

SITEWIDE GROUNDWATER INVESTIGATION

RECOMMENDATIONS

MAY 1996

**235 PEACHTREE STREET, N.E.
NORTH TOWER, SUITE 2000
ATLANTA, GEORGIA 30303**

SITEWIDE GROUNDWATER INVESTIGATION RECOMMENDATIONS

The Plum Brook Ordnance Works (PBOW) Sitewide Groundwater Investigation included assessment of the groundwater flow regime and the groundwater quality in the two hydrostratigraphic units at the site: the unconsolidated overburden and the bedrock.

The groundwater investigation performed at the PBOW was designed as a preliminary investigation. The hydrogeologic regime at the site has not been adequately delineated. Additional information is needed to assess the seasonal variation in the groundwater flow patterns in both the overburden and bedrock hydrostratigraphic units; to evaluate the vertical component of flow between the overburden and the bedrock and the resulting potential for contaminant transport to the bedrock aquifer; and to characterize the groundwater quality, particularly with respect to nitroaromatics.

Groundwater Quality

In order to evaluate groundwater quality, Dames & Moore recommends that the groundwater chemistry data from this investigation be confirmed by additional sampling and laboratory analysis. Because groundwater in the overburden in some areas is present seasonally, such sampling should be scheduled for late winter or early spring when water would be expected to be present in most of the overburden wells at the site. Dames & Moore recommends that, at a minimum, two additional rounds of groundwater samples be collected with approximately 3 months between sampling events.

Groundwater Flow Regime

In order to characterize the groundwater flow regime, Dames & Moore recommends that the following activities be performed, at a minimum.

1. An additional bedrock groundwater monitoring well should be installed at TNT Area B. The recommended location for this well is on the north

side of TNT Area B near overburden well MK-MW17. Low levels of nitroaromatics were detected in well MK-MW17 during this investigation. The purpose of this well is to evaluate whether nitroaromatics are migrating from the soils into the bedrock on the downgradient side of TNT Area B.

2. An additional bedrock well should be installed adjacent to overburden well DM-MW7 at the Pentolite Road Red Water Ponds. The purpose of this well is to evaluate whether nitroaromatics are migrating from the overburden into the bedrock immediately beneath the former ponds.
3. Dames & Moore recommends that an additional overburden well be installed at the West Area Red Water Ponds, on the north bank of the west pond. Red water was observed in a test pit located in this area and characterization of the groundwater quality is needed.
4. In order to evaluate the vertical component of flow between the overburden and bedrock hydrostratigraphic units, well pairs should be installed. Installation of two bedrock wells, one near overburden well MK-MW17 at TNT Area B and one near overburden well DM-MW7 at the Pentolite Road Red Water Ponds, provides two additional data points. Dames & Moore recommends that two additional data points be established. A third bedrock well is recommended at TNT Area A, near overburden well DM-MW10. Low levels of explosives residues were detected in this well. Dames & Moore also recommends that a fifth overburden well be installed at TNT Area C, near bedrock well BED-MW13. Low levels of nitroaromatics were detected in well BED-MW13.
5. A program of regular monthly water level measurements should be instituted at the site in order to establish seasonal variations in water table fluctuations and groundwater flow conditions.
6. If groundwater contamination of the bedrock aquifer is confirmed, aquifer testing should be performed to evaluate groundwater flow parameters in each of the hydrostratigraphic units at the site. Knowledge of the groundwater flow parameters is necessary for further assessment of the direction and rate (both horizontal and vertical) of groundwater movement. This assessment will be necessary to adequately evaluate potential remediation methods.