

WANDERVIEW ESTATES

Drainage Maintenance Manual

At a minimum of every five years, the following should be performed:

- sod from pond bottoms should be removed;
- sediment build-up should be removed (with backhoe and/or by hand)
- new sod should be replaced in pond bottoms;
- concrete drop inlet should be cleaned out; removing all sediment and debris;
- both drywells should be cleaned out, removing all sediment and debris;
- riprap at pipe outlet (Pond A to ditchline to Pond C) should have additional rock placed at outlet, as needed to provide erosion control;
- crushed rock and/or gravel should be added to the three gravel filter berms, as needed to keep original dimensions (two in ditchline adjacent to Wanderview Lane and one north of the existing power pole at entrance to sub-division).

Note:

- care should be taken so as preserve existing sideslopes in ponds;
- care should be taken when operating backhoe so as not to damage drywells and/or concrete drop inlet;
- care should be taken so as not to damage pipe between Pond A and ditch to Pond C.

WANDERVIEW ESTATES

SINKING FUND RESERVE ACCOUNT CALCULATIONS

Present Value of Drainage System

Item No.	Item Description	Quantity	Unit	Amount per Unit	Replacement Cost
1	Spokane County Standard Type A Drywell	2	each	\$ 2,000.00	\$ 4,000
2	Spokane County Standard Concrete Inlet Type 1	1	each	\$ 900.00	\$ 900
3	10-inch PVC stormwater pipe	40	l.f.	\$ 25.00	\$ 1,000
					\$ 5,900

Assumptions:

- 1 50% replacement in 20 years \$ 2,950
- 2 4% inflation = i
- 3 20 years = n
- 4 6% return on investment = i

Find Future Value, given Present Worth:

$$FV = PV/2(P/F, 4\%, 20) = \$2,950(2.1911) = \mathbf{\$6,463.75 = FV \text{ of Drainage System}}$$

Present Value of Annual Operation and Maintenance

Item No.	Item Description	Quantity	Unit	Amount per Unit	Replacement Cost
1	Rent one backhoe and misc. equipment	2	days	\$ 500.00	\$ 1,000
2	Hire two laborers to run backhoe and replace sod	32	hours	\$ 37.43	\$ 1,198
3	sod - material	6650	sf	\$ 1.00	\$ 6,650
4	add rock/gravel to 3 filter berms, as necessary	3	cy	\$ 19.00	\$ 57
5	add riprap at pipe outlet, as necessary	1	sy	\$ 65.50	\$ 66
					\$ 8,970
cost per year to perform every 5 years					\$ 1,794

Find Future Value, given Present Worth:

$$FV = PV(P/F, 4\%, 20) = \$1,794(2.1911) = \mathbf{\$3,930.83 = FV \text{ of Annual Operation and Maintenance}}$$

Find the Annual Set-Aside Amount for Future Replacement and Operation/Maintenance:

$$A = FV_{\text{Drainage}} + FV_{\text{O\&M}}(A/F, 6\%, 20) = (\$6,463.75 + \$3,930.83)(.0272) = \mathbf{\$282.73 = Total Annual Set-Aside}$$

Assuming all ten units are sold, \$28.28 should be collected from each homeowner per year to replace the necessary drainage system components in 20 years and to remove sod, scrape out sediment, replace sod with new, add gravel to filter berms (as necessary) and add riprap at pipe outlet (as necessary) every 5 years.