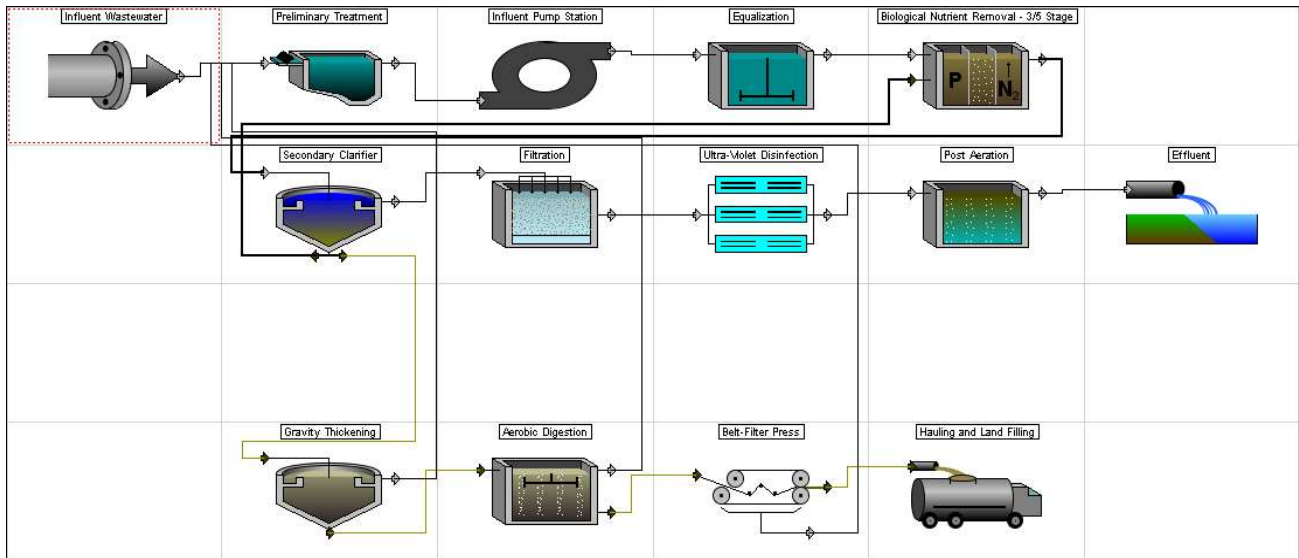


**Layout - Snyderville Basin East Canyon**



**Summary**

**Equipment Database**

Hydromantis 2014,(USA Avg)

**Layout Summary**

Description	Value	Units
<b>CONSTRUCTION COSTS</b>		
Unit process construction cost:	\$20,000,000	\$
Other direct construction costs	\$5,320,000	\$
Other indirect construction costs	\$18,900,000	\$
<b>Total construction costs</b>	<b>\$44,200,000</b>	<b>\$</b>

**ANNUAL COSTS**

**LABOR COSTS**

Administration labor cost	\$53,200	\$/yr
Laboratory labor cost	\$156,000	\$/yr
Unit process operation labor cost	\$652,000	\$/yr
Unit process maintenance labor cost	\$344,000	\$/yr
<b>Total labor costs</b>	<b>\$1,200,000</b>	<b>\$/yr</b>

**MATERIAL COSTS**

Total material cost	\$405,000	\$/yr
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**CHEMICAL COSTS**

Total chemical cost	\$21,000	\$/yr
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**ENERGY COSTS**

Total energy cost	\$706,000	\$/yr
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Total operation and maintenance	\$2,340,000	\$/yr
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**CONSTRUCTION COST AMC**

Amortization cost for total construction	\$3,840,000	\$/yr
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<b>Total annual project cost</b>	<b>\$6,170,000</b>	<b>\$/yr</b>
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**PROJECT SUMMARY**

Present worth	\$73,900,000	\$
Total project cost	\$44,200,000	\$
Total operation labor cost	\$861,000	\$/yr
Total maintenance labor cost	\$344,000	\$/yr
Total material cost	\$405,000	\$/yr
Total chemical cost	\$21,000	\$/yr
Total energy cost	\$706,000	\$/yr
Total amortization cost	\$3,840,000	\$/yr

**Process Summary**

Process	Construction (\$)	Operation (\$/yr)	Maintenance (\$/yr)	Material (\$/yr)	Chemical (\$/yr)	Energy (\$/yr)	Amortization (\$/yr)
Preliminary Treatment	674000	53300	23700	16800	0	3070	56500
Secondary Clarifier	693000	70000	35300	6790	0	1310	63900
Gravity Thickening	201000	18200	12000	2010	0	665	19300
Influent Pump Station	2100000	36500	25700	14700	0	28500	181000

Filtration	1050000	9150	5210	29800	0	3160	101000
Aerobic Digestion	318000	102000	45600	33900	0	135000	27800
Equalization	1830000	53000	42300	3380	0	174000	161000
Ultra-Violet Disinfection	430000	0	4630	4300	1490	10700	36400
Belt-Filter Press	812000	5900	1230	0	19600	3630	74300
Biological Nutrient Removal - 2	10600000	262000	138000	238000	0	343000	962000
Post Aeration	58000	33000	10400	1440	0	3330	5270
Hauling and Land Filling	324000	8620	0	53600	0	0	64700
Effluent	0	0	0	0	0	0	0
Blower System	905000	0	0	0	0	0	75900
Other Costs	24200000	209000	0	0	0	0	2010000

#### Summary of Other Costs for Layout

Description	Value	Units
Other Costs		
Quantities		
Required land	15	acre
Administration labor hours	1030	hr/yr
Laboratory labor hours	3020	hr/yr
Costs		
DIRECT COSTS		
Mobilization	478000	\$
Site preparation	709000	\$
Site electrical	1330000	\$
Yard piping	892000	\$
Instrumentation and control	665000	\$
Lab and administration building	1250000	\$
Total direct construction costs	5320000	\$
INDIRECT COSTS		
Cost of land	300000	\$
Miscellaneous cost	1460000	\$
Legal cost	582000	\$
Engineering design fee	4370000	\$
Inspection cost	582000	\$
Contingency	2910000	\$
Technical	582000	\$
Interest during construction	4330000	\$
Profit	3800000	\$
Total indirect construction cost	18900000	\$
Total of other construction costs	24200000	\$
LABOR COSTS		
Administration labor cost	53200	\$/yr
Laboratory labor cost	156000	\$/yr

#### Summary of Air Supply System

Description	Value	Units
Blower System for Entire Plant		
Design Information		
Minimum air flow capacity	10100	scfm
Safety factor	1.5	
Requested air flow capacity	15200	scfm
Total capacity of blowers	15200	scfm
Number of blowers in use	3	
Total number of blowers	4	
Capacity of individual blowers	5070	scfm
Estimated cost of an installed blower	162000	\$
Blower building area	1510	sqft
Costs		
Construction and equipment cost	905000	\$
Installed Blower Cost	650000	\$
Building Cost	166000	\$
Misc Costs	89700	\$
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	75900	\$/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	0.25 in
Slope of bars from horizontal	30 degrees
Head loss through screen	1.7977E+308 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	2.52 ft
Average channel depth	1 ft
Horizontal Flow Grit Chamber	
Maximum flow	15.5 cuft/s
Average flow	6.29 cuft/s
Minimum flow	3.98 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	7.77 cuft/s
Width of channel	1.29 ft
Depth of channel	4 ft
Length of channel	144 ft
Settling velocity of particle	0.0707 ft/s
Slope of channel bottom	0.00135
Allowance for currents	1.7
Manning coefficient	0.035
Hydraulic retention time	1.6 min
Volume of grit	16.3 cuft/d
Costs	
Construction and equipment co	674000 \$
Operational labor cost	53300 \$/yr
Maintenance labor cost	23700 \$/yr
Material and supply cost	16800 \$/yr
Chemical cost	0 \$/yr
Energy cost	3070 \$/yr
Amortization cost	56500 \$/yr

### Secondary Clarifier

#### Design Output Data

Description	Value	Units
Secondary Clarification		
Design Information		
Surface area	10200	sqft
Surface area per circular clarifi	5110	sqft
Diameter of each circular clarif	81	ft
Number of clarifiers per batter	2	
Number of batteries	1	
Solids loading rate	14.3	lb/(sqft-d)
Hydraulic retention time	4.04	hr
Designed surface overflow rate	400	gal(US)/(sqft-d)
Weir length	272	ft
Volume of wasted sludge	87600	gpd(US)
Quantities		
Operation labor required	1040	pers-hrs/yr
Maintenance labor required	571	pers-hrs/yr
Electrical energy required	10100	kWh/yr
Volume of earthwork required	132000	cuft
Slab thickness	10.2	in
Volume of slab concrete requir	10100	cuft
Wall thickness	11.5	in
Volume of wall concrete requir	5340	cuft
Costs		
Construction and equipment co	647000	\$
Earthwork Cost	39000	\$
Wall Concrete Cost	128000	\$
Slab Concrete Cost	131000	\$
Installed Equipment Cost	250000	\$
Misc Costs	98700	\$
Operational labor cost	53400	\$/yr
Maintenance labor cost	24500	\$/yr
Material and supply cost	6470	\$/yr
Chemical cost	0	\$/yr
Energy cost	1010	\$/yr
Amortization cost	59500	\$/yr
Waste Sludge Pumping		
Design Information		
Average daily pumping rate	0.0876	MGD(US)
Total pumping capacity	0.0876	MGD(US)
Design capacity per pump	30.4	gpm(US)
Number of pumps	3	
Number of batteries	1	
Firm pumping capacity	0.0876	MGD(US)

Quantities	
Operation labor required	322 pers-hrs/yr
Maintenance labor required	251 pers-hrs/yr
Electrical energy required	2950 kWh/yr
Volume of earthwork required	1610 cuft
Area of pump building	202 sqft
Costs	
Construction and equipment cc	46500 \$
Earthwork Cost	478 \$
Pump Building Cost	22200 \$
Installed Pump Cost	16800 \$
Misc Costs	7100 \$
Operational labor cost	16600 \$/yr
Maintenance labor cost	10800 \$/yr
Material and supply cost	326 \$/yr
Chemical cost	0 \$/yr
Energy cost	295 \$/yr
Amortization cost	4400 \$/yr

### Gravity Thickening

#### Design Output Data

Description	Value	Units
Gravity Thickening		
Design Information		
Initial concentration	1	%
Thickened concentration	5	%
Mass loading	10	lb/(sqft-d)
Hydraulic loading	120	gal(US)/(sqft-d)
Hydraulic retention time	13.5	hr
Number of tanks	2	
Tank volume	6570	cuft
Depth	9	ft
Surface area per tank	365	sqft
Tank diameter	22	ft
Quantities		
Amount of sludge generated	3.65	ton(short)/d
Volume of thickened sludge	15000	gpd(US)
Operation labor required	354	pers-hrs/yr
Maintenance labor required	280	pers-hrs/yr
Electrical energy required	6650	kWh/yr
Volume of earthwork required	11000	cuft
Slab thickness	10.2	in
Volume of slab concrete requir	943	cuft
Wall thickness	11.5	in
Volume of wall concrete requir	1610	cuft
Costs		
Construction and equipment cc	201000	\$
Earthwork Cost	3260	\$
Wall Concrete Cost	38700	\$
Slab Concrete Cost	12200	\$
Installed Equipment Cost	116000	\$
Misc Costs	30700	\$
Operational labor cost	18200	\$/yr
Maintenance labor cost	12000	\$/yr
Material and supply cost	2010	\$/yr
Chemical cost	0	\$/yr
Energy cost	665	\$/yr
Amortization cost	19300	\$/yr

### Influent Pump Station

#### Design Output Data

Description	Value	Units
Pump Station		
Design Information		
Volume of wet well	27100	cuft
Width of wet well	209	ft
Depth of the pumping station	28.4	ft
Length of the pumping station	21.2	ft
Width of the pumping station	239	ft
Minimum depth of water in wet	7.36	ft
Area of pump building	682	sqft
Peak capacity of pumps	13.8	MGD(US)
Firm pumping capacity	13.8	MGD(US)
Total dynamic head - average	44.5	ft
Quantities		
Operation labor required	710	pers-hrs/yr
Maintenance labor required	599	pers-hrs/yr
Electrical energy required	285000	kWh/yr
Volume of earthwork required	637000	cuft
Volume of slab concrete requir	47800	cuft
Volume of wall concrete requir	20100	cuft
Capacity per pump	9600	gpm(US)

Number of constant speed pur	2
Number of variable speed purr	0
Diameter of discharge header	22.1 in
Total dynamic head	59.8 ft
Size of selected pump	20 in
Specific speed of pump	4100
Pump rotating speed	878 rpm
Motor size required	168 HP
Size of selected motor	200 HP
Width of pump system	4.6 ft
Length of pump system	21.6 ft
Length of the dry well	21.2 ft
Width of the dry well	30.6 ft
Costs	
Construction and equipment cc	2100000 \$
Earthwork Cost	189000 \$
Wall Concrete Cost	484000 \$
Slab Concrete Cost	620000 \$
Building Cost	75000 \$
Installed Pump Equipment C	410000 \$
Misc Costs	320000 \$
Operational labor cost	36500 \$/yr
Maintenance labor cost	25700 \$/yr
Material and supply cost	14700 \$/yr
Chemical cost	0 \$/yr
Energy cost	28500 \$/yr
Amortization cost	181000 \$/yr

### Filtration

#### Design Output Data

Description	Value	Units
Filtration		
Design Information		
Surface area	740	sqft
Depth	9	ft
Terminal headloss through bec	192000	ft
Maximum head for backwashir	19.6	ft
Backwash rate	20	gal(US)/(sqft·min)
Washwater gutter depth	0.384	ft
Washwater needed	74000	gal(US)
Quantities		
Operation labor required	178	pers-hrs/yr
Maintenance labor required	121	pers-hrs/yr
Electrical energy required	31600	kWh
Surface area per filter unit	740	sqft
Number of cells per filter unit	4	
Number of filter units per batte	1	
Number of batteries	1	
Volume of earthwork for filter	11900	cuft
Volume of concrete for filter	6110	cuft
Volume of surge tank	9900	cuft
Width of surge tank	26.6	ft
Length of surge tank	53.2	ft
Volume of earthwork for surge	24900	cuft
Volume of concrete for surge t	3520	cuft
Costs		
Construction and equipment cc	1050000	\$
Earthwork Cost for Filter	3520	\$
Earthwork Cost for Surge Ta	7380	\$
Concrete Cost for Filter	147000	\$
Concrete Cost for Surge Tar	84800	\$
Installed Equipment Cost	595000	\$
Misc Costs	209000	\$
Operational labor cost	9150	\$/yr
Maintenance labor cost	5210	\$/yr
Material and supply cost	29800	\$/yr
Chemical cost	0	\$/yr
Energy cost	3160	\$/yr
Amortization cost	101000	\$/yr

### Aerobic Digestion

#### Design Output Data

Description	Value	Units
Aerobic Digestion		
Design Information		
Solids retention time	2.08	d
Design SS	12000	mg/L
Calculated VSS	6570	mg/L
Calculated VSS:TSS ratio	0.548	mg VSS/mg SS
Total volume of reactors	284	m3
Length of parallel train	3	m
Width of parallel train	10	m

Sidewater depth	5 m
Number of batteries	1
Number of parallel trains per b	2
Oxygen requirement to meet a	1520 kg/d
Air flow required to meet avera	8420 N m3/hr
Design air flow	494 N m3/min/1000 m3
Volatile solids loading	0.438 lb/(cuft·d)
Solids accumulated	3610 lb/d
Digester capacity	7510 lb
Volume of wasted sludge	34300 gal(US)
Quantities	
Operation labor required	1980 pers-hrs/yr
Maintenance labor required	1060 pers-hrs/yr
Electrical energy required	1350000 kWh/yr
Volume of earthwork required	17100 cuft
Volume of slab concrete requir	3390 cuft
Volume of wall concrete requir	3540 cuft
Handrail length	99.8 ft
Number of diffusers per train	218
Number of swing arm headers	1
Costs	
Construction and equipment co	318000 \$
Earthwork Cost	5070 \$
Wall Concrete Cost	85300 \$
Slab Concrete Cost	43900 \$
Handrail Cost	7490 \$
Installed Aerator Equipment	57200 \$
Air Piping Cost	87900 \$
Misc Costs	31600 \$
Operational labor cost	102000 \$/yr
Maintenance labor cost	45600 \$/yr
Material and supply cost	33900 \$/yr
Chemical cost	0 \$/yr
Energy cost	135000 \$/yr
Amortization cost	27800 \$/yr

### Equalization

#### Design Output Data

Description	Value	Units
Equalization		
Design Information		
Effective storage volume	817000	gal(US)
Average hourly flow	170000	gph(US)
Length of basin	331	ft
Width of basin	331	ft
Tank volume	4920000	gal(US)
Operating transfer efficiency	3.16	lbO2/(HP·h)
Power required	295	HP
Quantities		
Volume of earthwork required	991000	cuft
Volume of slab concrete requir	82200	cuft
Volume of wall concrete requir	7950	cuft
Number of aerators per basin	3	
Power of selected aerator	100	HP
Total installed power	300	HP
Operational labor required	1030	pers-hrs/yr
Maintenance labor required	987	pers-hrs/yr
Electrical energy required	1740000	kWh/yr
Costs		
Construction and equipment co	1830000	\$
Earthwork Cost	294000	\$
Wall Concrete Cost	191000	\$
Slab Concrete Cost	1070000	\$
Installed Aerator Equipment	194000	\$
Misc Costs	87300	\$
Operational labor cost	53000	\$/yr
Maintenance labor cost	42300	\$/yr
Material and supply cost	3380	\$/yr
Chemical cost	0	\$/yr
Energy cost	174000	\$/yr
Amortization cost	161000	\$/yr

### Ultra-Violet Disinfection

#### Design Output Data

Description	Value	Units
Ultra-Violet Disinfection		
Design Information		
Design based on a model calcul	1.98	gal(US)/(min·W)
Total number of lamps needed	107	
Number of spare channels	1	
Total number of lamps used in	144	
Number of excess lamps	37	

Number of lamps/modules	2
Number of modules/bank	3
Number of banks/channel	6
Number of channels	4
Calculated headloss	86.4 in
Costs	
Construction and equipment cost	430000 \$
Cost of installation	258000 \$
Total cost of UV lamps	172000 \$
Operational labor cost	0 \$/yr
Maintenance labor cost	4630 \$/yr
Material and supply cost	4300 \$/yr
Chemical cost	1490 \$/yr
Energy cost	10700 \$/yr
Amortization cost	36400 \$/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	48.1	gpm(US)
Final solids content	19	%
Solids capture fraction	0.996	
Quantities		
Operation labor required	115	pers-hrs/yr
Maintenance labor required	28.7	pers-hrs/yr
Power	36300	kWh/yr
Polymer required	15000	lb/yr
Dry solids produced	4120	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	5900	\$/yr
Maintenance labor cost	1230	\$/yr
Material and supply cost	0	\$/yr
Chemical cost	19600	\$/yr
Energy cost	3630	\$/yr
Amortization cost	74300	\$/yr

### Biological Nutrient Removal - 3/5 Stage

#### Design Output Data

Description	Value	Units
BNR System for BIO-P and N Removal		
Design Information		
Influent BOD/TP ratio too small		
3-Stage Biological Phosphorus		
Design aerobic SRT for nitrification	15	d
Total reactor SRT	30	d
Design SS	3000	mg/L
Calculated VSS	2010	mg/L
Calculated VSS:TSS ratio	0.669	mg VSS/mg SS
Total volume of anaerobic reactor	0	m <sup>3</sup>
Total volume of anoxic reactor	17100	m <sup>3</sup>
Total volume of aerobic reactor	17100	m <sup>3</sup>
Total volume of all reactors	34100	m <sup>3</sup>
Width of parallel train	10	m
Sidewater depth	5	m
Number of batteries	1	
Number of parallel trains per battery	4	
Number of anoxic cells within each battery	3	
Number of aerobic cells within each battery	3	
Anaerobic hydraulic retention time	0	hr
Anoxic hydraulic retention time	26.5	hr
Aerobic hydraulic retention time	26.5	hr
Amount of sludge generated	3410	kg/d
Sludge recycle ratio	42.9	%
Sludge recycle rate	6630	m <sup>3</sup> /d
Nitrogen required for biomass	18.8	mg/L

Phosphorus required for biome	3.75 mg/L
Oxygen required to meet aver	4990 kg/d
Air flow required to meet avera	8280 N m3/hr
Design air flow	8.09 N m3/min/1000 m3
Quantities	
Operation labor required	3530 pers-hrs/yr
Maintenance labor required	1900 pers-hrs/yr
Electrical energy required	2340000 kWh/yr
Volume of earthwork required	571000 cuft
Volume of slab concrete requir	170000 cuft
Volume of wall concrete requir	115000 cuft
Handrail length	4710 ft
Number of diffusers per train	615
Fine bubble diffuser floor cover	2.94 %
Number of swing arm headers	23
Required mixing power	224 kW
Total number of mixers	32
Required mixing power per mi	6.99 kW
Design mixing power per mixer	3.73 kW
Mixing power for each unaerati	14 kW
Costs	
Construction and equipment co	9360000 \$
Earthwork Cost	169000 \$
Wall Concrete Cost	2780000 \$
Slab Concrete Cost	2210000 \$
Handrail Cost	353000 \$
Installed Aerator Equipment	1990000 \$
Air Piping Cost	385000 \$
Installed Mixer Equipment Co	549000 \$
Misc Costs	928000 \$
Operational labor cost	182000 \$/yr
Maintenance labor cost	81500 \$/yr
Material and supply cost	230000 \$/yr
Chemical cost	0 \$/yr
Energy cost	234000 \$/yr
Amortization cost	845000 \$/yr
Internal Recycle Pumping	
Design Information	
Average daily pumping rate	3.06 MGD(US)
Total pumping capacity	3.06 MGD(US)
Design capacity per pump	1060 gpm(US)
Number of pumps	12
Number of batteries	1
Firm pumping capacity	3.06 MGD(US)
Quantities	
Operation labor required	508 pers-hrs/yr
Maintenance labor required	425 pers-hrs/yr
Electrical energy required	409000 kWh/yr
Volume of earthwork required	2080 cuft
Area of pump building	260 sqft
Costs	
Construction and equipment co	517000 \$
Earthwork Cost	2470 \$
Pump Building Cost	115000 \$
Installed Pump Cost	321000 \$
Misc Costs	78800 \$
Operational labor cost	26200 \$/yr
Maintenance labor cost	18200 \$/yr
Material and supply cost	3620 \$/yr
Chemical cost	0 \$/yr
Energy cost	40900 \$/yr
Amortization cost	48900 \$/yr
Internal Recycle Pumping	
Design Information	
Average daily pumping rate	4.09 MGD(US)
Total pumping capacity	4.09 MGD(US)
Design capacity per pump	1420 gpm(US)
Number of pumps	12
Number of batteries	1
Firm pumping capacity	4.09 MGD(US)
Quantities	
Operation labor required	527 pers-hrs/yr
Maintenance labor required	443 pers-hrs/yr
Electrical energy required	546000 kWh/yr
Volume of earthwork required	2240 cuft
Area of pump building	281 sqft
Costs	
Construction and equipment co	579000 \$
Earthwork Cost	2660 \$
Pump Building Cost	123000 \$
Installed Pump Cost	364000 \$
Misc Costs	88300 \$



Operational labor cost	27200 \$/yr
Maintenance labor cost	19000 \$/yr
Material and supply cost	4050 \$/yr
Chemical cost	0 \$/yr
Energy cost	54600 \$/yr
Amortization cost	54700 \$/yr
Sludge Recycle Pumping	
Design Information	
Average daily pumping rate	4.09 MGD(US)
Total pumping capacity	4.09 MGD(US)
Design capacity per pump	1420 gpm(US)
Number of pumps	3
Number of batteries	1
Firm pumping capacity	4.09 MGD(US)
Quantities	
Operation labor required	527 pers-hrs/yr
Maintenance labor required	443 pers-hrs/yr
Electrical energy required	136000 kWh/yr
Volume of earthwork required	2240 cuft
Area of pump building	281 sqft
Costs	
Construction and equipment cost	145000 \$
Earthwork Cost	665 \$
Pump Building Cost	30900 \$
Installed Pump Cost	91100 \$
Misc Costs	22100 \$
Operational labor cost	27200 \$/yr
Maintenance labor cost	19000 \$/yr
Material and supply cost	1010 \$/yr
Chemical cost	0 \$/yr
Energy cost	13600 \$/yr
Amortization cost	13700 \$/yr

#### Post Aeration

##### Design Output Data

Description	Value	Units
Post Aeration by Diffused Aeration		
Design Information		
Dissolved oxygen in influent	2	mg/L
Desired dissolved oxygen in effluent	5	mg/L
Correction factor for pressure	1	
Minimum dissolved oxygen in tank	2	mg/L
Oxygen saturation at summer temperature	8.5	mg/L
Oxygen required	100	lb/d
Operating transfer efficiency	2.95	lbO <sub>2</sub> /(HP·h)
Total volume of aerobic reactor	27800	gal(US)
Air flow rate required to meet oxygen demand	134	scfm
Quantities		
Basin depth	15	ft
Length of basin	8.25	ft
Width of basin	30	ft
Number of diffusers	12	
Number of swing arm diffuser lines	1	
Volume of wall concrete required	861	cuft
Volume of slab concrete required	186	cuft
Electrical energy required	33300	kWh/yr
Operation labor required	640	pers-hrs/yr
Maintenance labor required	243	pers-hrs/yr
Costs		
Construction and equipment cost	58000	\$
Wall Concrete Cost	20700	\$
Slab Concrete Cost	11200	\$
Installed Equipment Cost	20400	\$
Misc Costs	5750	\$
Operational labor cost	33000	\$/yr
Maintenance labor cost	10400	\$/yr
Material and supply cost	1440	\$/yr
Chemical cost	0	\$/yr
Energy cost	3330	\$/yr
Amortization cost	5270	\$/yr

#### Hauling and Land Filling

##### Design Output Data

Description	Value	Units
Sludge Hauling and Land Filling		
Design Information		
Volume of sludge hauled	10.7	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	10 miles
<b>Quantities</b>	
Total sludge volume hauled	10.7 cuyd/d
Maximum anticipated landfill depth	30 d
Anticipated sludge storage height	8 ft
Sludge storage shed area	1080 sqft
Width of sludge storage shed	23.3 ft
Length of sludge storage shed	46.6 ft
Volume of earthwork required	3170 cuft
Volume of slab concrete required	1400 cuft
Surface area of canopy roof	1080 sqft
Round trip haul distance	20 miles
Round trips per day per truck	1
Distance traveled per year per truck	5000 miles
Sludge hauled	9.47 ton(short)/d
Operation labor required	167 pers-hrs/yr
LandFilling cost	35200 \$/yr
<b>Costs</b>	
Construction and equipment cost	324000 \$
Earthwork Cost	938 \$
Slab Concrete Cost	18200 \$
Canopy Roof Cost	21700 \$
Vehicle Cost	283000 \$
Operational labor cost	8620 \$/yr
Maintenance labor cost	0 \$/yr
Material and supply cost	53600 \$/yr
Chemical cost	0 \$/yr
Energy cost	0 \$/yr
Amortization cost	64700 \$/yr

**Effluent**

**Design Output Data**

<b>Description</b>	<b>Value</b>	<b>Units</b>
<b>Costs</b>		
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