City of Auburn

Water Resource Management
Pump Station Calculation Worksheet

City of Auburn

PROJECT INFORMATION

Name of Project: _____ Date: _____

Developer: _____ Telephone Number: _____

Engineer: _____ Telephone Number: _____

ESTIMATED AVERAGE DAILY FLOW (ADF)

1. Total acreage to be served by pump station (provide service area map): _____ Acres

2. Residential Unit Density (list for each area): _____

   Total Residential Units: _____ Units *Estimate 250 gallons per day per unit (GPD/unit)*

   Total Estimated Residential ADF (Total Units x 250 GPD/unit): _____ GPD = _____ GPM

3. Commercial Area (square feet): _____ SF Commercial Zoning: _____

   Type of Commercial Development: _____

   Total Estimated Commercial ADF: _____ GPD = _____ GPM *(provide calculations)*

   Estimation Criteria or Sources Used: _____

4. Total Estimated ADF (Residential + Commercial): _____ GPD = _____ GPM

ESTIMATED PEAK DESIGN FLOW (PDF)

PDF = ADF x Peaking Factor of 4.0

1. Estimated Residential PDF: _____ GPD = _____ GPM

2. Estimated Commercial PDF: _____ GPD = _____ GPM

3. Estimated Total PDF: _____ GPD = _____ GPM

DIMENSIONS AND ELEVATIONS

All elevations shall be provided in reference to Mean Sea Level (MSL)

1. Wet Well:
   - Shape: _____ Area: _____ SF
   - Wet Well Top or Rim Elevation (T): _____ FT
   - Lowest Incoming Gravity Invert Elevation (LI): _____ FT
   - Wet Well Bottom or Floor Elevation (B): _____ FT
   - Total Wet Well Storage Height (LI - B): _____ FT ≥ *5 Feet*

2. Floats:
   - Pump Off Float Elevation (OFF): _____ FT *(OFF - B ≥ 1 Foot)*
   - Lead Pump On Float Elevation (LEAD): _____ FT *(LEAD - OFF ≥ 1 Foot)*
   - Lag Pump On Float Elevation (LAG): _____ FT *(LAG - LEAD ≥ 1 Foot)*
   - Alarm Float Elevation (ALARM): _____ FT *(ALARM - LAG ≥ 1 Foot)*

3. Head Conditions:
   - High Point (HP): _____ FT Discharge Elevation (DE): _____ FT
   - Static Head (HP - OFF): _____ FT

Attach to Email

STORAGE AND FILL TIME

1. Effective Storage: Effective Height (EFH = ALARM - OFF): _____ FT *≥ 3 Feet*

   Effective Volume (EFV = EFH x Area): _____ CF = _____ GALLONS

   EFV Fill Time at ADF (EFV / ADF): _____ Minutes

   EFV Fill Time at PDF (EFV / Total PDF): _____ Minutes *≥ 30 Minutes*

   **Effective storage shall be calculated as the volume between the pump off elevation (OFF) and the alarm elevation (ALARM)*

2. Emergency Storage: Emergency Height (EMH = LI - ALARM): _____ FT *≥ 1 Foot*

   Emergency Volume (EMV = EMH x Area): _____ CF = _____ GALLONS

   EMV Fill Time at ADF (EMV / ADF): _____ Minutes

   EMV Fill Time at PDF (EMV / Total PDF): _____ Minutes *≥ 10 Minutes*

   **Emergency storage shall be calculated as the volume between the alarm elevation (ALARM) and the lowest gravity invert elevation (LI)*

3. Total Storage: Total Height (TH = LI - OFF): _____ FT *≥ 4 Feet*

   Total Volume (TV = TH x Area): _____ CF = _____ GALLONS

   TV Fill Time at ADF (TV / ADF): _____ Minutes

   TV Fill Time at PDF (TV / Total PDF): _____ Minutes

   **Total storage shall be calculated as the volume between the pump off elevation (OFF) and the lowest gravity invert elevation (LI)*

PUMP AND FORCE MAIN DESIGN

1. Force Main: Size: _____ IN Material: _____

   Length: _____ FT Friction Losses: _____ FT

2. Pump Selection: Make: _____ Model: _____ Impeller: _____

3. Motor Selection: Model: _____ HP: _____ RPM: _____ Voltage Rating _____

4. Performance (1 Pump): *Compute System Curve*

   a. Total Dynamic Head (TDH): _____ FT

   b. Pumping Capacity: _____ GPM *≥ PDF*

   c. Force Main Velocity: _____ FT/S *≥ 2 Feet/Second*

   d. Efficiency: _____ %

5. Performance (2 Pumps): *Compute System Curve*

   a. Total Dynamic Head (TDH): _____ FT

   b. Pumping Capacity: _____ GPM

   c. Force Main Velocity: _____ FT/S *≤ 8 Feet/Second*

   d. Efficiency: _____ %

ADDITIONAL DESIGN NOTES