is a line scanning device which detects energy in seven spectral intervals or bands including six in the visible and reflected infrared ranges and one in the thermal range (Table 1). Energy detected by the TM is quantized to 256 levels or digital numbers (DNs, zero to 255). The effective ground resolution (or instantaneous field of view) of the TM detectors is approximately one-fifth acre (1/5 ac) in the reflective bands. The thermal band, with its much coarser resolution of about 3.5 acres, is generally used only in geothermal investigations. The single sample unit is referred to as a pixel (picture element). Each full TM scene is 6967 pixels wide (columns) by 5965 pixels high (rows). (For computing purposes, this translates to 6967*5965 = 41,558,155 bytes of data per scene *per band.*) For digital or computer assisted processing, Landsat data are available on magnetic computer compatible tapes (CCTs). Digital image analysis provides a means of more easily incorporating information derived from remotely sensed data into existing spatial databases and of handling data for very large areas.

Table 1. Characteristics of Landsat TM data.

| **Band Number** | **Wavelength ($\mu$m)** | **Spectral Region** | **Resolution (m)** |
|---|---|---|---|
| 1 | .45 - .52 | Blue | 28.5 |
| 2 | .52 - .60 | Green | 28.5 |
| 3 | .63 - .69 | Red | 28.5 |
| 4 | .76 - .90 | Near Infrared | 28.5 |
| 5 | 1.55 - 1.75 | Mid-infrared | 28.5 |
| 7 | 2.08 - 2.35 | Mid-infrared | 28.5 |
| 6 | 10.40 - 12.50 | Thermal | 120 |

Landsat 5 TM coverage of any geographical area is repeated every 16 days. The satellite orbit is polar and sun-synchronous; that is, the satellite crosses the equator at about the same local time (approximately 9:30 a.m. standard time) in each north-south transit. Repetitive, sun-synchronous, synoptic coverage at relatively high spatial and spectral resolutions make the Landsat TM a logical and useful source of data for resource inventory and management.

**Acquisition of TM Data**

Landsat 5 TM digital data were acquired from the Earth Observation Satellite Company (EOSAT) in Lanham, Maryland (Table 2). Major portions of five Landsat scenes were needed to cover all of the A/P drainage basin with the exception of small areas in Johnston, Wayne and Lenoir Counties in North Carolina and Charlotte and Mecklenburg Counties in Virginia. Image