

# Slow Sand Filter Plant Update of Net Present Value

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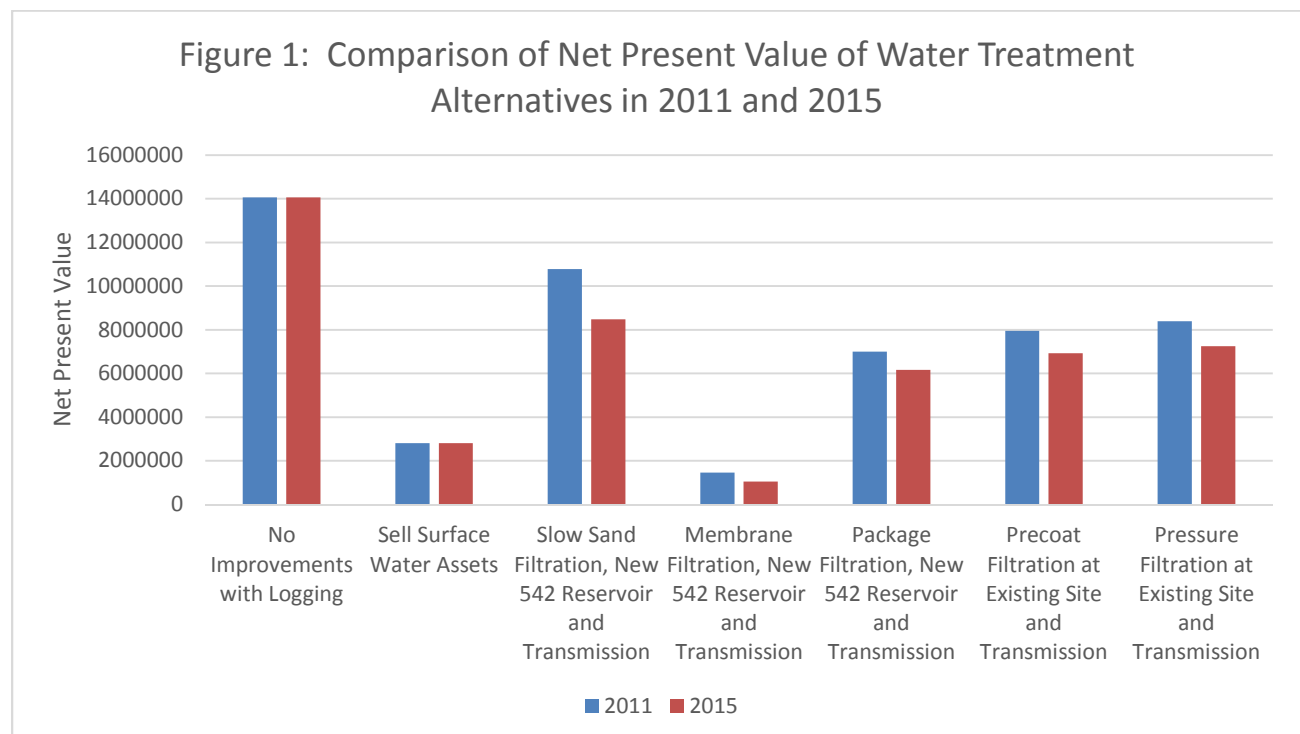
PROJECT NUMBER: 653244

This memorandum compares the original assumptions envisioned in the water supply options study with the current situation and costs of the slow sand filter plant.

The original water supply study included seven options as follows:

1. Logging the watershed
2. Selling the assets associated with the surface water supply
3. Constructing Slow Sand Filters
4. Constructing Membrane Filters
5. Constructing Package Conventional Water Treatment Plant
6. Constructing Diatomaceous earth (or Pre-Coat) Filtration
7. Constructing New Pressure Filters

The net present values for each of these seven alternatives calculated in 2011 for the study is shown in Figure 1, as well as the current Net Present Values.



All of the alternatives had a positive net-present value for a number of reasons, including:

- The value of the watershed would continue to grow
- Energy is saved by not having to pump the wells to the highest pressure zones
- Lumber sales could off-set the capital and O&M costs to a large degree

In addition, high-tech businesses like the low silica content in the surface water supply. The slow sand plant was selected as the preferred alternative for a couple of reasons:

- It could be located at a higher elevation and could feed into the highest pressure zone
- It had the lowest capital and operating cost of any of the alternatives

In 2011, the capital cost estimate for the slow sand plant was \$3.4million and the total capital cost was estimated at \$8.1 million including transmission improvements.

The current slow sand plant low bid is \$5.7 million dollars, including tax. The total project cost has increased to \$10.6 million. Among the reasons for the increase in cost of the slow sand plant are:

- The early version assumed a balanced cut and fill with native material and included a liner for the slow sand cells.
- The geotechnical report conducted for design determined that the materials must be excavated to rock and could not be used as structural fill. The filter cells were also changed from a liner to concrete.

To compare the costs with the current costs, the Net Present Values were updated to 2015 costs using the actual transmission costs. The other alternatives were escalated to current day costs.

Although the costs have increased, the slow sand plant's lower O&M cost makes it a better option than other treatment alternatives.