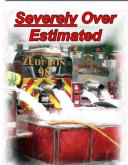
WaterTenderApp.com - Shuttle Calculator



World's <u>FIRST-EVER</u> Water Tender Shuttle Operations Calculator App

Never again <u>OVER</u> or <u>UNDER</u> <u>estimate</u> your remote <u>HIGH</u> 'Fire-Flow' needs.

Finally, we can quickly and accurately estimate and verify ACTUAL GPM/LPM delivered and minimum Portable Storage Tank capacities to meet immediate and forecasted Water Tender needs critical to effectively support our incidents without RISK of inadequate or excess resources.

Only <u>seven</u> (7) entries verify <u>five</u> (5) Water Tenders will deliver approximately <u>653 GPM</u> to exceed the <u>600 GPM</u> minimum for <u>SAFETY</u>

1) SAE/Metric - Enter "S" or "M"

2) Estimated "<u>Fire-Flow</u>" (<u>400 GPM</u>) at <u>150%</u> (<u>600 GPM</u>) to ensure FIREFIGHTER <u>SAFETY!</u>

3) Tank Size (TS) capacity (2,500 Gals.)

4) 'Fill' rate and 'Dump' rate (1,000 GPM)

5) <u>Travel Distance</u> to Water Source (<u>4.0 mi</u>.)

6) Avg. '<u>Make</u>' and '<u>Break</u>' and '<u>manuever'</u> time (<u>1.5 min</u>.) at each end of roundtrip (<u>3.0</u>)

The estimated GPM delivered in 22.25 min. 'CYCLE' at 90% of 2,500 (TS) yields 101 GPM requires six (6) identical tenders for SAFETY

7) Enter 'ACTUAL' roundtrip 'CYCLE' time [24 min at 90% of 2,500 (TS) yields 94 GPM].

Manually Enter 'Flow-Chart' Data

Enter <u>EACH</u> Water Tender by <u>Identifier</u>, <u>Tank</u> <u>Size</u> (TS), <u>GPM</u> or <u>LPM</u>, and <u>minutes</u> for each <u>estimated</u> or <u>ACTUAL</u> roundtrip 'CYCLE' to verify <u>653 GPM</u> exceeds <u>600 GPM</u> minimum.

Portable Storage Tank Capacity (at 8,000 gallons) is auto-calculated upon:

1) The <u>Number</u> of Water Tenders (5) assigned shuttling water... times (X)...

2) <u>Average</u> Water Tender Delivery rate in GPM or LPM (129 GPM)... times (X)...

3) Number of Deliveries per hour (12.4)...

4) Round UP to the nearest 500 Gallons or 2000 Liters for PERSONNEL SAFETY.

Water Tender Shuttle Calculator App							
http://Water	TenderApp.com	Min. Req?	YES!				
"SAE" or "M"	s	Port. Tank:	8,000				
Identica	l Water Tende	rs Needed:	6				
Fire Flow:	400	+50% @	<u>600</u>				
Capacity:	2.500	delivers	101				
Fill Rate:	1,000	Fill Time:	4.0				
Dump Rate:	1,000	Dump Time:	4.0				
Dist. Mi:	4.0	Travel:	14.25				
Make/Break:	1.5	Handling:	3.0				
Estimated	TRAVEL Time:	22.25	minutes				
The calculation process estimates							
2,500	<u>delivers</u>	101	GPM				
	<u>delivers</u> <u>Travel time</u>		<u>GPM</u>				
2,500 ACTUAL:		Delivers:	<u>GPM</u>				
ACTUAL:		Delivers:	<u>GPМ</u> 94				
ACTUAL: <u>Complete</u> Req. Flow:	Travel time 24	Delivers: chart to de	GPM 94 etermine:				
ACTUAL:	Travel time 24 the following	Delivers:	GPM 94 etermine:				
ACTUAL: <u>Complete</u> <u>Reg. Flow:</u> <u>ACTUAL</u> <u>Flow:</u> Totals:	Travel time 24 the following 600 653 16,500	Delivers:	94 etermine: Met? YES! 12.4				
ACTUAL: Complete Reg. Flow: ACTUAL Flow: Totals: Veh.	Travel time 24 the following 600 653 16,500 Capacity:	Delivers: Chart to de	GPM 94 etermine: Met? YES! 12.4 Travel				
ACTUAL: Complete Req. Flow: ACTUAL Flow: Totals: Veh. Ident.	the following 600 653 16,500 Capacity: GALLONS	Delivers: Min. Flow 53.0 Deliveries per hour: GPM	94 etermine: Met? YES! 12.4				
ACTUAL: Complete Reg. Flow: ACTUAL Flow: Totals: Veh. Ident. BU-57	the following 600 653 16,500 Capacity: GALLONS 2,500	Delivers: **Chart to do ** **Min.** **A Flow 53.0 Deliveries per hour: **GPM** **101**	GPM 94 etermine: Met? YES! 12.4 Travel				
ACTUAL: Complete Req. Flow: ACTUAL Flow: Totals: Veh. Ident.	Travel time 24 the following 600 653 16,500 Capacity: GALLONS 2,500 5,000	Delivers: Min. Flow 53.0 Deliveries per hour: GPM	GPM 94 etermine: Met? YES! 12.4 Travel				
ACTUAL: Complete Req. Flow: ACTUAL Flow: Totals: Veh. Ident. BU-57 TCU-44	the following 600 653 16,500 Capacity: GALLONS 2,500	Delivers: **Chart to do ** **Min.** **A Flow 53.0 Deliveries per hour: **GPM** **101**	GPM 94 etermine: Met? YES! 12.4 Travel				
ACTUAL: Complete Req. Flow: ACTUAL Flow: Totals: Veh. Ident. BU-57 TCU-44 MRFD-11	Travel time 24 the following 600 653 16,500 Capacity: GALLONS 2,500 5,000	Delivers: chart to do Min. 53.0 Deliveries per hour: GPM 101 188	GPM 94 etermine: Met? YES! 12.4 Travel				
ACTUAL: Complete Req. Flow: ACTUAL Flow: Totals: Veh. Ident. BU-57 TCU-44 MRFD-11	Travel time 24 the following 600 653 16,500 Capacity: GALLONS 2,500 5,000 2,500	Delivers: Chart to do	GPM 94 etermine: Met? YES! 12.4 Travel				
ACTUAL: Complete Req. Flow: ACTUAL Flow: Totals: Veh. Ident. BU-57 TCU-44 MRFD-11 BU-39	Travel time 24 the following 600 653 16,500 Capacity: GALLONS 2,500 5,000 2,500 4,000	Delivers: Chart to delivers:	GPM 94 94 etermine: Met? YES! 12.4 Travel minutes 23 24 23 29				
ACTUAL: Complete Reg. Flow: ACTUAL Flow: Totals: Veh. Jdent. BU-57 TCU-44 MRFD-11 BU-39 BFD-69	Travel time 24 the following 600 653 16,500 Capacity: GALLONS 2,500 5,000 2,500 4,000	Delivers: Chart to delivers:	gPM 94 etermine: Met? YES! 12.4 Travel minutes 23 24 23 29				

Ensure <u>ACTUAL</u> delivery rates are neither <u>OVER</u> nor <u>UNDER</u> <u>estimated</u> per <u>IFSTA</u> <u>'Pumping Fire Apparatus Driver/Operator Handbook</u>,' 3rd Edition, Copyright © 2015



Be <u>OSHA</u> and <u>NFPA</u> compliant with these <u>FIRST-EVER</u> Firefighter Life and <u>SAFETY</u> Technologies and Equipment never before introduced in Fire Service history!

FREE Trial (as available) of <u>BOTH</u> 'TestFlight' Apple (iOS) versions of the <u>Wildland Hydraulics</u> and <u>Water</u> Tender Shuttle Calculator Apps at: <u>HFTFireApp.com</u>

'<u>Fight</u> the Fire... <u>NOT</u> the Hose!' ...with 'The <u>Technology</u> to Take the <u>HEAT</u>' TM

HoseRoller.net - HoseRoller.info

'The SAFEST Hose Load EVER!' - Texas A & M Fire School



HENway.org - HydraulicsPoster.com



FREE up your district's resources with...



FireBusterPro.com to OutThinkWildfire.net







230 GPM @ 115 PSI 130 GPM @ 108 P

<u> HydraulicsSlideRule.com</u>

HydraulicsApp.com

Everyone

Home.org

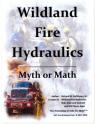
Gets

App Store



The world's first-ever to estimate accurately in mere seconds!

<u>HydraulicsBook.com</u> - <u>HydraulicsBook.org</u>



For the first time in Fire Service history, any fire apparatus driver/operator assigned to the pump-panel on any wildland fire hoselay can finally meet:

The OSHA general duty clause, Section 5(a) (1) of the Occupational Safety and Health Act, requires that each employer furnish to each of its employees a workplace that is free from recognized hazards that are causing or likely to cause death or serious physical harm.

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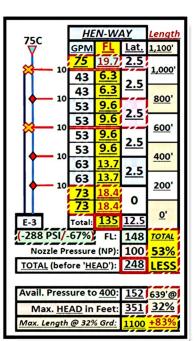
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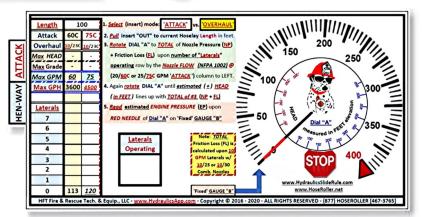
HFT Fire 'TOTAL' Engine Pressure Slide-Rule Calculator

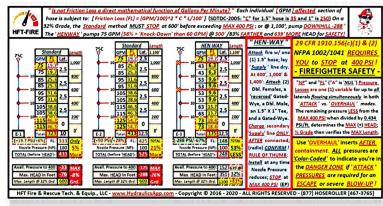


<u>The Scenario</u>



'HENWAY' at 248 PSI





- Select 'HENWAY' or 'Standard' method.
- 2. <u>Extend</u> insert to current hoselay Length (i.e. 1,100' at 75 GPM)
- 3. <u>Determine</u> NP + FL per number of laterals operating. (i.e. "5" Lat.)
- 4. Rotate Dial "A"

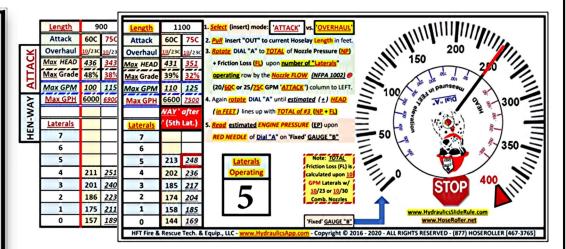
(i.e. 248 PSI on flat ground)

5. <u>Count</u> the 40' contour lines on a USGS map to estimate elevation.

(i.e. 8.75 X 40' ~ 350')

6. Rotate Dial "A" until HEAD in feet lines up with FL + NP of Step 4.

(i.e. <u>EP</u> = MAX 400 PSI)



	<u>Length</u>	900		Length	11	00	1. <u>Select</u> (insert) mode: 'ATTACK' vs. 'OVERHAUL'		
	Attack	60C	75 C	Attack	60C	75C	2. Pull insert "OUT" to current Hoselay Length in feet.		
×	Overhaul	<u>10</u> /23C <u>1</u>	<u>0</u> /23	Overhaul	<u>10</u> /230	10/230	3. Rotate DIAL "A" to TOTAL of Nozzle Pressure (NP)		
ACK	Max HEAD	436	343	Max HEAD	431	<u>351</u>	+ Friction Loss (FL) upon number of "Laterals"		
ATT	Max Grade	48%	<u>38%</u>	Max Grade	39%	32%	operating row by the Nozzle FLOW (NFPA 1002) @		
A	Max GPM	100	115	Max GPM	110	125	(20/50C or 25/75C GPM 'ATTACK') column to LEFT.		
\	Max GPH	6000	590C	Max GPH	6600	<u>7500</u>	4. Again rotate DIAL "A" until estimated (±) HEAD		
3					NAY'	after	(In FEET) lines up with TOTAL of #3 (NP + FL)		
HEN-WAY	<u>Laterals</u>			<u>Laterals</u>	' (5th	Lat.)	5. Read estimated ENGINE PRESSURE (EP) upon		
포	7			7			RED NEEDLE of Dial "A" on 'Fixed' GAUGE "B"		
	6	7.77		6			/ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		
	5			5	213	248	Laterals (Friction loss (FL) is		
	4	211	251	4	202	236	Operating Calculated upon 10		
	3	201	240	3	185	217	GPM Laterals w/ 10/23 or 10/30		
	2	186	223	2	174	204	Comb. Nozzles		
	1	175	211	1	158	185	www.HydraulicsSlideRule.com		
	0	157	189	0	144	169	'Fixed' GAUGE "B" www.HoseRoller.net		
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