



Developing a Device to Transport Water Uphill to Fight Forest Fires

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Summary

- Considerations
 - Maintenance of each system
 - Flexibility
 - Response time
 - External costs (personnel training, transport, etc)
- 3 Solutions (high, middle, low cost)



Proposed Solutions

- High Cost
 - Aerial Fire Suppression
- Middle Cost
 - Rollable Water Tanks with Airless Tires
- Low Cost
 - Water Pumps

High Cost Solution

Aerial Fire Suppression

- Fixed-wing aircraft vs. helicopters
- Aircraft depends on the situation and size of the fire
- Chemicals include water, water enhancers such as foam, gels, and fire retardants
- Cost up to \$6,000 per hour or 40692.91 TT\$
 - Dependant on size of fire
- Retardant cost ~\$3 per gallon or 20.35 TT\$
- Other costs: training, maintenance, etc
- Water is much cheaper but would require a larger aircraft for the same effectiveness



Middle Cost Solution

Rollable Water Tanks with Airless Tires

- Allows for up to 500 gallons of water to be transported at once
- Multiple Hoses
- Pulled by hand or by ATV
- Augmented with Airless tires
 - Avoid problems with heat/brush rupturing tires
- Cost : \$5,640 USD or 38,251.34 TT\$(one time purchase)
 - Tank system ~\$5,000 USD or 33,910.76 TT\$
 - Tires = \$160 USD each or 1,085.14 TT\$



Low Cost Solution

Pumps

MINI-STRIKER® Lightweight Pump

- Long hose lay for remote watering during firefighting operations
- In series pumping over long distances
- Portable
- Can attach to vehicles with different design

About \$1,400 each or 9495.01 TTD\$ each

10 Pumps would cost 94950.13 TT\$ total (\$14,000)

Number of pumps depends on size of fire



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Wrap-Up



Side-By-Side Comparison

Aerial Fire Suppression

Price: \$6000/hr

Flexibility: High

Response Speed: Low

Recommendation: Low

Water Tank/Airless Tires

Price: \$5,640/unit

Flexibility: High

Response Speed: High

Recommendation: High

Water Pumps

Price: \$1,400 (9495.01
TTD\$)/unit

Flexibility: Medium

Response Speed: Medium

Recommendation: High