



Ten Year Alternative Water Supplies - Operational Plan



Research indicates Alternative Water Supplies in the form of a network of strategically located Dry Hydrants will improve the fire protection of Mayne Island and reduce the Fire Department Capital Costs over time.

The Fire Department requests funding approval for \$22,500 from the Board of Trustees to proceed with the installation of three (3) Dry Hydrants in selected ponds in the year 2013.

This proposal for Alternative Water Supplies provides for the ongoing installation of three Dry Hydrants each year over a period of up to ten years. The cost estimate is approximately \$5-7,500 per installation. The goal of the Fire Department is to have a minimum of twenty Dry Hydrant installations completed, tested and registered with FUS by the time Tender One reaches its recommended replacement age of twenty years in 2020.

This could eliminate the need to replace Tender One in the future, reducing the fleet of Water Tenders to two Tenders (Tender Three, Tender Four), a reserve Pumper/Tender (Engine One), a Frontline Pumper (Engine Two) plus the rescue apparatus (Rescue One).

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Alternative Water Supplies - Dry Hydrants

Firefighting requires large volumes of water to be effective when combating most structure or wildland fires. The water required to extinguish any given fire at a fire scene is the fire flow rated in gallons per minute. An average flow rate of 500 to 1000 IGpm is the minimum that can be expected from a fire hydrant, (pressurized hydrant, or a dry hydrant) this enables effective fire suppression operations within 600 meters of each hydrant.

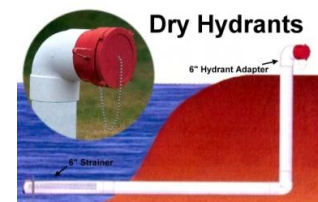
In areas without a network of municipal fire hydrants, the needed water may be located so far away from where it is needed that a fire department's ability to control the fire is impaired. Mobile Water Supply Tenders can move water from distant sources, but the critical factor is whether or not the fire department can maintain an uninterrupted supply of a predictable rate of water at the fire scene.

Mayne Island Fire Department uses a fleet of three water Tenders to move water where it is required for fighting fires. Under ideal conditions - this Standard water shuttle service is capable of delivering approximately 250 IGpm at the fire scene, over a distance not exceeding 5 kilometers.

Installation of a network of dry hydrants in local ponds eliminates the inefficiency and complexity of long-distance water shuttle operations. This arrangement also allows access to water sources from a roadway instead of having to work on soft ground immediately adjacent to the pond.

In any area without water mains and domestic fire hydrants, the dry hydrant concept can provide a simple, cost-effective solution to the need for rapid access to water sources. A dry hydrant consists of an arrangement of piping with one end in the water and the other end extending to dry land and available for connection to a supply pumper. Dry hydrants have the following features:

- Use a non-pressurized pipe system.
- Use relatively inexpensive pvc piping materials and other supplies.
- Are permanently installed in existing lakes, ponds, streams and cisterns.
- Provide a means of access whenever needed, regardless of weather.
- Allow years of simple operation with a minimum of maintenance.



The time savings are many. Multiple lengths of hard suction hose extending to the water are not needed; usually one section to the dry hydrant is enough. The strainer is also permanently attached, saving more time. Fewer people are needed to make a hookup compared to make a conventional direct drafting hookup. When a strategically placed dry hydrant with all-weather road access allows more water to be distributed in less time and the water can be applied effectively on the fire, fire fighter effectiveness and safety is improved.

Savings can be financial as well. Fire departments save money by reducing Capital Equipment and fuel costs through shorter transportation distances and lower operational demands. Communities can preserve more of their treated water supplies, since dry hydrants use untreated water.

Alternative Water Supplies - Implementation

Within Mayne Island's fire protection district, there are currently twenty-plus known ponds of suitable size, located in or near built up residential areas to be considered for a dry hydrant installation. A strategically planned network of dry hydrant installations prioritizing the high risk and residential areas, will improve the fire flows available for the effective firefighting of structural fires as well as interface wildland fires.

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Installing “Dry Hydrants” in existing water sources such as private ponds is an attainable firefighting water supply strategy and it is achievable within the capital plan and it is within the Improvement District mandate.

Upkeep and maintenance for standpipes is minimal and if they are registered with FUS they can be recognized for insurance purposes for properties within 300 meters. This would allow the community to see benefit and support the dry hydrant system development. I would expect the cost of investment for 3 Dry Hydrants to be in the order of \$17 - \$22,500. Variables to the cost of each Dry Hydrant are due to site conditions.

The value our 3 tenders provide in supplying water to contain fires should not be underestimated. From an analysis of current operations and available fire flows the current tender replacement plan should not be altered before the minimum number of high volume water supplies in the high risk areas have been completed.

The current system of Standard Water Tender Shuttle Service is our only method of delivering water to contain a fire. Until the Dry Hydrants are in place, tested and training has been completed, the Fire Department requires 3 fully operational and reliable tenders to provide a steady supply of firefighting water.

The timeline to establish an adequate network of dry hydrant installations throughout Mayne Island is seven (7) years. The basis of the seven year timeline is directly linked to the age of the existing fire fighting apparatus and their projected replacement dates as the underlying factor.

With the arrival of Engine 2, the Standard Water Tender Shuttle Service would be replaced with relay pumping operations; operating a supply pumper (Engine 1) at a dry hydrant location and pumping water directly to the attack Engine (Engine 2) through long runs of large diameter hose (up to 2500'). This allows for increased fire flows and reduced labor requirements when compared to a water shuttling operation.

The proposal to invest in a network of Dry Hydrants throughout Mayne Island will improve the available fire flows where residential density and highest risk is greatest. Within seven years, sufficient Dry Hydrant installations improves firefighter safety, fire protection of residential areas, reduces risks of vehicle accidents during emergency driving operations and reduces the impact of Capital funding requirements and ongoing training, Vehicle Maintenance and replacements.

Dry Hydrant installation costs

Year	Vehicle Replacement	No. of Dry Hydrant Installations	Funding Requested*	Hydrant Cost Details	
				Components	Contractor Cost
2013	Rapid Attack	3	\$22,500	Hydrant #1	
2014	Tender 2	3	\$22,500	\$2,500	\$5,000
2015		3	\$22,500	Hydrant #2	
2016	Engine 1	3	\$22,500	\$2,500	\$5,000
2017		3	\$22,500	Hydrant #3	
2018		3	\$22,500	\$2,500	\$5,000
2019		3	\$22,500		
		21	\$157,500		

*individual installation cost will vary depending on site conditions, to be reviewed annually.

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