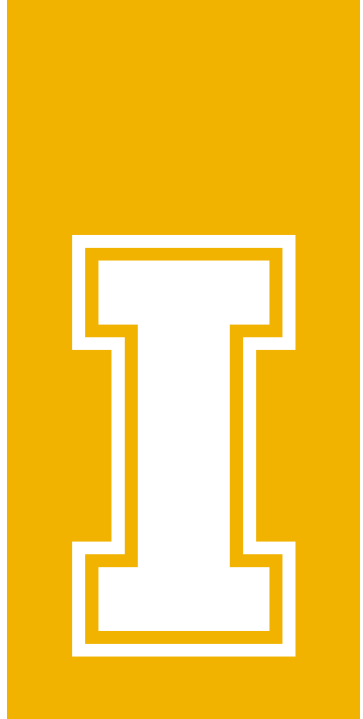


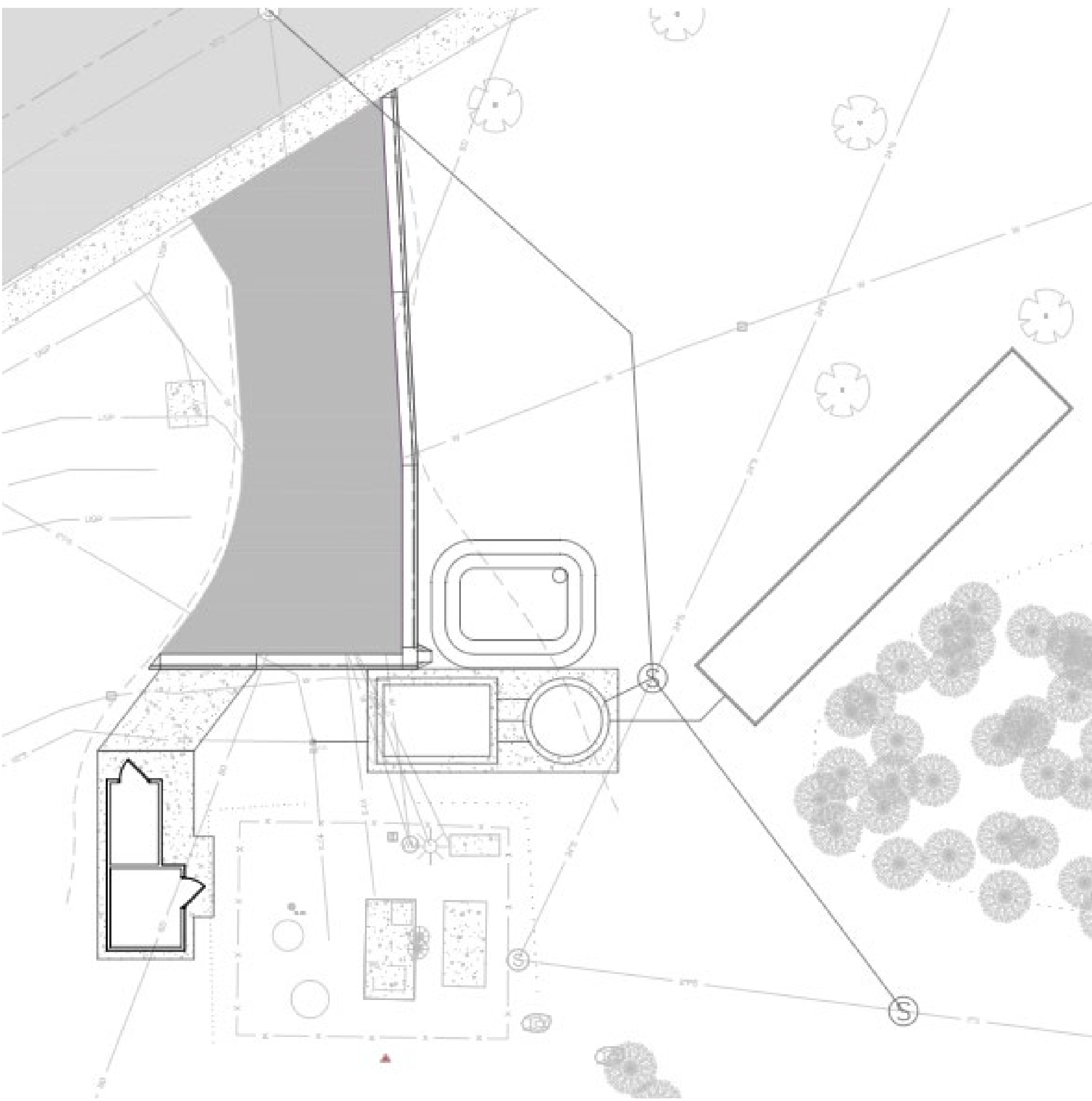


BACKGROUND

The Ponderosa lift station is located within Polites Park in Post Falls, ID. The objective of this project is to replace and decommission the existing triplex lift station for future peak flows and increased infrastructure in the surrounding community. This design is guided by the following design peak flows:

- 5-year Peak Flow : 810 GPM
- 20-year Peak Flow : 1757 GPM

SITE PLAN



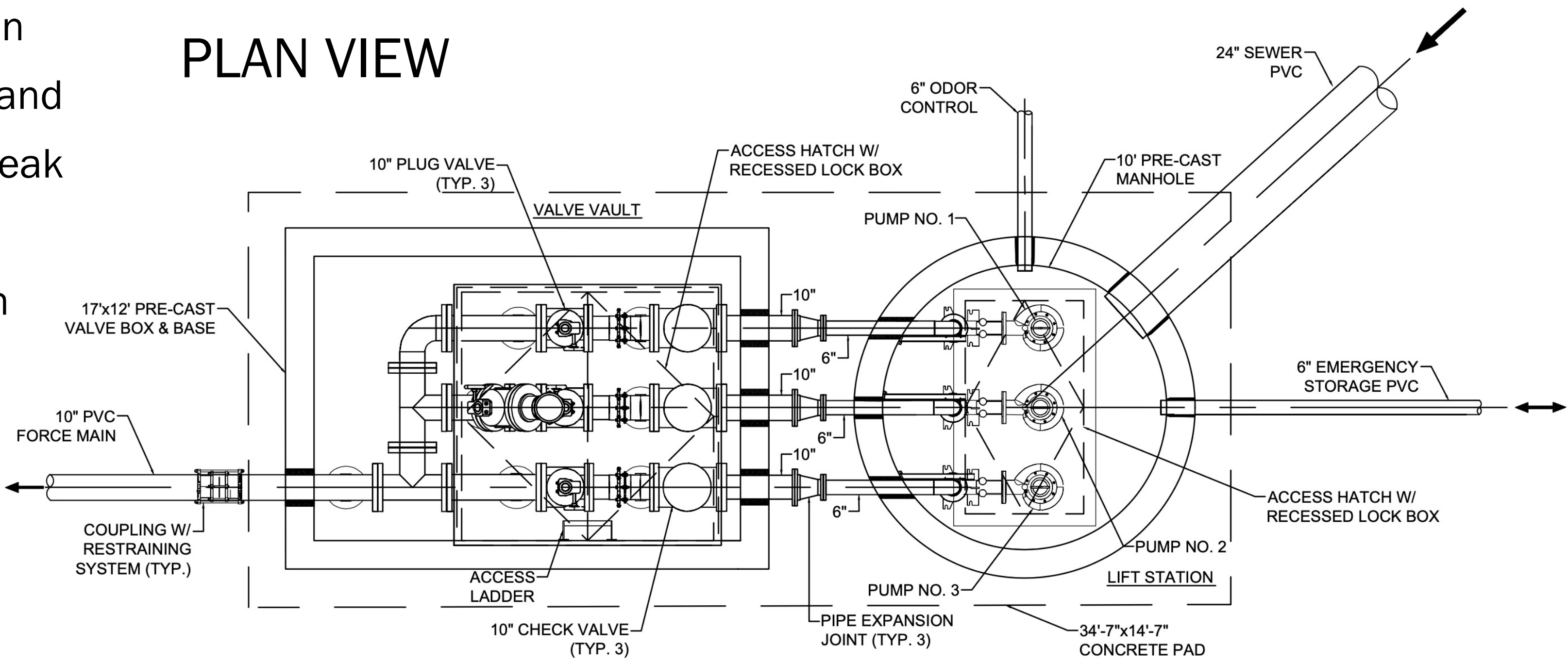
HYDROLOGIC ANALYSIS

The Rational Formula was used in order to estimate surface runoff of pre- and post-development. A swale was designed in order to account for the increased flow rate from the additional impervious surfaces added to the new site.

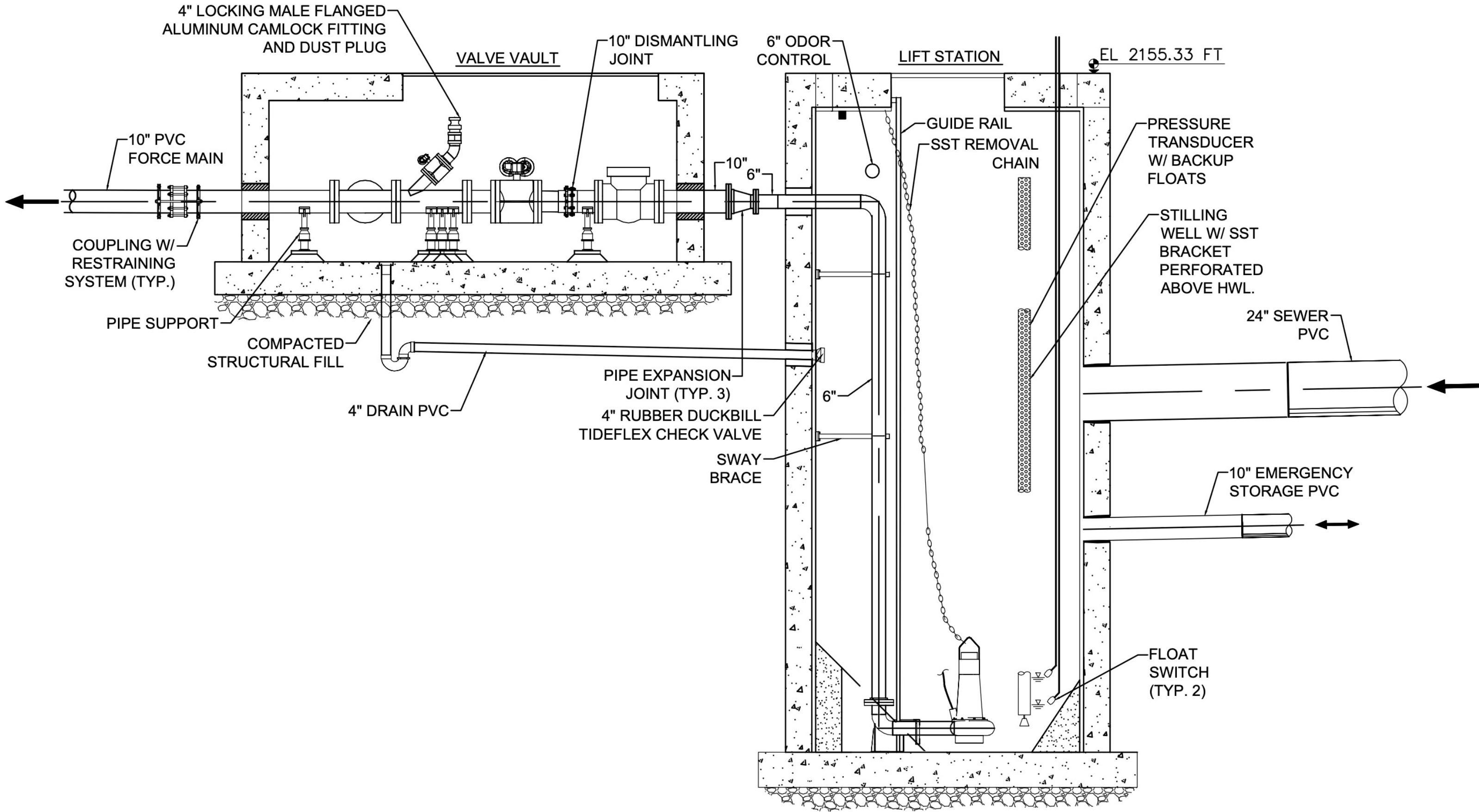
$Q = C i A$

LIFT STATION DESIGN

PLAN VIEW



PROFILE VIEW

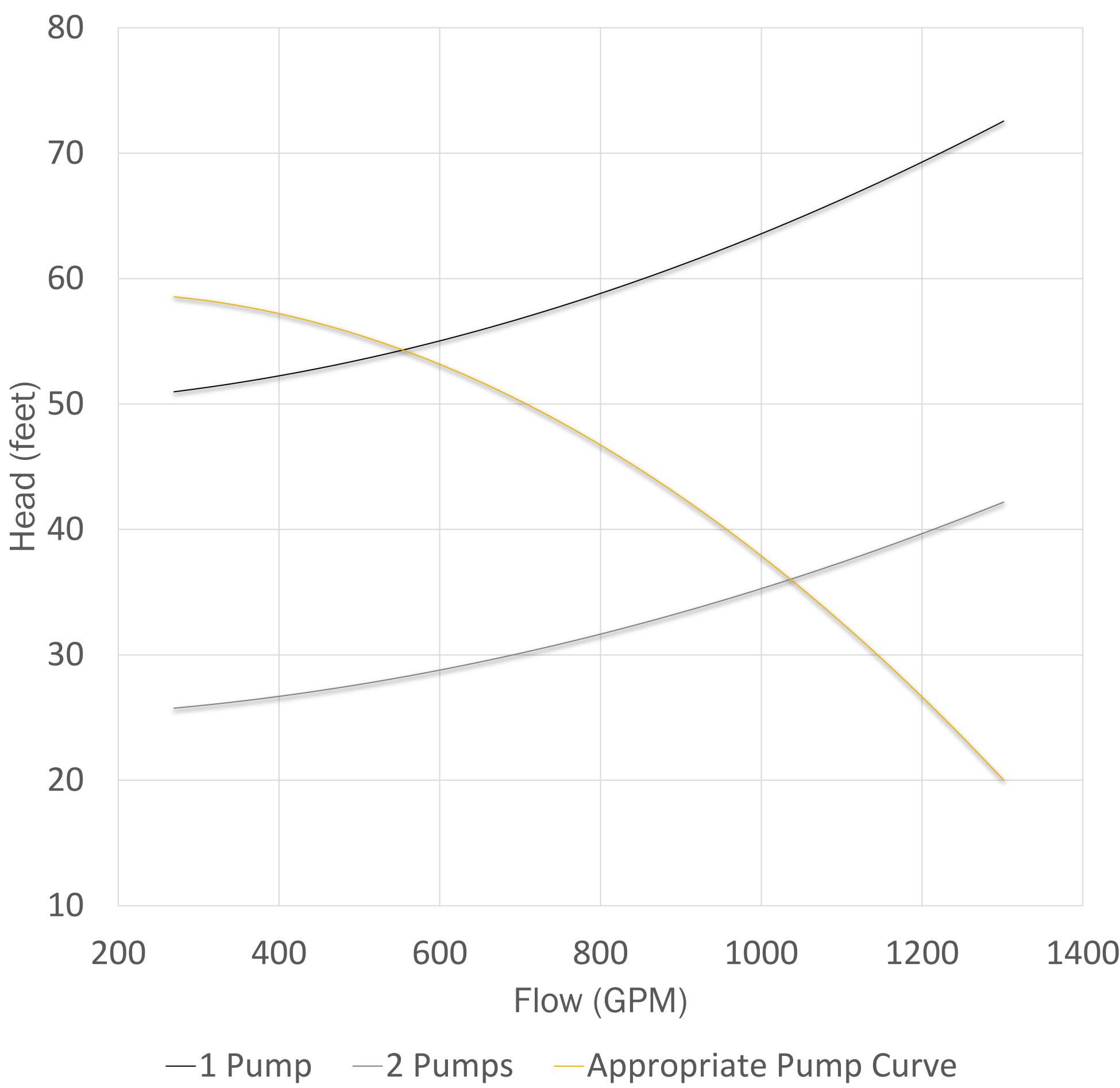


HYDRAULIC ANALYSIS

A combination of the Colebrook-White formula and Darcy Weisbach equation was used to establish a function for total headloss as a function of volumetric flow rate.

$$f = \frac{0.25}{\left(\log \left(\frac{5.74}{\left(\frac{4Q}{\pi D v} \right)^{0.9} + \frac{k_s}{3.7D}} \right) \right)^2}$$
$$h_f = \frac{8Q^2}{g\pi^2 D^4} \left(\frac{fL}{D} + \sum K \right)$$

SYSTEM CURVE



ACKNOWLEDGEMENTS

- Meghann Kolb, EI
Fritz R. Fiedler, Ph.D., P.E.
Erik R. Coats, Ph.D., P.E.

COST ANALYSIS

Cost Estimate	
Civil	\$58,000
Sanitary	\$281,000
Total	\$339,000

Displayed on the graph are the system curves accounting for 5-year peak flow and 20-year peak flow along with an appropriate pump curve to satisfy both conditions.