

Bill & Sue Galligan
219 Spring Creek Rd.
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JUN 29 2012

DEPARTMENT OF
WATER RESOURCES

FOOTBALL ID 837

27 JUN 2012 PM 11



Mr MICHELE EDL, ASSOC. ENGINEER
IDAHO DEPT. OF WATER RESOURCES
322 E. FRONT ST.
BOISE, ID 83720



RECEIVED

JUN 29 2012

DEPARTMENT OF
WATER RESOURCES

6/25/12

PERMIT 75-7668

DEAR MIGHELE;

I HOPE YOU FOUND THE PHOTO I RETURNED TO YOU
ADEQUATE FOR USE IN LOCATING MY POWER HOUSE. THE RUN
OF 4" PVC PIPE FROM THE SPRING IS ABOUT 600 FEET IN
LENGTH WITH 40 FEET OF HEAD. THE POWERHOUSE IS LOCATED
ON THE EAST FORK OF SPRING CREEK, 160 FEET FROM
OUR DWELLING, THE PLACE OF POWER USE.

I AM ENCLOSEING SOME INFORMATION THAT CAME WITH THE HARRIS
TURBINE THAT SHOULD BE OF HELP IN DETERMINING FLOW.
ONE ITEM IS A NOZZLE FLOW TABLE WHICH SEEMS TO
INDICATE THAT EACH OF THE TWO $\frac{1}{2}$ INCH NOZZLES (WHICH
I MEASURED FOR YOU) WOULD FLOW AT AROUND 30 GPM.
THE OTHER IS A SPEC. SHEET INDICATING A DESIGN
FLOW OF 60 GPM.

I SUSPECT THIS MAY BE A BIT LESS THAN THE 0.18 CFS
I APPLIED FOR. MY ONLY CONCERN IS THAT I BE
ALLOWED TO CONTINUE TO USE WHATEVER FLOW
IS PRESENTLY PASSING THROUGH MY SYSTEM.

I WILL BE BACK IN BOISE AROUND JULY 5TH AND
WILL EMAIL YOU SOME IMAGES OF THE POWERHOUSE
AND OF OUR SOLAR SYSTEM.

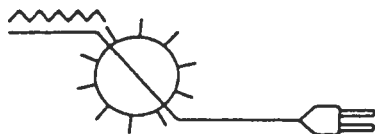
IF YOU NEED TO REACH ME HERE, MY PHONE NUMBER
IS (208) 394-2148, AND MY BOISE NUMBER IS 343-4418.

I REALLY APPRECIATE THE EFFORT YOU ARE MAKING
AND AM HAPPY TO WORK WITH YOU IN ANY WAY
POSSIBLE.

SINCERELY,
Bill Gannon

HARRIS HYDROELECTRIC

Hydro-Power for Home Use



COMPONENT SPECIFIC INFORMATION

ALTERNATOR TYPE

ROTOR

STATOR

RHEOSTAT

DESIGN STATIC HEAD

DESIGN FLOW MAXIMUM

DESIGN FLOW MINIMUM

SHIPPING DATE

5. Multiply the figure found in the table times 2.31, then times the number of 100 foot pipe sections needed.
6. From these figures, select the pipe size necessary for available water.
7. Subtract this figure from the static head (#1). This is "dynamic" or "net" head.
8. Find output below using flow and net head.

Delco Alternator
Output in Watts
Feet of Net Head

G. M.	25	50	75	100	200	300	600
3					25	60	125
6				15	80	110	240
10			35	65	140	225	450
15		40	60	105	225	350	580
20	20	65	100	150	300	400	
30	45	100	175	230	450	600	
50	75	175	290	400			
100	155	350	500	625			
200	175	400	600				

High Output Alternator
Output in Watts
Feet of Net Head

G/M	25	50	75	100	200	300	600
3					30	70	150
6			25	35	100	150	300
10		35	60	80	180	275	550
15	20	60	95	130	260	400	800
20	30	80	130	200	400	550	1100
30	50	125	210	290	580	850	1500
50	115	230	350	500	950	1400	
100	200	425	625	850	1500		
200	225	520	850	1300			

The water that will pass through the turbine is dependent on the nozzle size, the number of nozzles, and the net head. In a given pipe the bigger the nozzle the lower the net head will be. This is significant in long, small diameter pipes. The flow through a given nozzle increases with the square root of the increase in net head.

NOZZLE FLOW TABLE

Head	3 / 16	1 / 4	3 / 8	1 / 2	nozzle size
25	3.4	5.9	12.7	22.8	G.P.M.
50			19.4	34.1	
100	6.8	11.8	25.4	45.7	
400	13.6	23.6	50.8	91.4	

For multiple nozzle systems, add together the flow figures for each nozzle.

If all this seems too complex, it is simpler and more interesting to try various nozzles and note the results!