ATTACHMENT 11

Pump Analysis

Note: This Attachment contains an analysis to determine the pump size for Phase 3 of either Option No. 1 or No. 2. The pump would be located at the intersection of Apache Trail and Blackfoot Trail West. This analysis shows the power and capacity required to pump the maximum 100-Year flow rate of 17.40 CFS from the 3.99-acre drainage area to the proposed 30-inch drain pipe through the existing lumber yard to Pine Avenue.

```
  CIVILCADD/CIVILDESIGN  Engineering Software, (c) 2004   Version 7.0
------------------------------------------------------------------------
Lift Pump - Rimforest



------------------------------------------------------------------------


Program License Serial Number 4500

------------------------------------------------------------------------
               *** Pump or Turbine Analysis ***

        Upstream (headworks) Elevation =   5610.000(Ft.)
        Downstream (outlet) Elevation =   5616.000(Ft.)
        Runoff/Flow Distance =    405.000(Ft.)
        Maximum flow rate in channel(s) =     12.800(CFS)
------------------------------------------------------------------------



Pressure or depth at pipe inlet =      0.000(Ft.)
Pressure or depth at pipe outlet =      0.000(Ft.)
Difference in static head (inlet - outlet) =     -6.000(Ft.)
Pipe size =     18.00(In.)
Number of pipes = 1, Mannings 'N' =    0.013

PRESSURE FLOW CONDITION:

Following is data if FULL FLOW rate of     12.800(CFS) is
forced through pipe(s):
Velocity =      7.243(Ft/s)
Pressure required at inlet =     13.234(Ft.)
Pipe friction loss =      6.012(Ft.)
Minor Friction loss =      1.222(Ft.)  K-factor =   1.50


------------  Power Analysis -------------
Pump Analysis
Flow for pump/turbine =          5744.68  Gallons/Min.
Efficiency = 0.7000
Power  =     27.464  Horsepower
Electrical power =     20.480 kilowatts
------------------------------------------------------------------------


------------------------------------------------------------------------
```