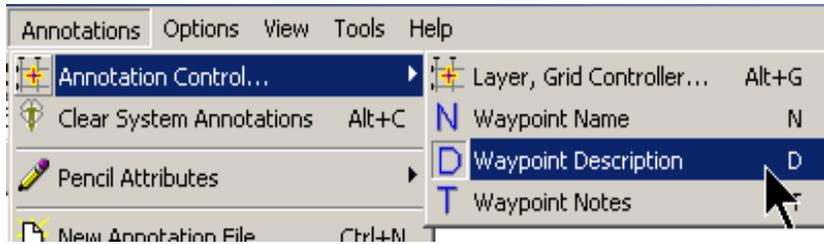
- Edit WP U28 - RA8
- Begin New Line
- End Current Line
- Close Current Line
- Insert After WP U28 - RA8
- New Spur From WP U28 - RA8
- Renumber Route RA8
- Erase Last
- Delete WP U28 - RA8

What you see now, is that the program added the last line to close the parcel back to the point you began from and added a vertical crosshatch.

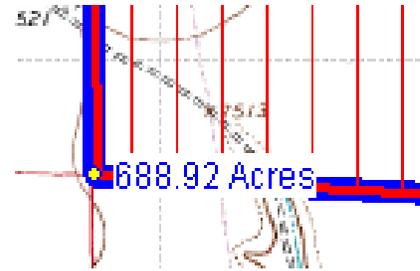
If your Waypoint Description is not turned on, at this point you can't see that it calculated the area inside the newly hatched parcel also.



I am now going to do two more things. First, to turn on the Waypoint Description button, click on the “Annotations” Menu item, move down to Annotation Control, the move the cursor to the right and go down to the Waypoint Description entry and Left Click.



With this done, now you can read the area that the program calculated as being 688.92 acres in this “snapped” around parcel. (I need to make a very important point here. In the Annotation Source Editor below, note the Lat./Lon. on Line 22 was the beginning point of this parcel and the Lat./Lon. on Line 36 was last point BEFORE the going back to the Line 22 point. When I asked for the “Close Current Line” feature, the program knew that I wanted that last leg to now be the blue color, so it added the color. However, it did NOT use the Line 22 Lat./Lon. as the ending one, but did add the <Line Close> command seen below on Line 35. So, if you deleted the <Line Close> command, you would lose the blue coloring on the last leg.)



Secondly, I want to do is to get rid of the individual Aliquot parts lines that made up the whole of the 688.92 acres. You can either remove them from the Annotation Source file, OR you can “hide” them inside that file. I prefer to “hide” them, which is simply done by adding a semicolon to the beginning of each of the Aliquot parts lines. So, now open the Annotation Source file, by clicking on the file name near the bottom of the screen or pressing the F8 key.

```

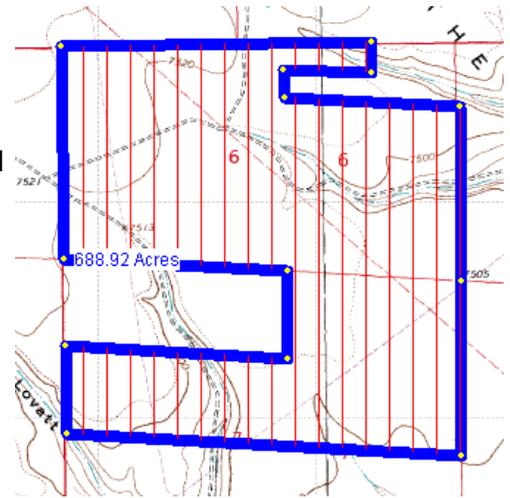
Annotation Source Editor: C:\ATM7Pro\USER\Pinedale maps.hwp
File Edit Search Options Convert Jump Reannotate Help
1 ;
2 ; SEC 4 T 32 N R 109 W PM6 DRAW; ; ;
3 ; N ½ SEC 4 T 32 N R 109 W PM6 DRAW; ; ;
4 ; S ½ SEC 4 T 32 N R 109 W PM6 DRAW; ; ;
5 ; NW ¼ SEC 4 T 32 N R 109 W PM6 DRAW; ; ;
6 ; SW ¼ SEC 4 T 32 N R 109 W PM6 DRAW; ; ;
7 ; NW ¼ NW ¼ SEC 4 T 32 N R 109 W PM6 DRAW; ; ;
8 ; NW ¼ NW ¼ SEC 4 T 32 N R 109 W PM6 DRAW; ; ;
9 ;
10 ; S ½ SEC 6 T 32 N R 109 W PM6 DRAW; ; ;
11 ; NW ¼ NE ¼ SEC 6 T 32 N R 109 W PM6 DRAW; ; ;
12 ; NW ¼ SEC 6 T 32 N R 109 W PM6 DRAW; ; ;
13 ; NW ¼ NW ¼ SEC 6 T 32 N R 109 W PM6 DRAW; ; ;
14 ;
15 ; SW ¼ NW ¼ SEC 7 T 32 N R 109 W PM6 DRAW; ; ;
16 ; SE ¼ NW ¼ SEC 7 T 32 N R 109 W PM6 DRAW; ; ;
17 ; S2 NE ¼ SEC 7 T 32 N R 109 W PM6 DRAW; ; ;
18 ; S ½ NE ¼ SEC 7 T 32 N R 109 W PM6 DRAW; ; ;
19 ;
20 ;
21 ; <Line BEGIN W=6>
22 42° 46' 46.411" N, 109° 53' 22.716" W; RA1; ; NW NW¼NW¼ S6
23 ; <Line ON>
24 42° 46' 46.398" N, 109° 52' 19.962" W; RA2; ; NE NW¼NE¼ S6
25 42° 46' 41.950" N, 109° 52' 19.955" W; RA3; ; SE NW¼NE¼ S6
26 42° 46' 42.408" N, 109° 52' 37.739" W; RA4; ; SW NW¼NE¼ S6
27 42° 46' 38.416" N, 109° 52' 37.715" W; RA5; ; SE SE¼NW¼ S6
28 42° 46' 36.585" N, 109° 52' 2.180" W; RA6; ; NE NE¼SE¼ S6
29 42° 46' 10.562" N, 109° 52' 2.413" W; RA7; ; SE SE¼SE¼ S6
30 42° 45' 44.522" N, 109° 52' 2.763" W; RA8; ; SE SE¼NE¼ S7
31 42° 45' 48.605" N, 109° 53' 22.679" W; RA9; ; SW SW¼NW¼ S7
32 42° 46' 1.639" N, 109° 53' 22.653" W; RA10; ; NW SW¼NW¼ S7
33 42° 45' 59.346" N, 109° 52' 37.817" W; RA11; ; NW SW¼NE¼ S7
34 42° 46' 12.364" N, 109° 52' 37.559" W; RA12; ; NW NW¼NE¼ S7
35 ; <Line CLOSE>
36 42° 46' 14.673" N, 109° 53' 22.627" W; RA13; %AREA%; SW SW¼SW¼ S6
37 ;
    
```

Seen here is the Annotation Source file where I added a semicolon and a space to lines 1 - 18 which effectively “hides” the Aliquot parts entries. The semicolon also acts like a spacer between different parts of the file, seen as lines 19 & 20.

Lines 21 - 36 were created when I “snapped” around the Aliquot parts.

Upon saving the editing in the Annotation Source file and returning back to the background topo map, you can see the Red outlined Aliquot parts are just “hidden” from view, but still in the file if you should want to re-display them.

You could now re-edit this parcel and change the outline color and line width, etc.



The best way to edit multiple lines, is to click on the BinoWpt button. That allows you to “hilite” multiple lines and Click the Edit at the bottom where the black arrow cursor is located.



This is good because any change you make applies to ALL of the “hilited” lines.

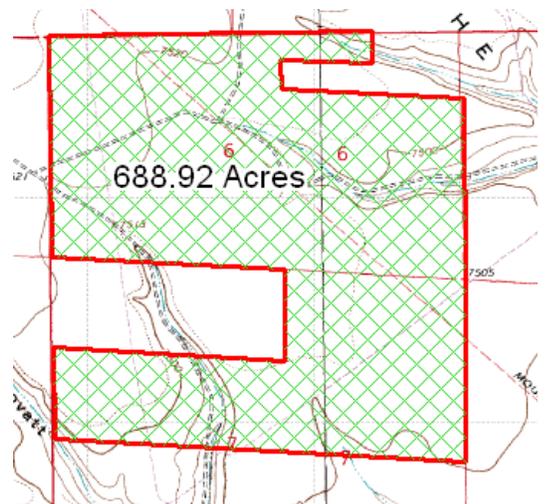
You can see that these line have the names of RA1 - RA13, which are the same as the Line number seen in the Annotation Source Editor file on the last page.

Num	Inc	Line	Name	Description	Note	Location
15	0	[C:\ATM7Pro\USER\Pinedale maps.hwp] 18				42° 45' 51.
16	0	[C:\ATM7Pro\USER\Pinedale maps.hwp] 23	RA1		Nw Nw¼Nw¼ S	42° 46' 46.
17	0	[C:\ATM7Pro\USER\Pinedale maps.hwp] 25	RA2		Ne Nw¼Ne¼ S6	42° 46' 46.
18	0	[C:\ATM7Pro\USER\Pinedale maps.hwp] 26	RA3		Se Nw¼Ne¼ S6	42° 46' 41.
19	0	[C:\ATM7Pro\USER\Pinedale maps.hwp] 27	RA4		Sw Nw¼Ne¼ S6	42° 46' 42.
20	0	[C:\ATM7Pro\USER\Pinedale maps.hwp] 28	RA5		Se Se¼Nw¼ S6	42° 46' 38.
21	0	[C:\ATM7Pro\USER\Pinedale maps.hwp] 29	RA6		Ne Ne¼Se¼ S6	42° 46' 36.
22	0	[C:\ATM7Pro\USER\Pinedale maps.hwp] 30	RA7		Se Se¼Se¼ S6	42° 46' 10.
23	0	[C:\ATM7Pro\USER\Pinedale maps.hwp] 31	RA8		Se Se¼Ne¼ S7	42° 45' 44.
24	0	[C:\ATM7Pro\USER\Pinedale maps.hwp] 32	RA9		Sw Sw¼Nw¼ S	42° 45' 48.
25	0	[C:\ATM7Pro\USER\Pinedale maps.hwp] 33	RA10		Nw Sw¼Nw¼ S	42° 46' 1.6
26	0	[C:\ATM7Pro\USER\Pinedale maps.hwp] 34	RA11		Nw Sw¼Ne¼ S7	42° 45' 59.
27	0	[C:\ATM7Pro\USER\Pinedale maps.hwp] 35	RA12		Nw Nw¼Ne¼ S7	42° 46' 12.
28	0	[C:\ATM7Pro\USER\Pinedale maps.hwp] 37	RA13	688.92 Acres	Sw Sw¼Sw¼ S	42° 46' 14.
29	0	[C:\ATM7Pro\USER\Pinedale maps.hwp] 42				44° 19' 4.2

Here is what I edited from the graphic at the top of the page to create this one on the right.

- Changed Line color to Red from Blue
- Changed Line width to 2 from 6
- Changed Hatch to Green Cross Hatch from Red Vertical
- Changed the Symbol size from 2 to -1 which hide the corner circle symbols
- Changed the Font size and Color for the Acreage
- Changed the Acreage location from E by 3 pixels to NE by 30 pixels

You could do more editing if you wanted.



Inserting NON-Aliquot Section Resurvey TRACTS

You may have noticed that I removed the language **“directly into ATMs from your Word Processor”**, from the topic heading for good reason.

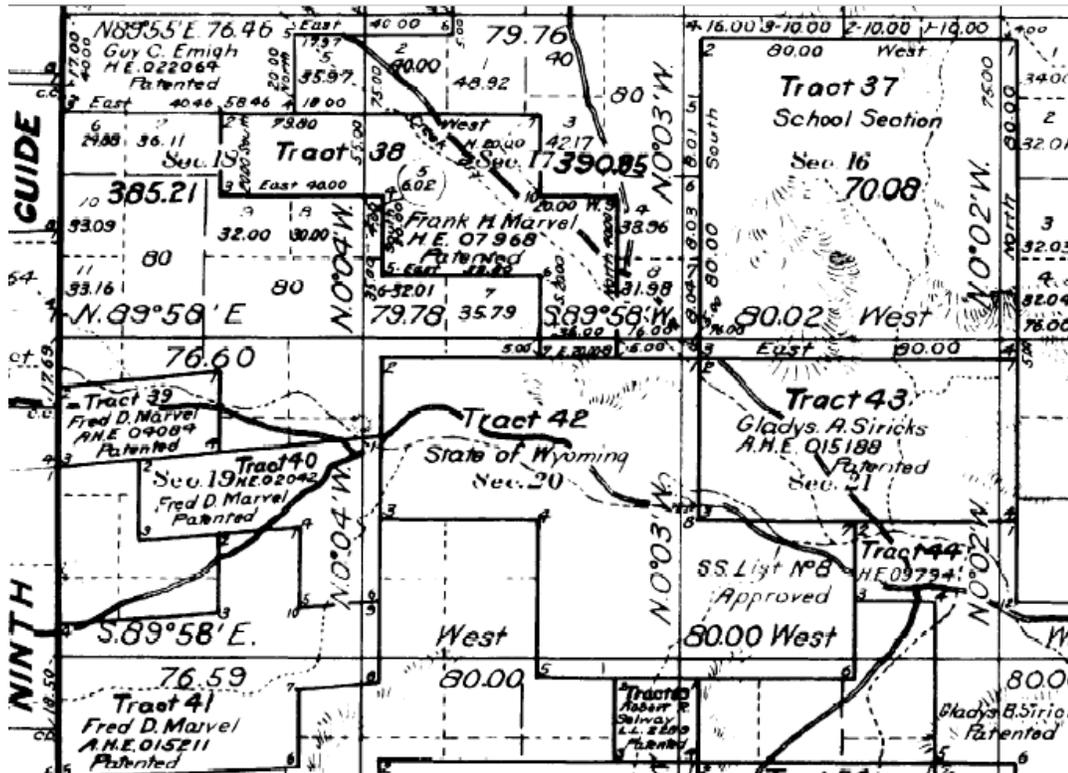
Non-Aliquot Section Resurvey TRACTS, DO NOT lend themselves to automatic insertion like Aliquot parts or Lots (using what the Aliquot parts should have been for Lots) . Let’s see a sample of a Resurvey map and see the Tracts that were created by the resurvey.

Very often (but I’ve not seen it all of the time), there will be a table like the one following that gives you some information as to which of the original Aliquot parts, Lots and Section numbers that are now parts of Resurveyed Tracts.

Resurvey Township N^o 56 North, Range N^o 72 West of the Sixth
In four sheets
Group N^o 57

INDEX TO SEGREGATED TRACTS

Resurvey Tract N ^o	Original Survey			Subdivisions	Entry		Status in Land Office
	T.	R.	Sec.		Kind	Number	
37	56	72	16	All	School Section		Grant
38	"	"	17	N ^o SW ^o , S ^o NW ^o , W ^o SE ^o	H. E.	07968	Patented
	"	"	18	S ^o NE ^o	A. H. E.	04084	Patented
39	"	"	19	Lot 1, NE ^o NW ^o	H. E.	02042	Patented
40	"	"	19	SE ^o NW ^o , S ^o NE ^o , NE ^o SE ^o	A. H. E.	015211	Patented
41	"	"	19	NW ^o SE ^o , Lot 4, SE ^o SW ^o , S ^o SE ^o			
	"	"	30	NW ^o NE ^o , NE ^o NW ^o , Lot 1			
42	"	"	20	N ^o , SE ^o	S. S.	List B	Approved
	"	"	21	SW ^o	A. H. E.	015188	Patented
43	"	"	21	N ^o			
44	"	"	21	E ^o SE ^o , NW ^o SE ^o			
	"	"	22	S ^o SW ^o			



There is no simple (or even difficult) solution for getting Resurvey Tracts into the All Topo Maps automatically.

Without the underlying BLM Resurvey maps, you do not have a clue where they are located in the Sections. You simply have to get BLM Survey and Resurvey Maps and look and estimate the Tract locations. You could then “snap” around the areas, but using the Point 2 Point cursor, but be sure that the PLS Magnet Tool is turned OFF (showing the red slash through it). If the PLS Magnet Tool is still active or ON (without the red slash), the program thinks that you want it to capture the nearest GCDB corner that it is sensing and displaying.

Hope this helps your Aliquot parts and Lots input into the All Topo Maps.

Mike