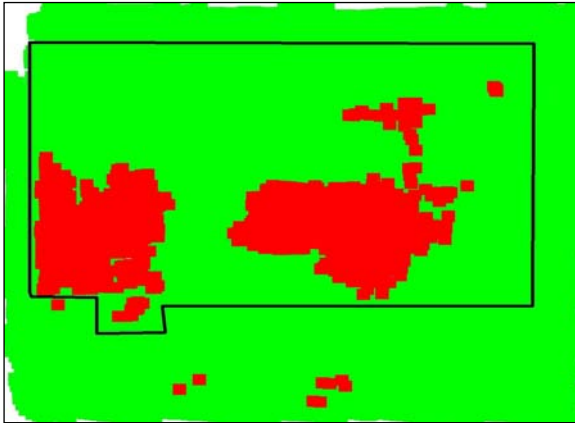


ERG Experience and Capabilities

Precision Excavation Control Method for Sorting Soils

ERG is currently applying their Precision Excavation Control Method (PECM) at a site in Pennsylvania. It has proven to be a successful alternative to soil sorting machines where soils are classified as being above or below the cleanup criteria, based on gamma emission rates of a relatively thin layer of material. Contaminated areas are excavated in 15-cm lifts. Portions of the lift that are identified as radioactive waste are identified and the waste placed in the “Disposal Pile” for eventual off-site disposal. The remaining portion of the lift is excavated and placed in the “Clean Pile”. Subsequent lifts are removed in a similar manner until the depth exceeds the depth of contamination. At that point, the Final Status Survey is performed. The PECM is described below.

Conventional gamma radiation survey equipment is coupled to a global positioning system and data logger. Three units are mounted onto a Polaris ATV and driven over the site at a slow speed. For each unit a 2-inch by 2-inch NaI detector is mounted at 18 inches above the ground surface. The distance between the detectors is approximately 2.5 feet. The GPS data loggers store gamma count-rate data and corresponding x, y, z coordinate data at one-second intervals. The speed with which the ATV is driven depends on the characteristic size of the contaminated areas. Prior to excavation a correlation between radionuclide concentration and gamma count rate is established. The correlation is continuously updated throughout the duration of the excavation.



After each lift has been scanned, the data are downloaded to a field computer and analyzed using ArcView GIS. Each data point is assigned a color dependent upon the count-rate range in which it lies. Color ranges are chosen to differentiate between the waste classifications “Clean Pile” and “Disposal Pile”. GIS files showing the boundaries of these areas are then uploaded to a GPS unit. An operator then uses stakes or spray paint to delineate the boundaries between the “Clean Pile” and the “Disposal Pile” material in the field prior to excavation. These boundary files are also uploaded to a GPS system in the excavator allowing the excavator operator to confirm what is marked on the ground matches

that shown in cab. Independent soil sampling and analysis have shown that this method provides the desired accuracy at a very low cost.