



TIM O'HARE ASSOCIATES  
SOIL & LANDSCAPE CONSULTANCY

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10<sup>th</sup> June 2009

Our Ref: TOHA/09/3418/CS/Iss.1  
Your Ref: as below

Dear Mr Spetch

**RE: Topsoil Analysis Report : Bury St Edmunds – Clay Loam BU/CL/0509**

We have completed the analysis of the 2 No. *Clay Loam* samples recently submitted, referenced *BU/CL/0509–TOP* and *BU/CL/0509–BOTTOM* and have pleasure reporting our findings.

The purpose of the analysis was to determine the suitability of the topsoil samples for landscaping purposes.

This report presents the results of analysis for the BU/CL samples submitted to our offices on 15<sup>th</sup> May 2009. This report relates to the samples submitted and should be considered 'indicative' of the topsoil source. The report and results should therefore not be used by 3<sup>rd</sup> parties as a means of verification or validation testing, especially after the topsoil has left the British Sugar factory.

**SAMPLE EXAMINATION**

The samples were consistent in appearance and were described as dark greyish brown, slightly moist, friable CLAY LOAMS with moderately developed fine to coarse granular and subrounded blocky structures. The samples were virtually stone-free and no deleterious materials, roots or rhizomes of pernicious weeds were observed.

**ANALYTICAL SCHEDULE**

The samples were submitted to a UKAS and MCERTS accredited laboratory for a range of physical and chemical tests to confirm the composition and fertility of the soils, and the absence of potential contaminants. The following parameters were determined:

- particle size analysis and stone content;
- pH value;
- electrical conductivity values (CaSO<sub>4</sub> and water extracts);
- major plant nutrients (N, P, K, Mg);
- organic matter content;
- heavy metals (As, Ba, Br, Cd, Cr, Cu, Pb, Hg, Ni, Se, V, Zn, B);
- soluble sulphate, elemental sulphur, acid volatile sulphide;
- total cyanide and total (mono) phenols;
- aromatic and aliphatic TPH (C5-C35 banding);
- speciated PAHs (US EPA16 suite).

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The results are presented on the attached Certificate of Analysis and an interpretation of the results is given below. The interpretation considers the use of the BU/CL topsoil for landscaping purposes.

In the absence of site-specific criteria, the concentrations of the potential contaminants that affect human health have been assessed against a number of references, including the Soil Guideline Values (SGVs) for residential end-use (Contaminated Land Exposure Assessment (CLEA) (EA/DEFRA: 2009). The SGVs currently consider a limited range of parameters so where a potential contaminant is not covered by the CLEA Model other relevant schedules and guidelines for contamination assessment have been used, for example the CIEH/LQM Generic Assessment Criteria, as well as professional judgement.

## **RESULTS OF ANALYSIS**

### **Particle Size Analysis**

The samples both fell into the *clay loam* texture class and would be described as moderately heavy in texture.

#### Benefits

Heavy textured soil such as this has good water and nutrient retention capacities. The soil would be considered suitable for non-demanding planting environments such as hedgerows and highway embankments. In addition the soil would be ideal for landscape schemes that require moisture retentive soils and for plant species that thrive in such conditions. Such environments would include:

- Wet meadow planting;
- Wet woodland;
- Swales.

#### Limitations

Heavy textured soils are typically slow-draining and may suffer from seasonal waterlogging following periods of prolonged or heavy rainfall. The soil would not be ideally suited to demanding planting environments (such as shrub beds, tree pits or high foot traffic amenity grass) or plant species that require or prefer light or free-draining soils.

### **Stone Content**

The samples were virtually stone-free and, as such, stones will not restrict the use of the soil for any landscaping purposes.

### **pH and Electrical Conductivity Values**

The samples were slightly alkaline in reaction (pH 7.3-7.4) with pH values that would be suitable for landscaping purposes, including the majority of tree and shrub species and grass cultivars used in commercial and domestic landscaping.

The electrical conductivity (salinity) values were moderate, indicating that soluble salts should not be present at levels that would be harmful to plants.

### **Organic Matter and Fertility Status**

The samples were well supplied with organic matter and all major plant nutrients. The C:N ratios were low and suitable for general landscaping purposes.

The sample contained levels of extractable phosphorus and extractable potassium that slightly exceeded the maximum permissible values given in *BS3882:2007* – Table 1. In some instances, excess nutrients can indicate an elevated salinity problem or nutrient imbalance. On this occasion, neither of these problems is present and the phosphorus and potassium levels should not adversely affect soil function in any way.

The samples are too fertile for some habitats such as species-rich, wildflower grassland, which require low fertility soils.

### **Potential Contaminants**

Of the potential contaminants determined, none was found at levels that would indicate significant contamination.

### **CONCLUSION**

The purpose of the analysis was to determine the suitability of the BU/CL samples for landscaping purposes.

From the soil examination and laboratory analysis, the samples are described as slightly alkaline, virtually stone-free clay loams with adequate structures. The samples were moderately organic and contained high levels of major plant nutrients, particularly phosphorus and potassium. No potential contamination was found with respect to the parameters determined.

To conclude based on our findings, the soil represented by these samples is considered suitable for non-demanding planting environments, such as native transplants, and for landscape schemes that specifically require *moisture retentive soils*.

The slightly elevated levels of phosphorus and potassium should not adversely affect the function and performance of the topsoil in any way and this sample meets all other requirements of the *British Standard for Topsoil (BS3882:2007) – Multipurpose Grade*.

It is important that the physical condition of the soil is maintained and as such, all soil handling operations should be carried out when the soil is dry and non-plastic (friable) in consistency. Any stockpiling operations should be carried out when the soil is dry and the surface of the heap should be sealed in to weather-proof the stockpile.

### **Soil Handling Recommendations**

The heavy texture of this soil will make it particularly vulnerable to physical degradation (compaction) during all phases of soiling and landscaping works. It is important to ensure that the soil is not unnecessarily compacted by trampling or trafficking, and soil handling should be stopped during and after heavy rainfall, and not continued until the soil has returned to a friable state.

If this soil is damaged its potential for re-use will be limited. Therefore, to maintain the physical condition of the soil and avoid structural damage, all phases of soil handling operations (e.g. respreading, cultivating, and planting) should only be carried out when the soil is reasonably dry and non-plastic (friable) in consistency.

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We hope this report meets with your approval and provides the necessary information. Please do not hesitate to contact the undersigned if we can be of further assistance.

Yours sincerely

**Ceri Spears**  
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Soil Scientist

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Principal Consultant

For and on behalf of Tim O'Hare Associates LLP

