Contents

Pirrie, D., Ruffell, A. & Dawson, L. A. Environmental and criminal geoforensics: an introduction 1

Bowen, A. M. & Caven, E. A. Forensic provenance investigations of soil and sediment samples 9

Bergslien, E. T. X-ray diffraction and field portable X-ray fluorescence analysis and screening of soils: project design 27

Pirrie, D., Rollinson, G. K., Power, M. R. & Webb, J. Automated forensic soil mineral analysis; testing the potential of lithotyping 47

Guedes, A., Murray, R. C., Ribeiro, H., Sant’Ovalia, H., Valentim, B., Rodrigues, A., Leal, S. & Noronha, F. The potential application of magnetic susceptibility as a technique for soil forensic examinations 65

Di Maggio, R. M. & Nuccetelli, L. Analysis of geological trace evidence in a case of criminal damage to graves 75

Ispihording, W. C. Using soil mineral signatures to confirm sources of industrial contaminant trespass 81

Carvalho, Á., Ribeiro, H., Guedes, A., Abreu, I. & Noronha, F. Geological and palynological characterization of a river beach in Portugal for forensic purposes 87

Guedes, A., Murray, R. C., Ribeiro, H., Rodrigues, A., Valentim, B., Sant’Ovalia, H. & Noronha, F. Integration of different sediment characteristics to discriminate between sources of coastal sediments 97

McKinley, J. How useful are databases in environmental and criminal forensics? 109

Eby, G. N. Instrumental neutron activation analysis (INAA) and forensic applications 121

Purvis, O. W., Williamson, B. J., Spiro, B., Udachin, V., Mikhailova, I. N. & Dolgojopolova, A. Lichen monitoring as a potential tool in environmental forensics: case study of the Cu smelter and former mining town of Karabash, Russia 133

Ruffell, A., Pirrie, D. & Power, M. R. Issues and opportunities in urban forensic geology 147

Ruffell, A. Solid and drift geology in forensic investigations 163

Donnelly, L. & Harrison, M. Geomorphological and geoforensic interpretation of maps, aerial imagery, conditions of diggability and the colour-coded RAG prioritization system in searches for criminal burials 173

Donnelly, L. The design and implementation of a high-assurance forensic geology and police search following the discovery of the Staffordshire (Anglo Saxon) Gold Hoard 195

Larizza, M. & Forbes, S. L. Detection of fatty acids in the lateral extent of the cadaver decomposition island 209

CONTENTS

Hansen, J. D. & Pringle, J. K. Comparison of magnetic, electrical and ground penetrating radar surveys to detect buried forensic objects in semi-urban and domestic patio environments 229

Richardson, T. & Cheetham, P. N. The effectiveness of geophysical techniques in detecting a range of buried metallic weapons at various depths and orientations 253

Index 267