

IHS CROWNPOINT SERVICE UNIT: COMMUNITY FARM WETLAND

HOSPITAL GROUNDS RENOVATION: COMMUNITY-BASED ASSESSMENT & DESIGN DEVELOPMENT
Assessment • Design Development • Building Documents • Field Manuals

PRELIMINARY COST ESTIMATE

- Costs in this proposal are based on prevailing industry standards liberally inflated for remote location. It is anticipated that local contractors will provide services.
- Only costs directly associated with diverting and treating wastewater from the Quarters Area are included here. Any Community Farm development costs, such as orchards, necessary for utilizing wetland effluent are not included.
- The preliminary filter area calculation (3,000 s.f.) is based on a daily flow of 4,100 gallons. Subject to final engineering, the total 3,000 s.f. area would be configured in three (3) filters of 1,000 s.f. each immediately adjacent to one another. Septic tanks would be situated within 10/20 feet of sewer main with filters placed within 10/20 feet west of tanks (see schematic).

Engineering	3,000
Excavation/compaction	1,000
Gravel.....	3,500
Liner	2,000
Plants	1,000
Plumbing (incl. sewer line diversion).....	1,500
Control structures	2,000
Contingency @ 20% (Remote location).....	<u>5,600</u>
Total.....	<u>33,600</u>

CONSTRUCTION TIME

- Engineering @ 2 weeks
- All components of the wetland could be installed within two weeks' time. Operational lead time (maturation of rock reed vegetation) would require 3 to 6 months. A sub-surface orchard irrigation system would act as a conventional leach field until wetland biological/vegetative agents mature.
- No time estimate for bidding and contracting

OPERATION

- Wetlands maintenance amounts to an annual harvesting of cattails and iris leaves and stems....perhaps one day's work...with plant residues composted for soil improvement at locations on site. Otherwise there is little or no maintenance required for successful operation.
- Septic system will require periodic pumping most likely on a 2-year frequency. Photovoltaic powered pumps (stock pond pumps) are designed for maintenance-free operation under rugged conditions for decades of use.
- The utility half-life of the rock reed filter cell is indefinite. Sedimentation is the only limitation to effectiveness and measured rates of sedimentation prompt researchers to estimate the utility of wetlands at periods reaching beyond 50 years. In any case, the cell could be renovated in 4 days' time at a frequency of 10/15 years as a preventative (but probably unnecessary) measure.
- Monitoring (gathering samples of effluent for testing) would be carried out by state-qualified technicians at minimal cost. Frequency would be monthly until maturity (3/6 events) and yearly afterwards. We will want to collect such data for our own purposes as well.

SITE SCHEMATICS

