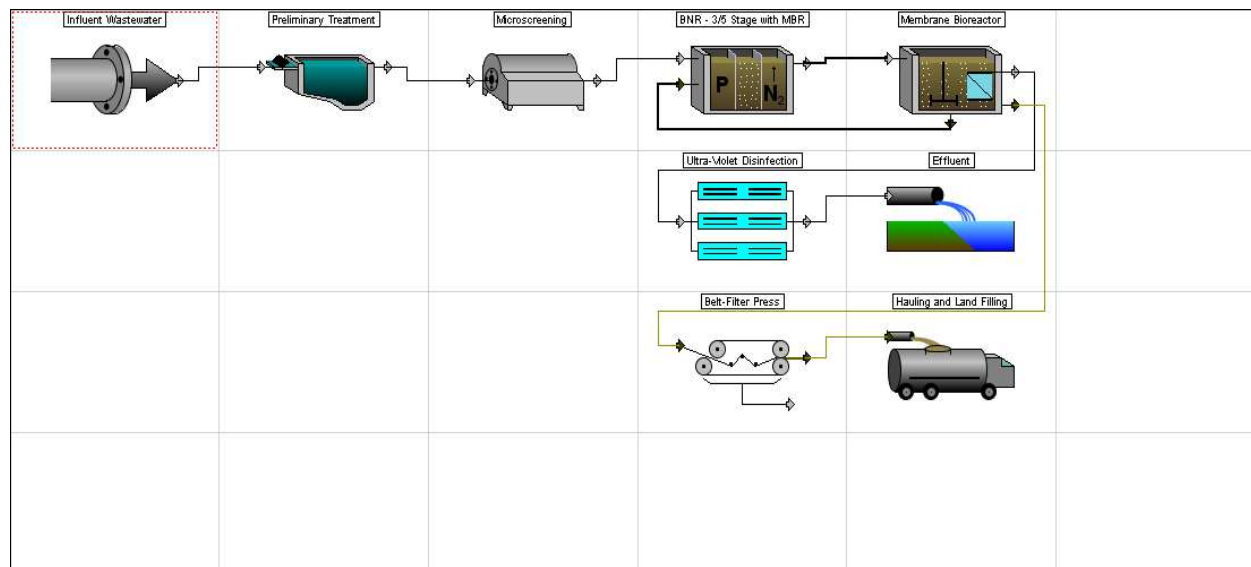


### Layout - Wolf Creek



### Summary

#### Equipment Database

Hydromantis 2014,(USA Avg)

#### Layout Summary

| Description                       | Value               | Units     |
|-----------------------------------|---------------------|-----------|
| <b>CONSTRUCTION COSTS</b>         |                     |           |
| Unit process construction cost:   | \$5,000,000         | \$        |
| Other direct construction costs   | \$1,330,000         | \$        |
| Other indirect construction costs | \$4,870,000         | \$        |
| <b>Total construction costs</b>   | <b>\$11,200,000</b> | <b>\$</b> |

#### ANNUAL COSTS

##### LABOR COSTS

|                                     |                  |              |
|-------------------------------------|------------------|--------------|
| Administration labor cost           | \$10,400         | \$/yr        |
| Laboratory labor cost               | \$114,000        | \$/yr        |
| Unit process operation labor cost   | \$319,000        | \$/yr        |
| Unit process maintenance labor cost | \$153,000        | \$/yr        |
| <b>Total labor costs</b>            | <b>\$596,000</b> | <b>\$/yr</b> |

##### MATERIAL COSTS

|                            |                  |              |
|----------------------------|------------------|--------------|
| <b>Total material cost</b> | <b>\$162,000</b> | <b>\$/yr</b> |
|----------------------------|------------------|--------------|

##### CHEMICAL COSTS

|                            |                 |              |
|----------------------------|-----------------|--------------|
| <b>Total chemical cost</b> | <b>\$13,400</b> | <b>\$/yr</b> |
|----------------------------|-----------------|--------------|

##### ENERGY COSTS

|                          |                 |              |
|--------------------------|-----------------|--------------|
| <b>Total energy cost</b> | <b>\$83,800</b> | <b>\$/yr</b> |
|--------------------------|-----------------|--------------|

|  |                  |              |
|--|------------------|--------------|
| <b>Total operation and maintenance</b> | <b>\$856,000</b> | <b>\$/yr</b> |
|--|------------------|--------------|

##### CONSTRUCTION COST AMC

|  |             |       |
|--|-------------|-------|
| Amortization cost for total construction | \$1,070,000 | \$/yr |
|--|-------------|-------|

|                                  |                    |              |
|----------------------------------|--------------------|--------------|
| <b>Total annual project cost</b> | <b>\$1,930,000</b> | <b>\$/yr</b> |
|----------------------------------|--------------------|--------------|

#### PROJECT SUMMARY

|                              |              |       |
|------------------------------|--------------|-------|
| Present worth                | \$23,200,000 | \$    |
| Total project cost           | \$11,200,000 | \$    |
| Total operation labor cost   | \$443,000    | \$/yr |
| Total maintenance labor cost | \$153,000    | \$/yr |
| Total material cost          | \$162,000    | \$/yr |
| Total chemical cost          | \$13,400     | \$/yr |
| Total energy cost            | \$83,800     | \$/yr |
| Total amortization cost      | \$1,070,000  | \$/yr |

#### Process Summary

| Process                   | Construction (\$) | Operation (\$/yr) | Maintenance (\$/yr) | Material (\$/yr) | Chemical (\$/yr) | Energy (\$/yr) | Amortization (\$/yr) |
|---------------------------|-------------------|-------------------|---------------------|------------------|------------------|----------------|----------------------|
| Preliminary Treatment     | 246000            | 24400             | 11200               | 6140             | 0                | 1160           | 20600                |
| Microscreening            | 307000            | 4120              | 2070                | 27800            | 0                | 9770           | 32900                |
| BNR - 3/5 Stage with MBR  | 759000            | 128000            | 64300               | 17500            | 0                | 29600          | 71000                |
| Ultra-Violet Disinfection | 215000            | 0                 | 2170                | 2150             | 747              | 5360           | 18200                |

|                          |         |        |       |       |        |       |        |
|--------------------------|---------|--------|-------|-------|--------|-------|--------|
| Belt-Filter Press        | 812000  | 732    | 143   | 0     | 2410   | 527   | 74300  |
| Membrane Bioreactor      | 1890000 | 159000 | 72900 | 18200 | 103000 | 37400 | 251000 |
| Effluent                 | 0       | 0      | 0     | 0     | 0      | 0     | 0      |
| Hauling and Land Filling | 289000  | 3190   | 0     | 90400 | 0      | 0     | 61800  |
| Blower System            | 486000  | 0      | 0     | 0     | 0      | 0     | 40700  |
| Other Costs              | 6200000 | 124000 | 0     | 0     | 0      | 0     | 503000 |

**Summary of Other Costs for Layout**

| Description                       | Value   | Units |
|-----------------------------------|---------|-------|
| Other Costs                       |         |       |
| Quantities                        |         |       |
| Required land                     | 10      | acre  |
| Administration labor hours        | 203     | hr/yr |
| Laboratory labor hours            | 2210    | hr/yr |
| Costs                             |         |       |
| <b>DIRECT COSTS</b>               |         |       |
| Mobilization                      | 114000  | \$    |
| Site preparation                  | 217000  | \$    |
| Site electrical                   | 292000  | \$    |
| Yard piping                       | 204000  | \$    |
| Instrumentation and control       | 131000  | \$    |
| Lab and administration building   | 374000  | \$    |
| Total direct construction costs   | 1330000 | \$    |
| <b>INDIRECT COSTS</b>             |         |       |
| Cost of land                      | 200000  | \$    |
| Miscellaneous cost                | 364000  | \$    |
| Legal cost                        | 146000  | \$    |
| Engineering design fee            | 1090000 | \$    |
| Inspection cost                   | 146000  | \$    |
| Contingency                       | 728000  | \$    |
| Technical                         | 146000  | \$    |
| Interest during construction      | 1100000 | \$    |
| Profit                            | 950000  | \$    |
| Total indirect construction cost  | 4870000 | \$    |
| Total of other construction costs | 6200000 | \$    |
| <b>LABOR COSTS</b>                |         |       |
| Administration labor cost         | 10400   | \$/yr |
| Laboratory labor cost             | 114000  | \$/yr |

**Summary of Air Supply System**

| Description                           | Value  | Units |
|---------------------------------------|--------|-------|
| Blower System for Entire Plant        |        |       |
| Design Information                    |        |       |
| Minimum air flow capacity             | 3210   | scfm  |
| Safety factor                         | 1.5    |       |
| Requested air flow capacity           | 4810   | scfm  |
| Total capacity of blowers             | 4810   | scfm  |
| Number of blowers in use              | 1      |       |
| Total number of blowers               | 2      |       |
| Capacity of individual blowers        | 4810   | scfm  |
| Estimated cost of an installed blower | 157000 | \$    |
| Blower building area                  | 1120   | sqft  |
| Costs                                 |        |       |
| Construction and equipment cost       | 486000 | \$    |
| Installed Blower Cost                 | 314000 | \$    |
| Building Cost                         | 123000 | \$    |
| Misc Costs                            | 48200  | \$    |
| Operational labor cost                | 0      | \$/yr |
| Maintenance labor cost                | 0      | \$/yr |
| Material and supply cost              | 0      | \$/yr |
| Chemical cost                         | 0      | \$/yr |
| Energy cost                           | 0      | \$/yr |
| Amortization cost                     | 40700  | \$/yr |

Notes  
Energy costs are shown at the individual unit processes that require air

**Influent Wastewater**

**Preliminary Treatment**

**Design Output Data**

| Description                     | Value  | Units   |
|---------------------------------|--------|---------|
| Preliminary Treatment           |        |         |
| Design Information              |        |         |
| Mechanically Cleaned Bar Screen |        |         |
| Bar size                        | 0.25   | in      |
| Bar spacing                     | 1.5    | in      |
| Slope of bars from horizontal   | 30     | degrees |
| Head loss through screen        | 0.0206 | ft      |
| Approach velocity               | 2.5    | ft/s    |
| Average flow through velocity   | 2.5    | ft/s    |

|                                 |              |
|---------------------------------|--------------|
| Maximum flow through velocity   | 3 ft/s       |
| Screen channel width            | 0.308 ft     |
| Average channel depth           | 1 ft         |
| Horizontal Flow Grit Chamber    |              |
| Maximum flow                    | 3.08 cuft/s  |
| Average flow                    | 0.77 cuft/s  |
| Minimum flow                    | 0.462 cuft/s |
| Temperature                     | 10 deg C     |
| Maximum flow through velocity   | 1.5 ft/s     |
| Average flow through velocity ( | 1 ft/s       |
| Size of smallest particle 100%  | 0.2 mm       |
| Specific gravity of particle    | 2.65         |
| Number of units                 | 2            |
| Maximum flow/unit               | 1.54 cuft/s  |
| Width of channel                | 0.257 ft     |
| Depth of channel                | 4 ft         |
| Length of channel               | 144 ft       |
| Settling velocity of particle   | 0.0707 ft/s  |
| Slope of channel bottom         | 0.00952      |
| Allowance for currents          | 1.7          |
| Manning coefficient             | 0.035        |
| Hydraulic retention time        | 1.6 min      |
| Volume of grit                  | 2 cuft/d     |
| Costs                           |              |
| Construction and equipment cc   | 246000 \$    |
| Operational labor cost          | 24400 \$/yr  |
| Maintenance labor cost          | 11200 \$/yr  |
| Material and supply cost        | 6140 \$/yr   |
| Chemical cost                   | 0 \$/yr      |
| Energy cost                     | 1160 \$/yr   |
| Amortization cost               | 20600 \$/yr  |

### Microscreening

#### Design Output Data

| Description                    | Value  | Units              |
|--------------------------------|--------|--------------------|
| Microscreening                 |        |                    |
| Design Information             |        |                    |
| Microscreen loading rate       | 7      | gal(US)/(sqft·min) |
| Quantity of wash water require | 4      | %                  |
| Area of microscreens required  | 198    | sqft               |
| Quantities                     |        |                    |
| Number of batteries            | 1      |                    |
| Number of units/battery        | 2      |                    |
| Drum diameter                  | 6      | ft                 |
| Drum width                     | 6      | ft                 |
| Area of selected unit          | 108    | sqft               |
| Area of building               | 155    | sqft               |
| Operation labor required       | 80     | pers-hrs/yr        |
| Maintenance labor required     | 51.5   | pers-hrs/yr        |
| Electrical energy required     | 97700  | kWh/yr             |
| Volume of wall concrete requir | 2600   | cuft               |
| Volume of earthwork required   | 5850   | cuft               |
| Costs                          |        |                    |
| Construction and equipment cc  | 307000 | \$                 |
| Earthwork Cost                 | 1730   | \$                 |
| Slab Concrete Cost             | 62500  | \$                 |
| Building Cost                  | 17000  | \$                 |
| Installed Equipment Cost       | 186000 | \$                 |
| Misc Costs                     | 40000  | \$                 |
| Operational labor cost         | 4120   | \$/yr              |
| Maintenance labor cost         | 2070   | \$/yr              |
| Material and supply cost       | 27800  | \$/yr              |
| Chemical cost                  | 0      | \$/yr              |
| Energy cost                    | 9770   | \$/yr              |
| Amortization cost              | 32900  | \$/yr              |

### BNR - 3/5 Stage with MBR

#### Design Output Data

| Description                        | Value | Units        |
|------------------------------------|-------|--------------|
| BNR System for BIO-P and N Removal |       |              |
| Design Information                 |       |              |
| 3-Stage Biological Phosphorus      |       |              |
| Design aerobic SRT for nitrific:   | 12.5  | d            |
| Total reactor SRT                  | 25    | d            |
| Design SS                          | 9000  | mg/L         |
| Calculated VSS                     | 6490  | mg/L         |
| Calculated VSS:TSS ratio           | 0.721 | mg VSS/mg SS |
| Total volume of anaerobic reac     | 11    | m3           |
| Total volume of anoxic reactor:    | 266   | m3           |
| Total volume of aerobic reacto:    | 277   | m3           |
| Total volume of all reactors       | 554   | m3           |
| Width of parallel train            | 10    | m            |

|   |                       |
|---|-----------------------|
| Sidewater depth                             | 5 m                   |
| Number of batteries                         | 1                     |
| Number of parallel trains per battery       | 2                     |
| Number of anoxic cells within each battery  | 1                     |
| Number of aerobic cells within each battery | 1                     |
| Anaerobic hydraulic retention time          | 0.14 hr               |
| Anoxic hydraulic retention time             | 3.37 hr               |
| Aerobic hydraulic retention time            | 3.51 hr               |
| Amount of sludge generated                  | 199 kg/d              |
| Sludge recycle ratio                        | 300 %                 |
| Sludge recycle rate                         | 5680 m3/d             |
| Nitrogen required for biomass               | 12.9 mg/L             |
| Phosphorus required for biomass             | 2.58 mg/L             |
| Oxygen required to meet average demand      | 397 kg/d              |
| Air flow required to meet average demand    | 659 N m3/hr           |
| Design air flow                             | 39.7 N m3/min/1000 m3 |
| Quantities                                  |                       |
| Operation labor required                    | 1210 pers-hrs/yr      |
| Maintenance labor required                  | 567 pers-hrs/yr       |
| Electrical energy required                  | 162000 kWh/yr         |
| Volume of earthwork required                | 24400 cuft            |
| Volume of slab concrete required            | 5040 cuft             |
| Volume of wall concrete required            | 4530 cuft             |
| Handrail length                             | 126 ft                |
| Number of diffusers per train               | 106                   |
| Fine bubble diffuser floor coverage         | 14.5 %                |
| Number of swing arm headers                 | 1                     |
| Required mixing power                       | 5.2 kW                |
| Total number of mixers                      | 4                     |
| Design mixing power per mixer               | 1.49 kW               |
| Mixing power for each unaerated tank        | 1.3 kW                |
| Costs                                       |                       |
| Construction and equipment costs            | 356000 \$             |
| Earthwork Cost                              | 7220 \$               |
| Wall Concrete Cost                          | 109000 \$             |
| Slab Concrete Cost                          | 65400 \$              |
| Handrail Cost                               | 9450 \$               |
| Installed Aerator Equipment                 | 53800 \$              |
| Air Piping Cost                             | 17600 \$              |
| Installed Mixer Equipment Costs             | 58000 \$              |
| Misc Costs                                  | 35300 \$              |
| Operational labor cost                      | 62500 \$/yr           |
| Maintenance labor cost                      | 22800 \$/yr           |
| Material and supply cost                    | 14700 \$/yr           |
| Chemical cost                               | 0 \$/yr               |
| Energy cost                                 | 16200 \$/yr           |
| Amortization cost                           | 32800 \$/yr           |
| Internal Recycle Pumping                    |                       |
| Design Information                          |                       |
| Average daily pumping rate                  | 0.75 MGD(US)          |
| Total pumping capacity                      | 0.75 MGD(US)          |
| Design capacity per pump                    | 260 gpm(US)           |
| Number of pumps                             | 6                     |
| Number of batteries                         | 1                     |
| Firm pumping capacity                       | 0.75 MGD(US)          |
| Quantities                                  |                       |
| Operation labor required                    | 424 pers-hrs/yr       |
| Maintenance labor required                  | 345 pers-hrs/yr       |
| Electrical energy required                  | 50300 kWh/yr          |
| Volume of earthwork required                | 1720 cuft             |
| Area of pump building                       | 215 sqft              |
| Costs                                       |                       |
| Construction and equipment costs            | 159000 \$             |
| Earthwork Cost                              | 1020 \$               |
| Pump Building Cost                          | 47300 \$              |
| Installed Pump Cost                         | 86300 \$              |
| Misc Costs                                  | 24200 \$              |
| Operational labor cost                      | 21800 \$/yr           |
| Maintenance labor cost                      | 13900 \$/yr           |
| Material and supply cost                    | 1110 \$/yr            |
| Chemical cost                               | 0 \$/yr               |
| Energy cost                                 | 5030 \$/yr            |
| Amortization cost                           | 15000 \$/yr           |
| Internal Recycle Pumping                    |                       |
| Design Information                          |                       |
| Average daily pumping rate                  | 1 MGD(US)             |
| Total pumping capacity                      | 1 MGD(US)             |
| Design capacity per pump                    | 347 gpm(US)           |
| Number of pumps                             | 6                     |
| Number of batteries                         | 1                     |
| Firm pumping capacity                       | 1 MGD(US)             |
| Quantities                                  |                       |

|                                 |                 |
|---------------------------------|-----------------|
| Operation labor required        | 440 pers-hrs/yr |
| Maintenance labor required      | 360 pers-hrs/yr |
| Electrical energy required      | 67000 kWh/yr    |
| Volume of earthwork required    | 1760 cuft       |
| Area of pump building           | 220 sqft        |
| Costs                           |                 |
| Construction and equipment cost | 174000 \$       |
| Earthwork Cost                  | 1040 \$         |
| Pump Building Cost              | 48300 \$        |
| Installed Pump Cost             | 98000 \$        |
| Misc Costs                      | 26500 \$        |
| Operational labor cost          | 22700 \$/yr     |
| Maintenance labor cost          | 14500 \$/yr     |
| Material and supply cost        | 1220 \$/yr      |
| Chemical cost                   | 0 \$/yr         |
| Energy cost                     | 6700 \$/yr      |
| Amortization cost               | 16400 \$/yr     |
| Sludge Recycle Pumping          |                 |
| Design Information              |                 |
| Average daily pumping rate      | 0.5 MGD(US)     |
| Total pumping capacity          | 0.5 MGD(US)     |
| Design capacity per pump        | 174 gpm(US)     |
| Number of pumps                 | 3               |
| Number of batteries             | 1               |
| Firm pumping capacity           | 0.5 MGD(US)     |
| Quantities                      |                 |
| Operation labor required        | 403 pers-hrs/yr |
| Maintenance labor required      | 325 pers-hrs/yr |
| Electrical energy required      | 16800 kWh/yr    |
| Volume of earthwork required    | 1680 cuft       |
| Area of pump building           | 210 sqft        |
| Costs                           |                 |
| Construction and equipment cost | 70400 \$        |
| Earthwork Cost                  | 497 \$          |
| Pump Building Cost              | 23100 \$        |
| Installed Pump Cost             | 36100 \$        |
| Misc Costs                      | 10700 \$        |
| Operational labor cost          | 20700 \$/yr     |
| Maintenance labor cost          | 13100 \$/yr     |
| Material and supply cost        | 493 \$/yr       |
| Chemical cost                   | 0 \$/yr         |
| Energy cost                     | 1680 \$/yr      |
| Amortization cost               | 6660 \$/yr      |

### Ultra-Violet Disinfection

#### Design Output Data

| Description                         | Value  | Units           |
|-------------------------------------|--------|-----------------|
| Ultra-Violet Disinfection           |        |                 |
| Design Information                  |        |                 |
| Design based on a model calculation | 2.12   | gal(US)/(min·W) |
| Total number of lamps needed        | 49     |                 |
| Number of spare channels            | 1      |                 |
| Total number of lamps used in       | 72     |                 |
| Number of excess lamps              | 23     |                 |
| Number of lamps/modules             | 2      |                 |
| Number of modules/bank              | 3      |                 |
| Number of banks/channel             | 3      |                 |
| Number of channels                  | 4      |                 |
| Calculated headloss                 | 10.8   | in              |
| Costs                               |        |                 |
| Construction and equipment cost     | 215000 | \$              |
| Cost of installation                | 129000 | \$              |
| Total cost of UV lamps              | 85900  | \$              |
| Operational labor cost              | 0      | \$/yr           |
| Maintenance labor cost              | 2170   | \$/yr           |
| Material and supply cost            | 2150   | \$/yr           |
| Chemical cost                       | 747    | \$/yr           |
| Energy cost                         | 5360   | \$/yr           |
| Amortization cost                   | 18200  | \$/yr           |

### Belt-Filter Press

#### Design Output Data

| Description                      | Value | Units   |
|----------------------------------|-------|---------|
| Belt-Filter Press                |       |         |
| Design Information               |       |         |
| Belt filter width                | 1     | m       |
| Number of units                  | 1     |         |
| Hydraulic loading per unit per r | 70    | gpm(US) |
| Hydraulic loading required per   | 12.4  | gpm(US) |
| Final solids content             | 19    | %       |
| Solids capture fraction          | 0.992 |         |
| Quantities                       |       |         |

|                                 |                  |
|---------------------------------|------------------|
| Operation labor required        | 14.2 pers-hrs/yr |
| Maintenance labor required      | 3.55 pers-hrs/yr |
| Power                           | 5270 kWh/yr      |
| Polymer required                | 1860 lb/yr       |
| Dry solids produced             | 509 lb/d         |
| Belt filter(s)                  | 275000 \$        |
| Building                        | 279000 \$        |
| Installation                    | 68800 \$         |
| Polymer system                  | 82500 \$         |
| Feed pumps                      | 30300 \$         |
| Conveyor system                 | 77000 \$         |
| Costs                           |                  |
| Construction and equipment cost | 812000 \$        |
| Building Cost                   | 279000 \$        |
| Polymer System Cost             | 82500 \$         |
| Feed Pumps Cost                 | 30300 \$         |
| Conveyor System Cost            | 77000 \$         |
| Installed Belt Filter           | 344000 \$        |
| Operational labor cost          | 732 \$/yr        |
| Maintenance labor cost          | 143 \$/yr        |
| Material and supply cost        | 0 \$/yr          |
| Chemical cost                   | 2410 \$/yr       |
| Energy cost                     | 527 \$/yr        |
| Amortization cost               | 74300 \$/yr      |

### Membrane Bioreactor

#### Design Output Data

| Description                           | Value   | Units       |
|---------------------------------------|---------|-------------|
| Membrane Bioreactor                   |         |             |
| Design Information                    |         |             |
| Total volume of reactors              | 12400   | cuft        |
| Length of parallel train              | 22.4    | ft          |
| Width of parallel train               | 11.2    | ft          |
| Sidewater depth                       | 16.4    | ft          |
| Number of batteries                   | 1       |             |
| Number of parallel trains per battery | 3       |             |
| Total Membrane Area                   | 15800   | m2          |
| Total Scour Air Requirement           | 3150    | N m3/hr     |
| Quantities                            |         |             |
| Operation labor required              | 2380    | pers-hrs/yr |
| Maintenance labor required            | 1250    | pers-hrs/yr |
| Electrical energy required            | 359000  | kWh/yr      |
| Volume of earthwork required          | 15800   | cuft        |
| Volume of slab concrete required      | 3170    | cuft        |
| Volume of wall concrete required      | 4400    | cuft        |
| Handrail length                       | 253     | ft          |
| Number of diffusers per train         | 78      |             |
| Number of swing arm headers           | 1       |             |
| Costs                                 |         |             |
| Construction and equipment cost       | 1680000 | \$          |
| Earthwork Cost                        | 4680    | \$          |
| Wall Concrete Cost                    | 106000  | \$          |
| Slab Concrete Cost                    | 41100   | \$          |
| Handrail Cost                         | 19000   | \$          |
| Membrane Cost                         | 1360000 | \$          |
| Installed Aerator Equipment           | 69000   | \$          |
| Air Piping Cost                       | 43000   | \$          |
| Misc Cost                             | 38700   | \$          |
| Operational labor cost                | 123000  | \$/yr       |
| Maintenance labor cost                | 50200   | \$/yr       |
| Material and supply cost              | 16800   | \$/yr       |
| Chemical cost                         | 10300   | \$/yr       |
| Energy cost                           | 35900   | \$/yr       |
| Amortization cost                     | 231000  | \$/yr       |
| Permeate Pumping                      |         |             |
| Design Information                    |         |             |
| Average daily pumping rate            | 0.25    | MGD(US)     |
| Total pumping capacity                | 1       | MGD(US)     |
| Design capacity per pump              | 386     | gpm(US)     |
| Number of pumps                       | 6       |             |
| Number of batteries                   | 1       |             |
| Firm pumping capacity                 | 2.22    | MGD(US)     |
| Quantities                            |         |             |
| Operation labor required              | 488     | pers-hrs/yr |
| Maintenance labor required            | 405     | pers-hrs/yr |
| Electrical energy required            | 15100   | kWh/yr      |
| Volume of earthwork required          | 1780    | cuft        |
| Area of pump building                 | 222     | sqft        |
| Costs                                 |         |             |
| Construction and equipment cost       | 180000  | \$          |
| Earthwork Cost                        | 1050    | \$          |
| Pump Building Cost                    | 48800   | \$          |

|   |                 |
|---|-----------------|
| Installed Pump Cost                     | 103000 \$       |
| Misc Costs                              | 27500 \$        |
| Operational labor cost                  | 25100 \$/yr     |
| Maintenance labor cost                  | 16300 \$/yr     |
| Material and supply cost                | 1260 \$/yr      |
| Chemical cost                           | 0 \$/yr         |
| Energy cost                             | 1510 \$/yr      |
| Amortization cost                       | 17000 \$/yr     |
| Waste Sludge Pumping Design Information |                 |
| Average daily pumping rate              | 0.00426 MGD(US) |
| Total pumping capacity                  | 0.00426 MGD(US) |
| Design capacity per pump                | 1.48 gpm(US)    |
| Number of pumps                         | 3               |
| Number of batteries                     | 1               |
| Firm pumping capacity                   | 0.00426 MGD(US) |
| Quantities                              |                 |
| Operation labor required                | 218 pers-hrs/yr |
| Maintenance labor required              | 161 pers-hrs/yr |
| Electrical energy required              | 145 kWh/yr      |
| Volume of earthwork required            | 1600 cuft       |
| Area of pump building                   | 200 sqft        |
| Costs                                   |                 |
| Construction and equipment cost         | 31800 \$        |
| Earthwork Cost                          | 474 \$          |
| Pump Building Cost                      | 22000 \$        |
| Installed Pump Cost                     | 4430 \$         |
| Misc Costs                              | 4840 \$         |
| Operational labor cost                  | 11200 \$/yr     |
| Maintenance labor cost                  | 6470 \$/yr      |
| Material and supply cost                | 222 \$/yr       |
| Chemical cost                           | 0 \$/yr         |
| Energy cost                             | 14 \$/yr        |
| Amortization cost                       | 3000 \$/yr      |

### Effluent

#### Design Output Data

| Description                     | Value   | Units |
|---------------------------------|---------|-------|
| Costs                           |         |       |
| Construction and equipment cost | 0 \$    |       |
| Operational labor cost          | 0 \$/yr |       |
| Maintenance labor cost          | 0 \$/yr |       |
| Material and supply cost        | 0 \$/yr |       |
| Chemical cost                   | 0 \$/yr |       |
| Energy cost                     | 0 \$/yr |       |
| Amortization cost               | 0 \$/yr |       |

### Hauling and Land Filling

#### Design Output Data

| Description  | Value     | Units        |
|--|-----------|--------------|
| Sludge Hauling and Land Filling Design Information |           |              |
| Volume of sludge hauled                            | 1.32      | cuyd/d       |
| Truck capacity                                     | 19        | cuyd         |
| Round trip time to disposal site                   | 1         | hr           |
| Truck loading time                                 | 0.75      | hr           |
| Operational hours per day                          | 8         | hr           |
| Number of trucks required                          | 1         |              |
| Distance to disposal site                          | 30        | miles        |
| Quantities   |           |              |
| Total sludge volume hauled                         | 1.32      | cuyd/d       |
| Maximum anticipated landfill depth                 | 30        | d            |
| Anticipated sludge storage height                  | 8         | ft           |
| Sludge storage shed area                           | 134       | sqft         |
| Width of sludge storage shed                       | 8.18      | ft           |
| Length of sludge storage shed                      | 16.4      | ft           |
| Volume of earthwork required                       | 508       | cuft         |
| Volume of slab concrete required                   | 246       | cuft         |
| Surface area of canopy roof                        | 134       | sqft         |
| Round trip haul distance                           | 60        | miles        |
| Round trips per day per truck                      | 1         |              |
| Distance traveled per year per truck               | 15000     | miles        |
| Sludge hauled                                      | 1.17      | ton(short)/d |
| Operation labor required                           | 62        | pers-hrs/yr  |
| LandFilling cost                                   | 35200     | \$/yr        |
| Costs  |           |              |
| Construction and equipment cost                    | 289000 \$ |              |
| Earthwork Cost                                     | 151 \$    |              |
| Slab Concrete Cost                                 | 3190 \$   |              |
| Canopy Roof Cost                                   | 2680 \$   |              |
| Vehicle Cost                                       | 283000 \$ |              |
| Operational labor cost                             | 3190      | \$/yr        |

|                          |             |
|--------------------------|-------------|
| Maintenance labor cost   | 0 \$/yr     |
| Material and supply cost | 90400 \$/yr |
| Chemical cost            | 0 \$/yr     |
| Energy cost              | 0 \$/yr     |
| Amortization cost        | 61800 \$/yr |