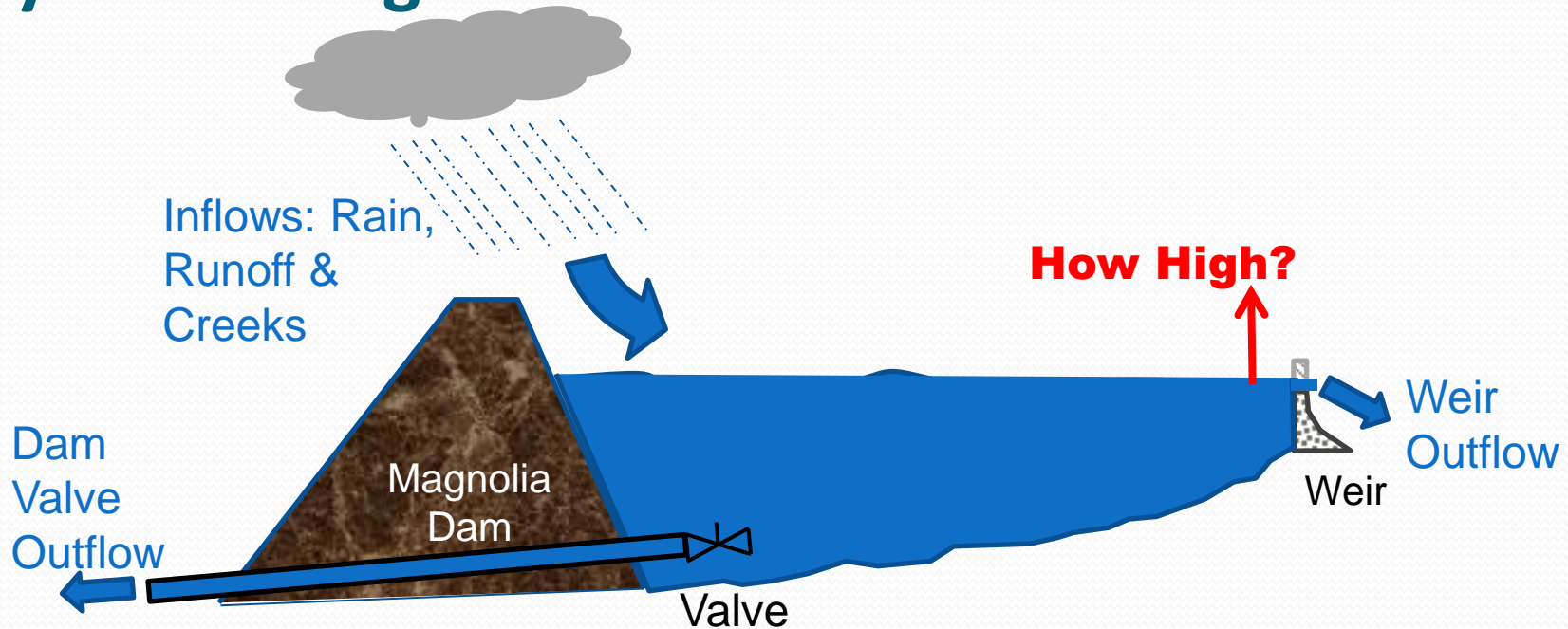


LOP Lake Level Analysis

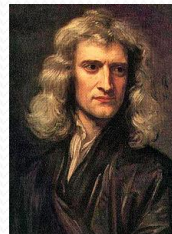
Presentation to the Pinesmen - 1/25/2017

Ross Tokmakian

How high should I plan for LOP lake levels in my yard redesign?



Looked to Isaac Newton

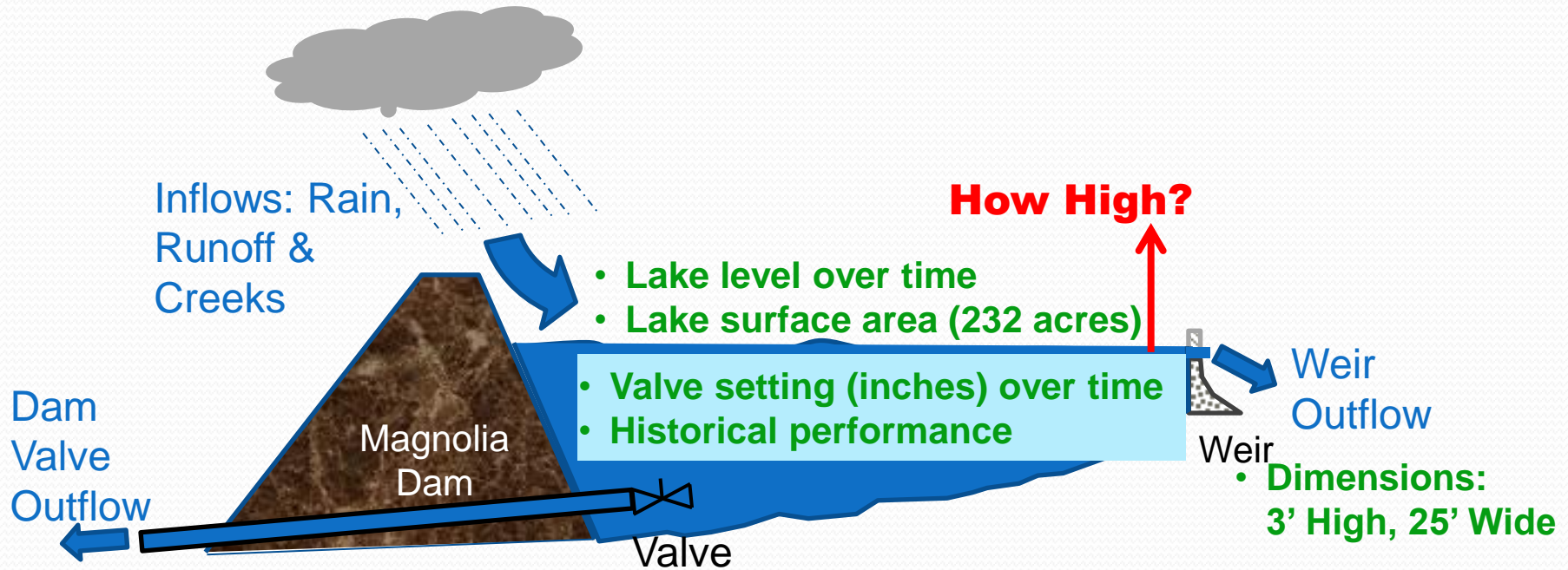


and



Daniel
Bernoulli

Model Calculations



Lake volume change:
Surface area times
change in level

+

Valve Outflow:
Historically observed
and modelled
drawdown rates

+

Weir Outflow:
Francis formula (Hydro
dynamics - Bernoulli):
Based on weir
dimensions and height
of water

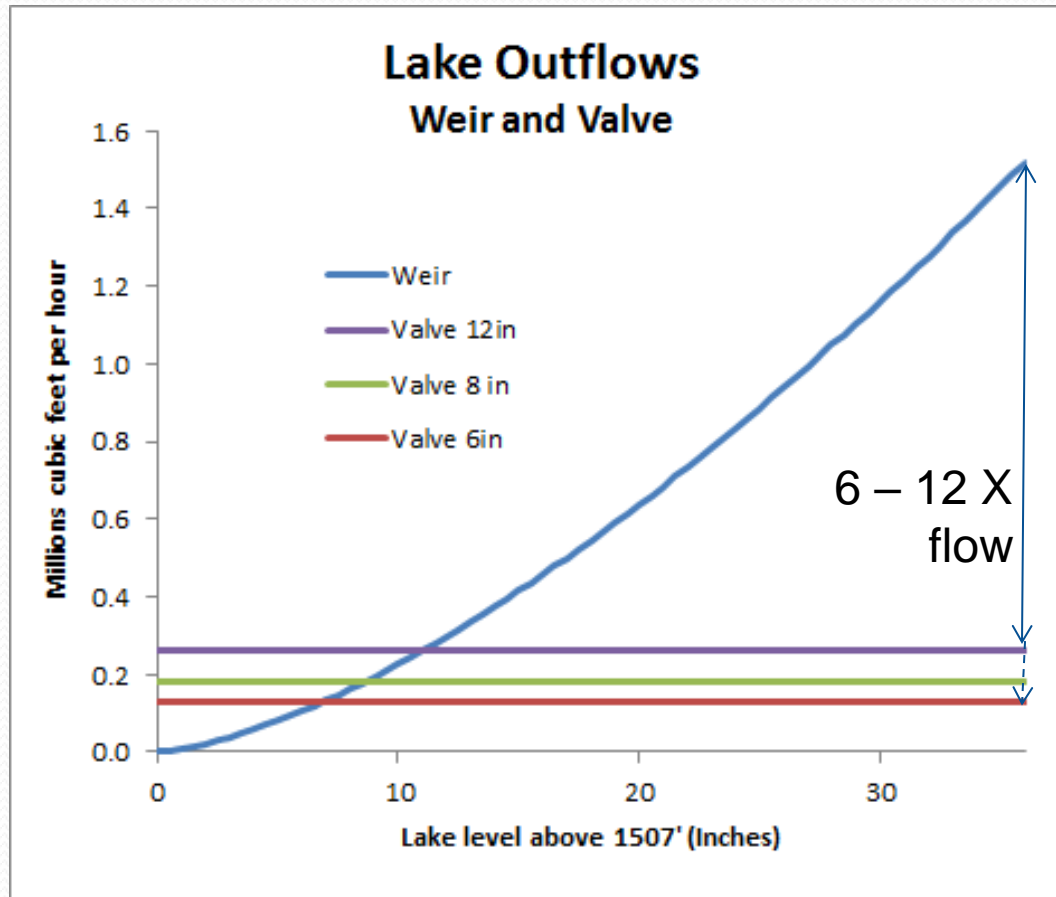
=

Inflow:
Calculated = Lake
volume change –
outflows (Newton -
Calculus)



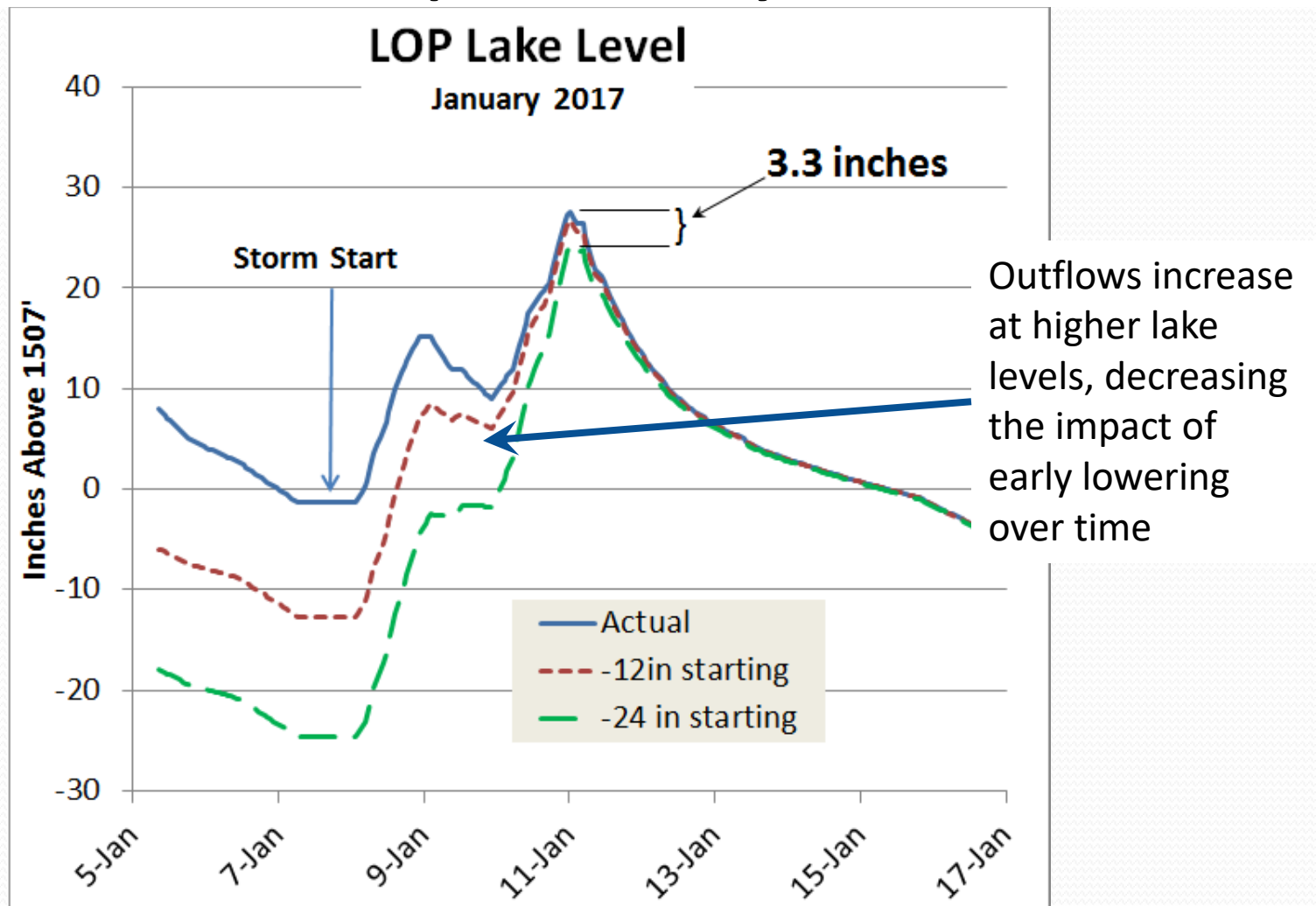
Used inflows over time to model management scenarios

When the lake level is high, the Weir system outflow is 6-12 times the valve's outflow



Source: Francis formula for Weir, Lake observations and linear model for valve

Lowering the lake by 24 inches prior to the storm would have reduced peak level by 3 inches



Source: RT LOP lake flow model – valve positions not changed across scenarios