Transparency, Textures and Drawing Order in 3D View

LSS™

Introduction

From time to time we receive a call asking detailed questions about how LSS performs transparency between different over-displayed surveys in 3D view. For the most part, this subject is pretty straightforward to understand. However, there are situations where the nature of any textures which are being used in the survey or any over displayed surveys throws up what are considered unexpected results. We have documented the rules in the following document, but invite users to contact us if they need any further information.

Transparency in Textures

Any bitmap used as a texture that has at least one black (RGB – 0, 0, 0) pixel is considered to have transparency. The black pixels will become 100% transparent in 3D view. If you require a texture that has black in it but not transparent, use a 'nearly' black colour (RGB – 0, 0, 1). A point, link or surface that has a texture deemed to have transparency will be drawn in a different order to those that don't.

Drawing Order and Transparency

Transparency is achieved in 3D View by blending the colour of what is about to be drawn with that which has already been drawn; the amount of blending being controlled by transparency percentage. Black pixels in textures are considered 100% transparent and therefore no blending is carried out. It can be seen therefore that the order in which items are drawn has an important effect on how transparency appears in the final frame.

The order in which 3D View draws items is as follows :-

1. The Sky or background colour.
2. Opaque (0% transparent) items from the 36 overdrawn surveys in the order listed.
3. Opaque items from the current survey.
4. Items with transparency from the 36 overdrawn surveys.
5. Items with transparency from the current survey.
6. The flood plane, if specified.

Consider the 3D View setup below :-
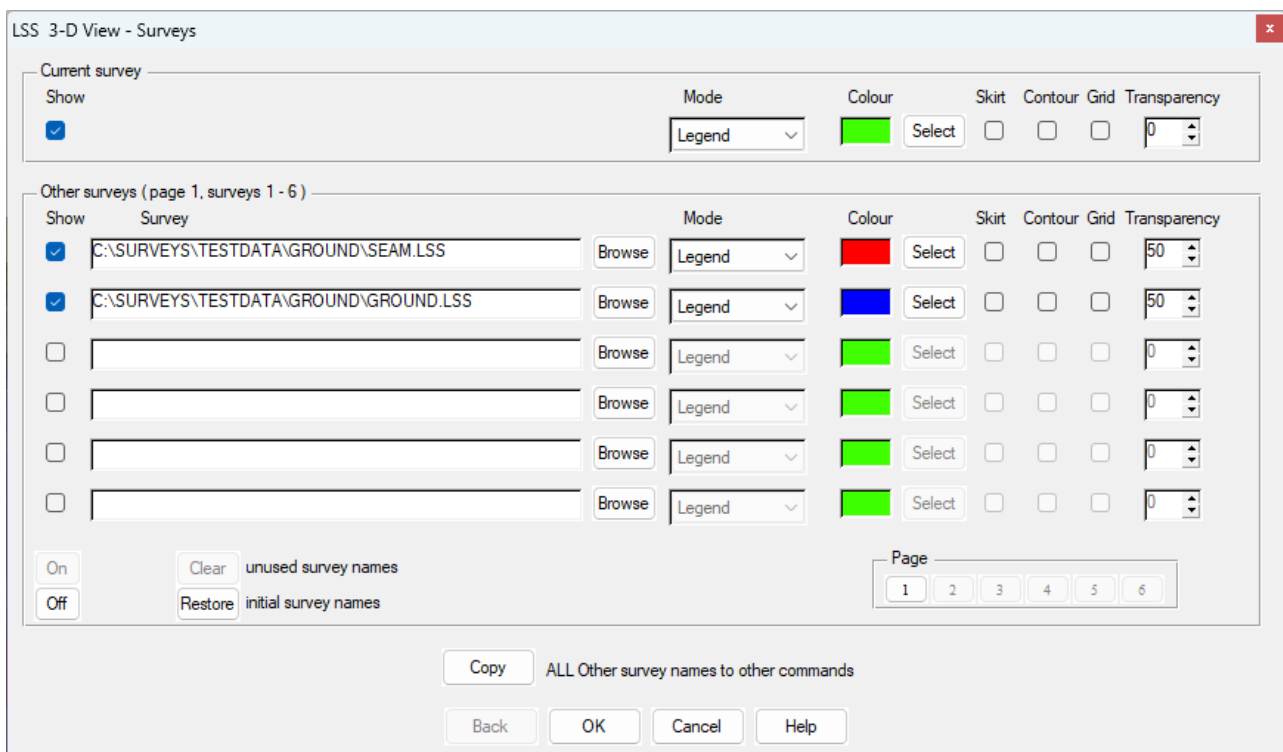
The current survey is drawn first, being the only opaque item listed. Then the Red and Blue surveys, which are all 50% transparent, are drawn in that order. When viewed from one particular direction the transparency appears correct as shown below.
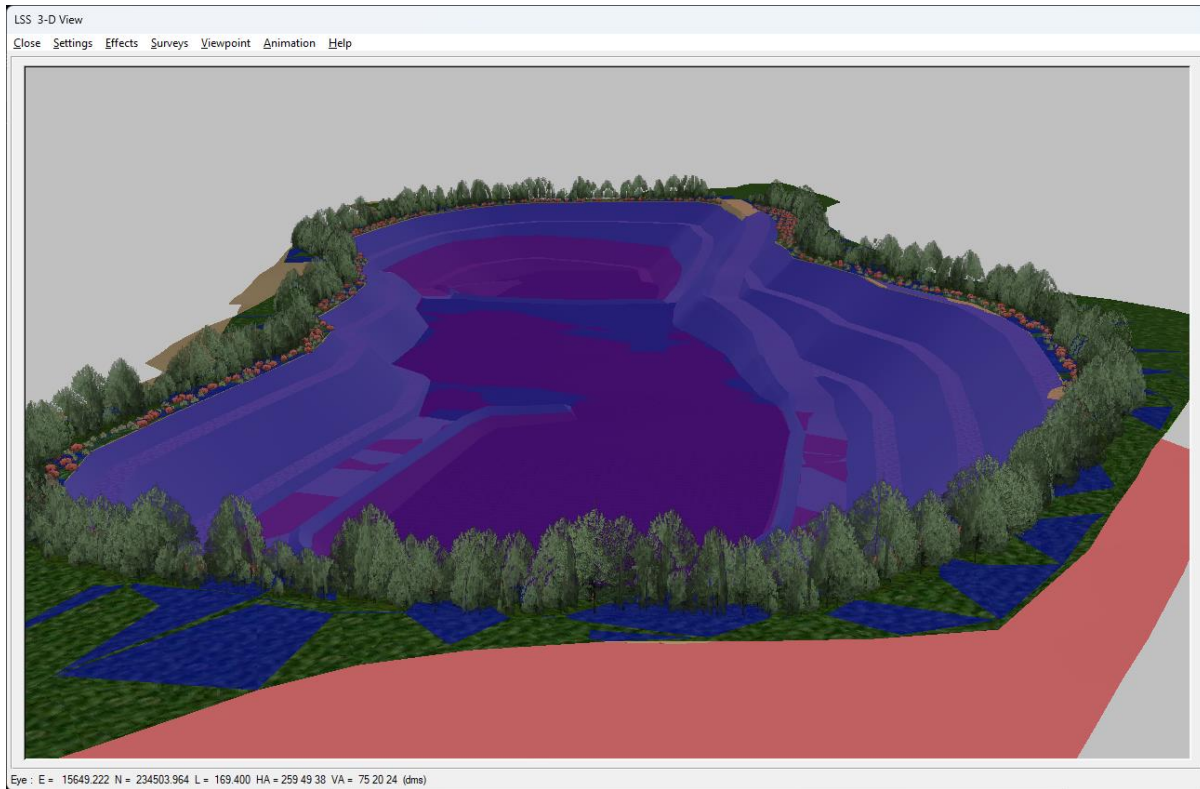
The Current survey is drawn first, the Red survey is blended on top of it, and finally the Blue survey is blended on top of that.

Turning off one of the surveys (in this case the Blue survey), the Red survey can be seen more clearly, but due to its transparency the current survey can still be seen.
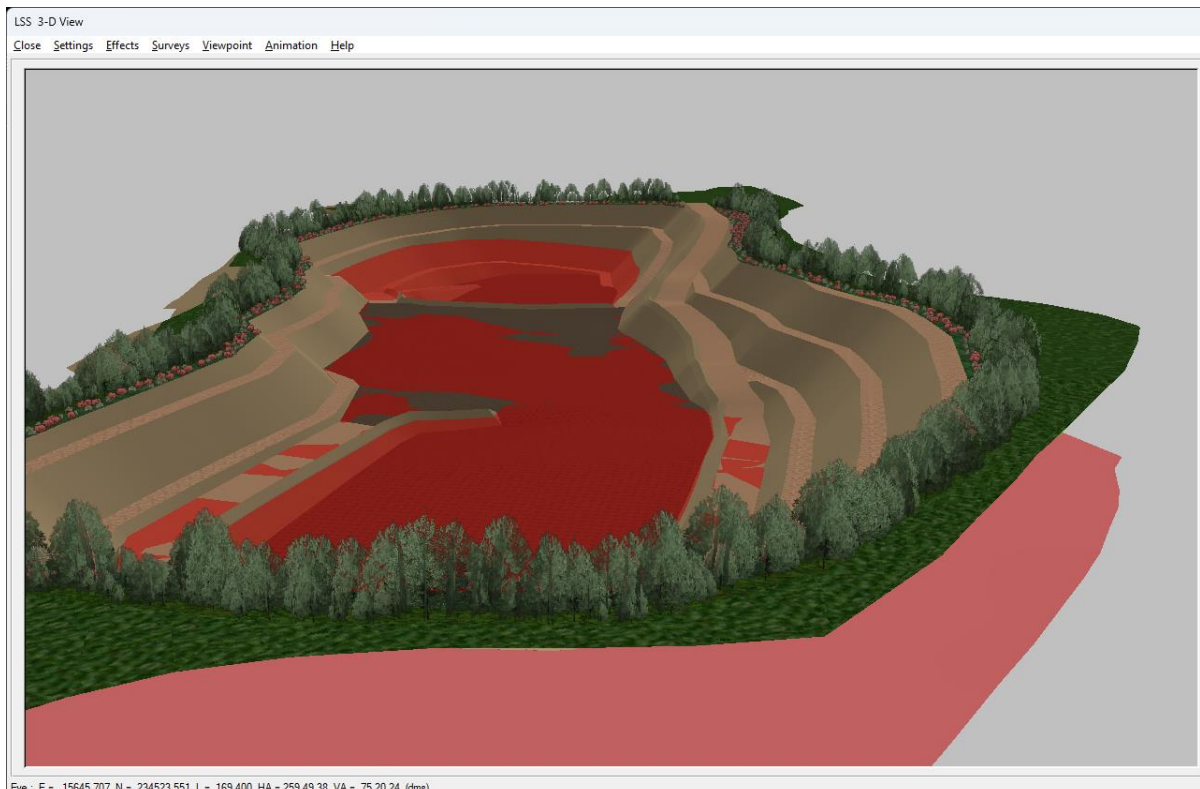
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