

DRAINAGE SYSTEM
OPERATION AND MAINTENANCE MANUAL
FOR
VASILENKO HILL

Metro Engineering, Inc.'s
Project No:
00-043

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RETURN TO COUNTY ENGINEER

INTRODUCTION

This Operation and Maintenance Manual is for the stormwater collection and disposal system which serves the plat of Vasilenko Hill.

The Vasilenko Hill Homeowners Association is responsible and liable for the maintenance and operation of the drainage facilities within the plat of Vasilenko Hill and the drainage facilities outside the plat in drainage easements. The record drawings which give the specifics of the drainage facilities are located in the attached pocket.

The Homeowners Association shall designate an individual or group of individuals (herein referred to as the operator) to be responsible for the operation and maintenance of the stormwater facility. The operator shall be familiar with the facilities and have an understanding of the intent of the facilities. They shall also be familiar with general good operating practices for stormwater collection and disposal. They must keep the interest of the public and the homeowners as the highest priority during their operation and maintenance.

RESPONSIBILITY

It is the responsibility of the Vasilenko Hill Homeowners Association to provide effective, efficient, and continuous operation and maintenance of the stormwater facilities and related appurtenances.

DESCRIPTION OF THE SYSTEM

Please refer to the record drawings in the attached pocket.

The stormwater system is comprised of a stormwater collection system of ditches, swales and culverts, which convey the water to a manmade stock pond (detention pond) with a controlled overflow.

The manmade stock pond is intended to store water until the water evaporates or infiltrates into the ground. The detention pond can overflow through the existing overflow weir. This pond can be accessed and maintained from Hazard Road which is adjacent to the pond

MAINTENANCE AND OPERATION

The ditches, culverts, swales, and detention pond shall be visually inspected at least semi-annually and following all major storm events. The drainage structures should be maintained per the outline below and as listed on the maintenance checklist. Outflow structures shall be kept free of obstructions, including sediment.

The integrity of the pond side slopes should be inspected with each visual inspection to make sure there is no erosion of the side slopes.

MAINTENANCE TASK

FREQUENCY

I. Summer (April-October)

Visual Inspection

Monthly and after major rain events

Pond, Swales, and Ditches:

 Weed Control

Remove noxious weeds as they appear, twice per year (typical)

 Raking and litter control

As necessary, primarily at the end of autumn

 Watering

As necessary to keep the grass green and healthy. See note 1 regarding watering.

Overflow:

 Clear debris (including excess vegetation) from overflow

As necessary to keep overflow clear

Culverts:

 Check and clean culverts

As necessary to keep culverts clear

II. Winter (November-March)

Visual Inspection and litter control

(Same as above)

Clear snow & ice from overflows and ditches

As necessary to keep overflows and ditches clear

GENERAL NOTES:

1. Generally the pond, swales, and ditches will not need to be watered. If during the dry season areas need to be watered to keep the grass alive, precautions shall be taken so as to not over water the soil. Do not over water.
2. The pond, swales, and ditches shall be sprayed for weeds a maximum of twice per year. The primary purpose is to control weeds and to keep the grass in the facilities healthy. Caution should be taken not to over fertilize. Likewise, fertilizers and pesticides adjacent to the ponds shall be carefully controlled.
3. Grass clippings and other debris from maintenance of the pond, ditches and common areas shall not be dumped into the pond. Rubbish, litter and materials removed during maintenance shall be disposed of in an approved manner.
4. The pond is intended to handle typical residential strength stormwater runoff. Hazardous materials, such as, but not limited to, oil, fertilizers, paint, battery acid, antifreeze, fuel oil, and other materials commonly recognized as deleterious to water quality, shall not be discharged into the stormwater system. Precautions should always be taken to prevent these items from entering the stormwater system. If hazardous materials accidentally enter the stormwater system they shall be removed and disposed of immediately, by approved methods.

This maintenance plan and schedule is only a rough guide, the intent is to keep the stormwater facilities fully functional and maintained as a neighborhood asset. The schedule may need to be adjusted after the stormwater facilities have been in operation and their performance observed.

FINANCIAL CONSIDERATIONS

The design life of the drainage system (assuming minimal maintenance) could be anywhere from 20 to 50 years. The service life of the facilities depends heavily on how well the facilities have been maintained.

The annual maintenance cost to repair and maintain the stormwater system is estimated at \$500.

The replacement cost for the stormwater system is estimated to be \$10,000 (Present Value). The annual set-aside for replacement is calculated at \$245.

Figuring the annual cost and the replacement cost amortized over 25 years the annual amount to be set aside to operate and maintain the system shall be \$745.

The Vasilenko Hill Homeowners Association shall create a "sinking-fund" to account for maintenance and replacement of the drainage facilities. The above amount will be added to the account annually. Expenses to maintain the system will come from this account. However, the fund should grow annually by the amortized replacement cost.

Liability insurance shall be carried by the Homeowners Association, per the Spokane County Code. This liability insurance needs to cover all common areas and interests held by the Homeowners Association.

Sinking Fund Reserve Account
Calculation for Operation and Maintenance Costs plus Replacement Costs
For Annual Cost per Lot

Annual Operation and Maintenance Costs (O&M)	\$500
Present Value of Drainage System, PV	\$10,000
Assume 50% replacement of pond and structures in 25 yrs.	PV/2 = \$5,000
Future Value to replace in 25 years, FV assuming inflation = 4%, n=25	$FV = PV/2(F/P, 4\%, n=25)$ $FV = \$5,000(2.6658) = \$13,329$
Annual Set-aside for future replacement of pond and structures, A assume conservative investment; interest=6%	$A = \$13,329(A/F, 6\%, n=25)$ $A = \$13,329(0.0182) = \242.59 say \$245
Total charges per Lot 7 lots	Total Annual Charge = (O&M)+(A) Total Annual Charge = \$745
Annual Charge/Lot = (Annual Costs) + (annual set-aside amount, A)	Annual Charge/Lot = \$745/7 lots = \$106.43 use \$110

NOTE:
Put date of inspection/
maintenance in box and initial.

VASILENKO HILL DRAINAGE MAINTENANCE CHECKLIST

YEAR: 20_____

COMPONENT/TASK	FREQUENCY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
POND AND SWALES													
VISUAL INSPECTION	MONTHLY*												
WEED CONTROL	AS NECESSARY												
RAKING/LITTER CONTROL	AS NECESSARY												
CLEAN OUT SEDIMENT	AS NECESSARY												
POND EMBANKMENT													
INSPECT FOR RODENT ACTIVITY	SEMI-ANNUAL												
CHECK FOR SURFACE EROSION	SEMI-ANNUAL*												
DITCHES													
VISUAL INSPECTION/CHECK FOR EROSION	MONTHLY*												
CLEAR DEBRIS AND SEDIMENT	AS NECESSARY												
OVERFLOW													
VISUAL INSPECTION	MONTHLY*												
CLEAR DEBRIS FROM OVERFLOW	AS NECESSARY												
CULVERTS													
VISUAL INSPECTION	MONTHLY*												
CLEANING	ANNUALLY OR AS NECESSARY												

COMMENTS: * AND AFTER EACH MAJOR RAIN EVENT