What are the Steps in Using the VSP-RS Module? (continued)

8. VSP computes for each segment the one-sided upper confidence limit (UCL) on the mean for each contaminant measured

9. If the UCL for a given segment for one or more contaminants equals or exceeds a specified action limit, then VSP bumps out that boundary segment in a triangular shape to create two new segments of same length

10. Each new segment is similarly sampled and tested using the UCL to see if it should be bumped out

11. VSP automatically prepares a summary report that includes a map of the final boundary, measurements obtained, statistical methods and assumptions

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Hypotheses Being Tested

► Comparing the UCL to the Action Limit is testing the null hypothesis

  ✍ H_o: Segment Population Mean = Action Limit

     versus the alternative hypothesis

 ✍ H_a: Segment Population Mean < Action Limit

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The null hypothesis is accepted as being true unless the evidence (data) strongly indicate that it should be rejected in favor of the alternative hypothesis. The burden of proof is on showing that the null hypothesis is false., i.e., on showing that the segment does not need to be bumped out.

Step 1: Download, Install and Open VSP

► Download VSP and the VSP user's guides from http://dqo.pnl.gov/vsp

► Install VSP by double clicking on the downloaded VSample.exe file

► Start VSP by clicking
   Start>Programs>Visual Sample Plan>Visual Sample Plan

► In the "Select VSP Version" box that appears, click "Range Sustainability Application Version" or "General (all inclusive) VSP"

► In the "VSP Advisor" box that appears
   ✍ Click on questions of interest about VSP to obtain answers
   ✍ Close the box when finished

► On the "Welcome to Visual Sample Plan" screen
   ✍ Click on questions of interest about VSP

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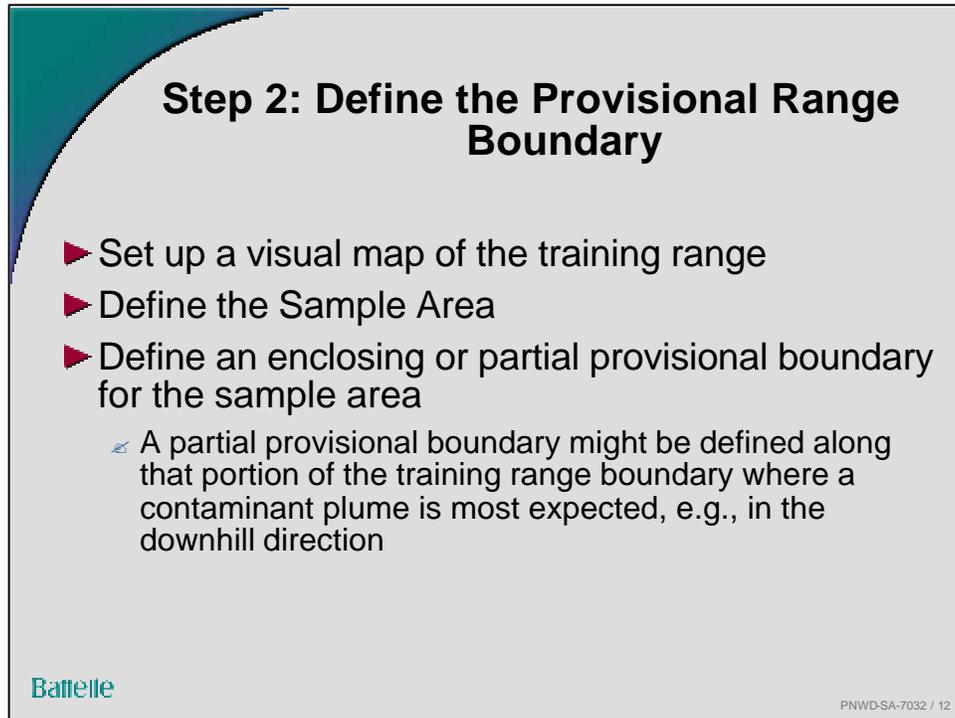
Step 2: Define the Provisional Range Boundary

► Set up a visual map of the training range

► Define the Sample Area

► Define an enclosing or partial provisional boundary for the sample area

  ✍ A partial provisional boundary might be defined along that portion of the training range boundary where a contaminant plume is most expected, e.g., in the downhill direction

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A provisional partial boundary can be placed at any location on the map, not necessarily on the boundary of the sample area. The provisional partial boundary may be placed at the field location (boundary) such that the soil on one side of the boundary is expected to be contaminated and the soil on the other side is expected to be uncontaminated.

Set Up a Visual Map of the Range

► Save a Shape (SHP) or Data Exchange Format (DXF) file of the training range in the VSP folder (C:\Program Files\Visual Sample Plan)

► Load the SHP or DXF file into the current VSP project by
  - clicking **Map** on the menu bar
  - clicking **Load Map from File** on the **Map** drop-down menu
  - double clicking on the desired file

► If a SHP or DXF file of the training range is not available, VSP drawing tools can be used to draw the range map

► Examples of a loaded DXF file and a site map drawn using the VSP drawing tool "Draw Line or Polyline" are provided on the next two slides
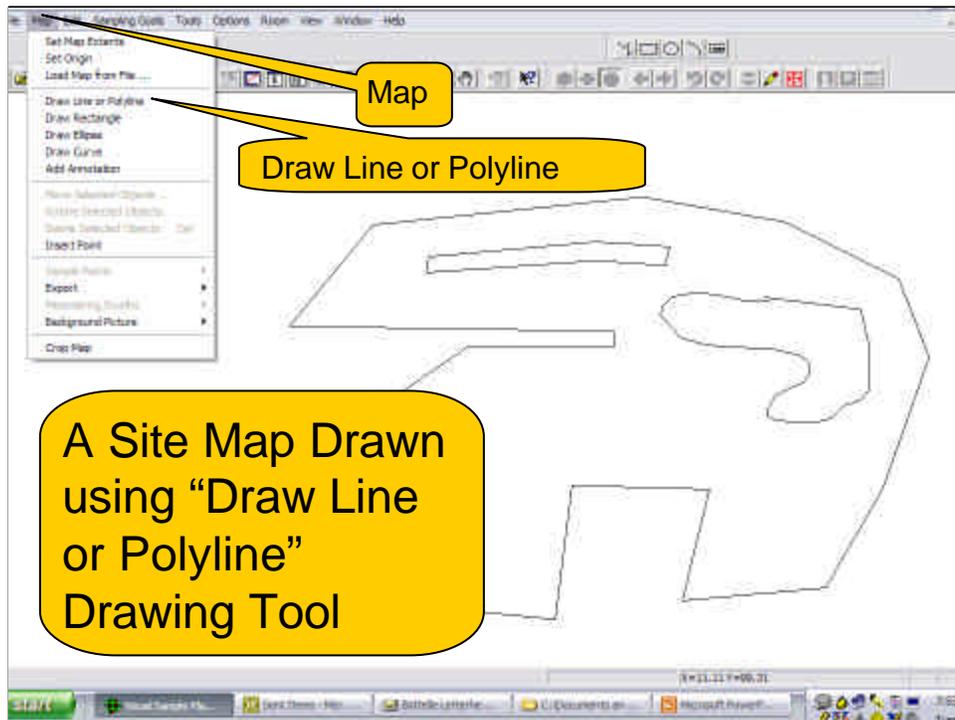
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A DXF File Loaded into VSP

Map

Load Map from File

Map Drop-Down Menu

A Site Map Drawn using "Draw Line or Polyline" Drawing Tool
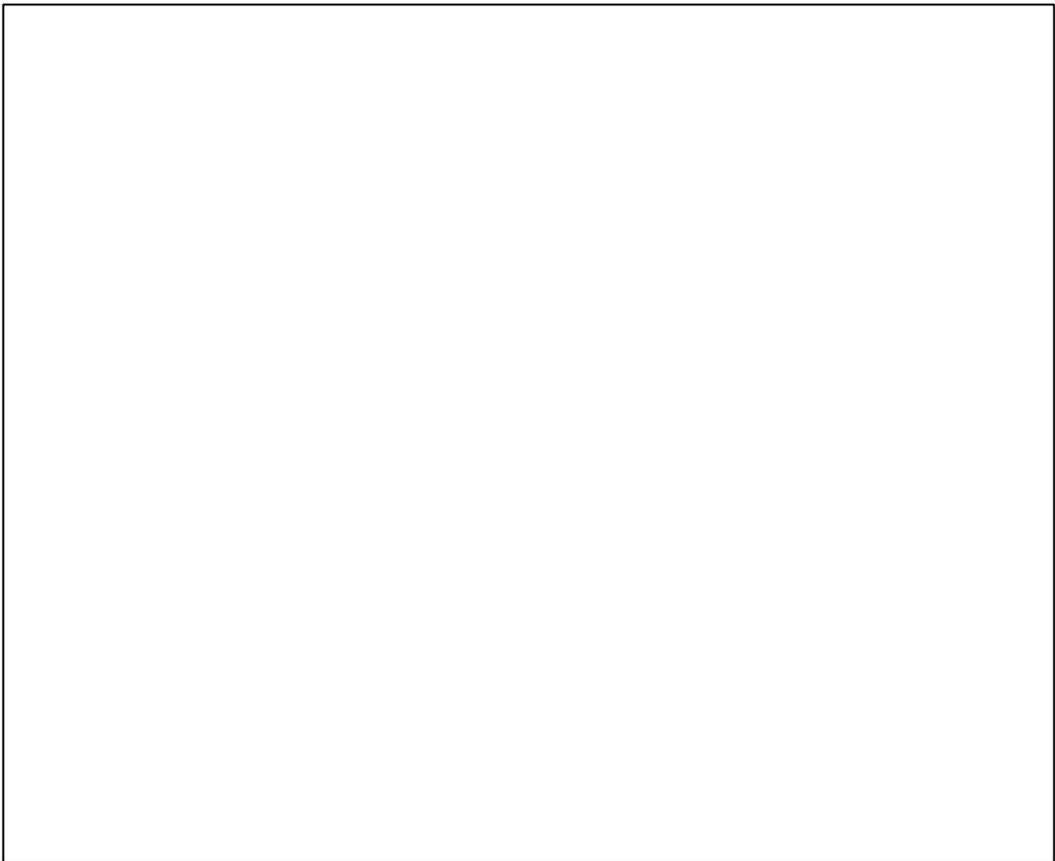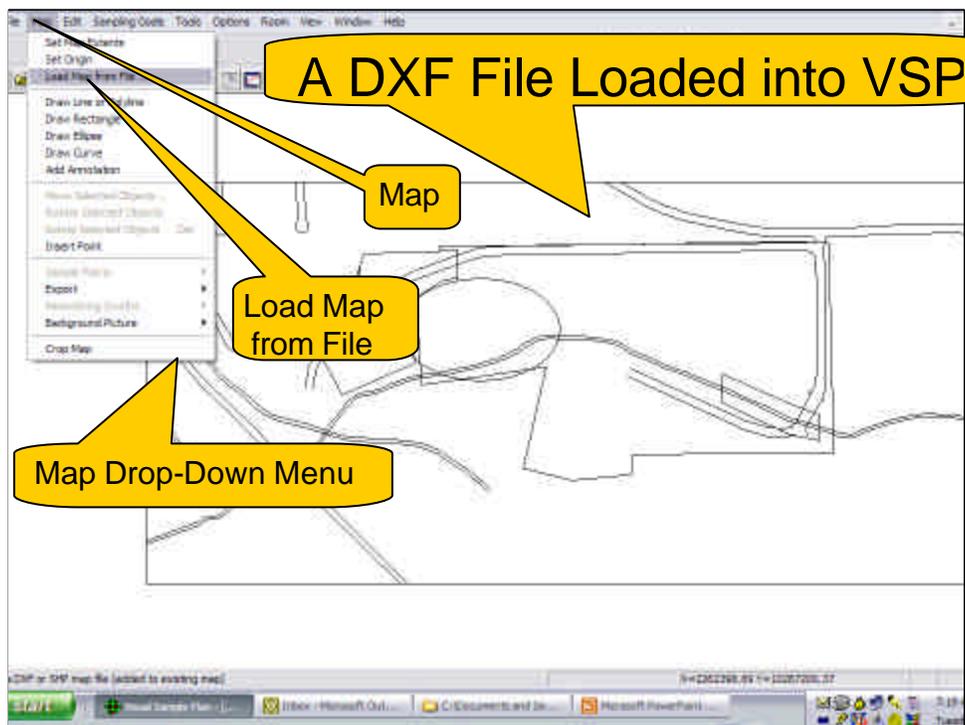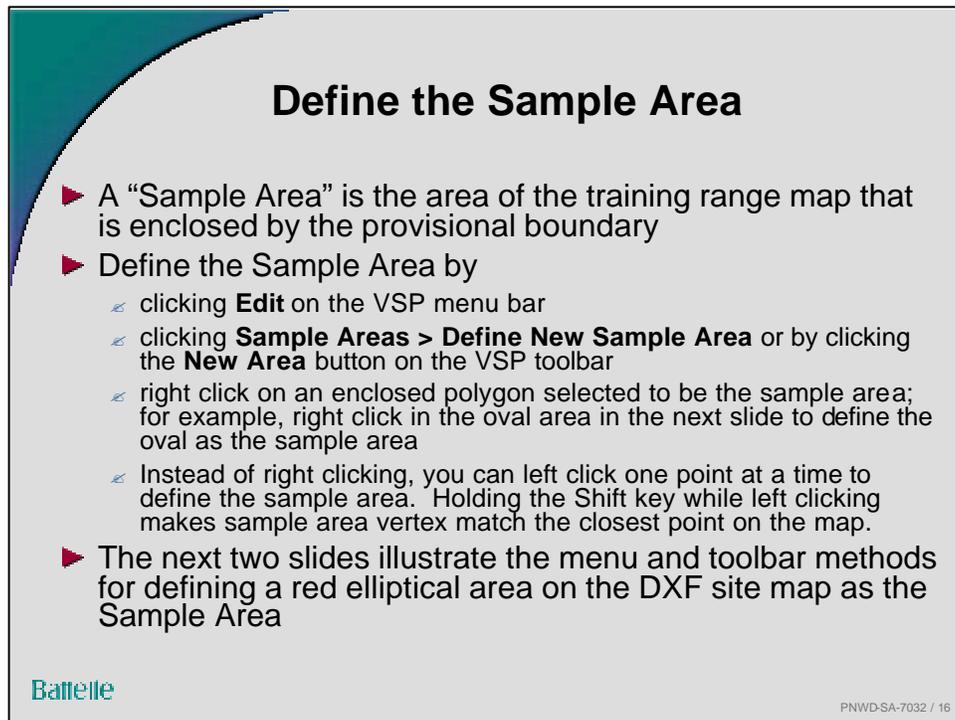
Other drawing tools on the MAP drop down menu are:

> Draw Rectangle

> Draw Ellipse

> Draw Curve

The VSP User's Guide (Hassig et al 2005) describes how to use these drawing tools.

The **New Area** button is the 6th button from the left on the VSP toolbar. Clicking this button or **Edit > Sample Areas > Define New Sample Area** brings up the **"Color Dialog Box**," which permits selecting a preferred color to highlight the Sample Area. The **Sample Area** is created by positioning the cursor inside the desired enclosed area on the map and right-clicking the mouse. A dialog box appears that shows the size of the **Sample Area** in square meters, square feet or square inches, as selected. If the **Sample Area** is relative simple (a rectangle, square, circle, ellipse or simple polygon) it is not necessary to first load a map of the training range. Instead the **Sample Area** can be drawn using one of the drawing tools on the **MAP** drop-down bar. Other methods for creating the **Sample Area** are provided in the VSP User's Guide by Hassig et al. (2005) that can be downloaded from http://dqo.pnl.gov/vsp.