

STANNARD'S FIGURES ON LIGHT PLANT WAR PRICES, SAYS DALY

Commissioner Not Convinced
by Report of Engineer and
Replies in Detail.

PRESENT PRICE WASTEFUL

Open Wooden Flumes Operated in
Same District by Private Firms
Prove Their Stability.

While the city council Friday held that no municipal light project should be voted on by the people at the city election in June, comments of Will H. Daly, commissioner of public utilities, on the report of J. L. Stannard, engineer appointed by the council to investigate the proposed hydro-electric plant in Bull Run reservoir, are presented in the following article.

Engineer Stannard estimates the cost of the project at \$2,391,585, while engineers of the water bureau who originally figured the cost estimated the cost at \$1,776,820. In his statement Daly says Stannard's figures are based on "war prices" and that he believes them to be unreasonable. He says: "I beg to invite attention to the facts that if the city's engineers' estimates and Mr. Stannard's estimates are considered on the same basis and each carrying all the consideration involved there would be little difference in the final conclusions."

Flume Sufficient, Says Daly.
"The design suggested in Mr. Stannard's report is practically identical with that proposed by the city's engineers. The main difference exists in the substitution of wood stave pipe for an open flume. This substitution, I consider unwarranted, in view of the fact that it increases the cost to almost double the estimates of open flume construction."

Mr. Daly's statement follows:
A comparison of the estimated costs of the different items shows the following:
Item No. 1, Improvement of Bull Run Lake.—This item, estimated by Mr. Stannard at \$47,968, does not appear in the estimate prepared by the city as a charge against the hydro-electric plant, for the reason that the improvement to the lake is urgently necessary to increase the municipal water supply and should be consummated at an early date. Last August the "peak" demand for water supply was at the rate of 42,000,000 gallons per day, approximately 65 cubic feet per second. The low water flow of Bull Run at the headworks is 72 cubic feet per second, which is only 4,000,000 gallons per day greater than the "peak" demand. In consideration of the fact that the city must make provision for additional water supply, regardless of whether the hydro-electric plant is built or not, seems to me conclusive that the substitution of a logical charge against the water system and bears little or no relation to this electric construction, which is in the nature of a by-product.

Figures Extravagant, He Says.
Item No. 2, Diversion, Bull Run River.—The difference in the estimate for the diversion of Bull Run river is made up largely of an increase in the allowance for contingencies, insurance, engineering, and interest. The total for these charges, as estimated by Mr. Stannard, being \$12,321, as against \$3,350 allowed in the city's estimates, and "contingencies," and "engineering" charges, 30 per cent by Mr. Stannard as against 10 per cent by the city. I believe that the allowance of 30 per cent is extravagant and unreasonable and I contend that 10 per cent is sufficient for the purpose.

In the matter of interest during construction, the city estimated that premiums on bonds for construction period interest, not on this item alone, but on the whole construction, was 30 per cent in the past year convinces me that this conclusion is well founded.

Item 3, Substitution of Stave Pipe.—Mr. Stannard substitutes a wood stave pipe for the open flume construction recommended by the city. He says that the service will be subject to fewer interruptions due to breakage caused by slides and falling timber.

It should be borne in mind that only a small portion of this flume will be used during the storm period or winter months, and only during the months of July, August and September, when the river flow is lowest, will it be necessary to use the entire flume construction, and this is during a period when storms are unknown on this watershed. The hillsides along which the proposed flume is located are not subject to land slides and there are no indications of snow slides having occurred. The two slides noted by Mr. Stannard occurred on the mountain in the Sandy River valley and the scars left by such slides are apparent for years, as the small trees are uprooted and carried away.

Other Flumes Standing.
In our plan the right-of-way would be cleared for a width of 100 feet and outside of this strip such trees as appeared over-ripe and dangerous could be cut down thereby rendering the open flume construction as safe as the wood stave pipe.

It is an argument that the open flume construction is preferable (particularly as there is a difference of about \$200,000 in cost) I would submit the fact that the Portland Railway, Light & Power company has three miles of flume in their Bull Run plant in this same valley and there is a short flume on their Cazadero plant. Also the Stone & Webster company have 10 miles of flume on their Puyallup power plant out of Seattle along a hillside very similar to the Bull Run country. The White river plant, also belonging to this company, has a flume and it would therefore seem that flume construction is considered advantageous by companies operating for profit. In view of the wide disparity in cost, Mr. Stannard's estimate being about double the cost of flume construction would be conclusive evidence that the city should adopt the economical plan.

Item No. 6, Operating Reservoir.—The main differences in this item are the same as on the diversion. Contingencies are figured by Mr. Stannard at 30 per cent, engineering at an

additional 10 per cent, overhead 7 1/2 per cent, and the estimate on excavation and embankment to 50 cents per cubic yard as against 40 cents per cubic yard by the city.

Item No. 6, Penstocks.—The same relation as to estimate of contingencies, engineering and overhead applies, except that contingencies in this item apply to labor only and the engineering is figured at 5 per cent.

War-Time Prices Quoted.
The big difference in cost, however, is in the price of pipe. Mr. Stannard figures the pipe at war-time prices, the highest price ever known probably in the history of the country, 11 1/2 cents per pound, while the city's engineer does his calculations on a high normal figure of 7 cents.

Item No. 8, Power House.—The difference in the estimated cost of this item is due to the fact that Mr. Stannard includes five dwellings for operators in his estimate, which item does not appear in the city estimate, and is not necessary.

Item 9, Generating Equipment.—On this item the difference between Mr. Stannard's estimate and that prepared by the city is due almost entirely to the fact that Mr. Stannard has adopted war-time prices for this equipment, while the city's engineer has been more temperate and used a normal basis.

Item No. 10, Wagon Road.—The city estimates four miles of wagon road at \$5,500 per mile. Mr. Stannard's estimate is \$3,144.50 per mile. I maintain that the city's estimate of \$5,500 per mile is sufficient and should not be increased.

Items Nos. 11 and 12, Inclined Tramway and Construction Plant.—These items were reported in the city's estimate against the work on which they were used.

Items Nos. 13 and 14, Telephone Lines and Transmission Lines.—The difference in these items is almost entirely due to the fact that Mr. Stannard used the war-time prices of copper, 42 1/2 cents, as against the city's engineer's estimate based on the normal copper market of 20 cents.

Cost Wrongly Placed.
Items 15, 16, 17 and 18: Substations, Distribution System, Ornamental Lighting, and Municipal Light and Power.—The difference in the estimates of the cost of the city distribution system is due in part to the fact that Mr. Stannard had based his estimates on the highest known cost of copper, and to the fact that the estimate includes the cost of an ornamental post lighting system in the downtown district.

As has been explained to the council before, we have always assumed that the ornamental post lighting estimate in the downtown district should and would be borne by the property owners, but to be maintained at the city's expense. This has been done in a great many cities. In fact it is the rule rather than the exception. At the present time the property owners are not only bearing the cost of construction, but also the cost of maintenance which doubtless is a heavy burden on them.

This item alone increases the estimates by \$251,396. This should be entirely eliminated from the estimate. Mr. Stannard's estimate for the distribution system contemplates the installation of an entirely independent pole system. There are 11 pole companies using the streets of Portland for their construction without charge. They are sharing their construction in a joint pole commission. Our estimates have contemplated that the city can and should participate in this joint use.

In the matter of the annual charges and revenue from the construction of such a plant, Mr. Stannard has included a charge for interest, operation and maintenance, depreciation and a sinking fund to retire bonds. The depreciation charge as made amounts to \$116,001 and the sinking fund to \$102,425. This amounts to a double charge, an unwarranted burden on this utility. The depreciation charge is sufficient to rebuild the plant at the end of its efficient life.

Plant Should Pay Charges.
The plant should pay all operation and maintenance charges. It should pay the interest on its bonds and redeem its bonds during its efficient life. It is unwarranted and unjust to strangle it with a further charge of \$116,000 per annum, which charge has for its sole purpose the building of a new plant for another generation of electric consumers.

Reducing the estimated annual expense by the smaller of these figures would leave an annual charge of \$427,217.

The estimated operating and maintenance charge are the same in the estimates, but by Mr. Stannard's estimate of power available for sale commercially from 1216 k. w. at the meter would be only 1,076,000 k. w. h. out of a total of 10,652,160; or that a lighting load with approximately 10 per cent load factor is the only distribution that could be made of the power. A municipal plant, as proposed, could develop a constant load of 3000 k. w. or the 3750 k. w. at 80 per cent efficiency in the distribution system would deliver 25,280,000 k. w. h. per year at the meter. Five thousand arcs would require 8,777,250 k. w. h. at the lamp. Assuming the same incandescent load as now carried it would bring the total municipal demand to 6,877,250 k. w. h. at the lamp, or factor. Figuring on a 50 per cent load factor the 25,280,000 k. w. h. would give 12,140,000 k. w. h. which would leave 6,812,750 k. w. h. for commercial distribution in addition to the municipal demand of 6,877,250 k. w. h.

Engineer Stannard has estimated a 30 per cent load factor evidently for the whole plant, so that it compares better than a 50 per cent load factor on its entire plant.

Ridiculous, Says Mr. Daly.
As a matter of fact, the estimate by Mr. Morrow apportions 50 per cent, or one-half of the available power to the city for municipal purposes. This municipal consumption is almost entirely arc light service with an average 12-hour load so that it compares 25 per cent of the entire development, leaving 75 per cent yet unsold, yet Mr. Stannard has estimated a 30 per cent load factor. The city being its own customer to the extent of 25 per cent leaves according to his estimate, only 5 per cent that could be disposed of. This we regard as ridiculous.

In 1912 the city of Seattle had completed its distribution system embracing 225 miles of line at a cost to the city of \$300,000. Certainly Portland should be able to build a like system for \$1,000,000.

In conclusion I would respectfully summarize the difference in these estimates as follows:

It is advised that the Bull Run lake improvement must be charged against this power development rather than water works conservation, at an expense of \$1,956.

That it should substitute wood stave pipe for its open flume construction at an increased cost of \$210,000. It is advised that for this construction it must pay the unprecedented war-time price for copper and steel now prevailing.

That it must add five cottages to its plant cost.

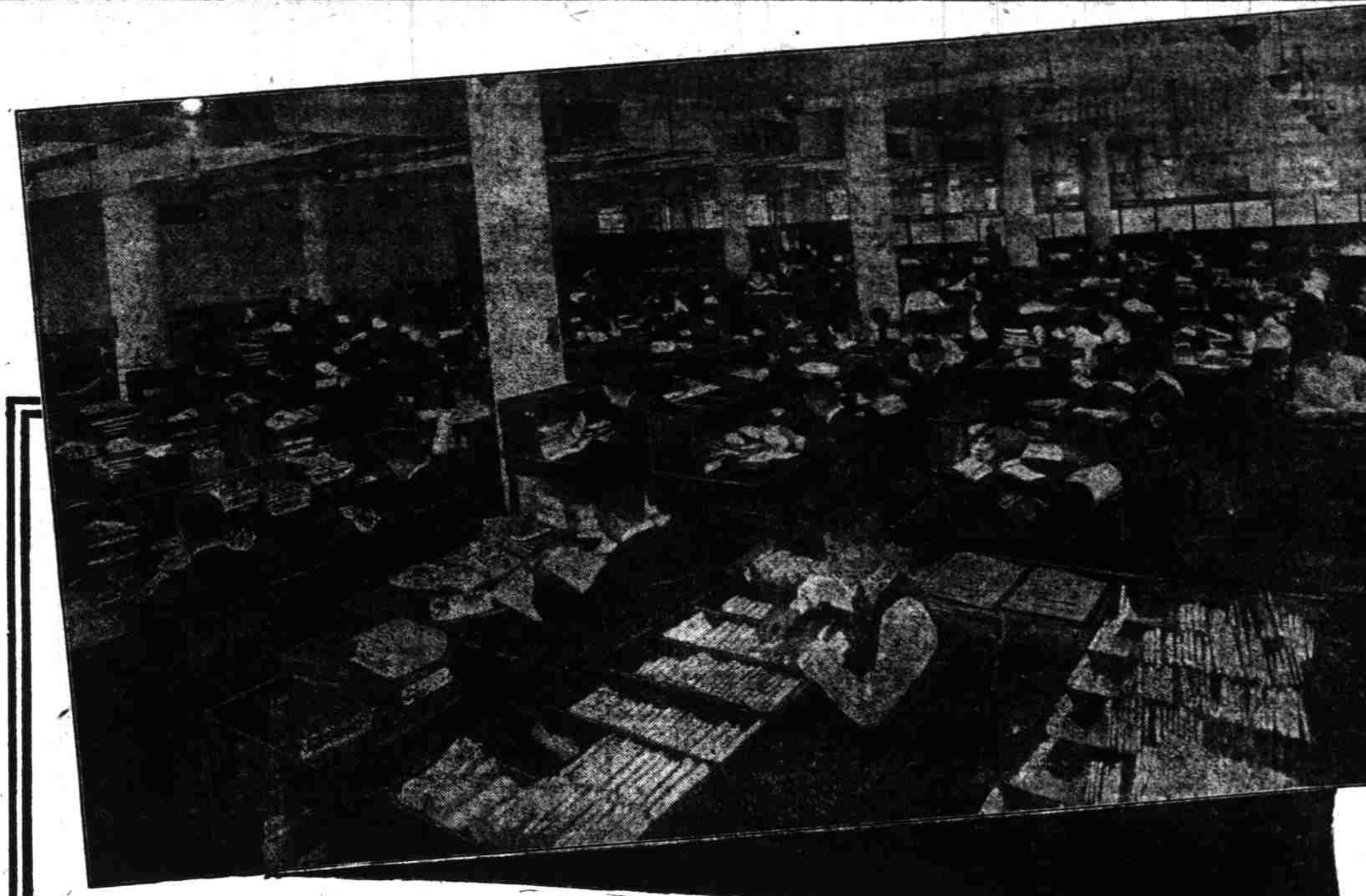
That the city should bear the entire cost of an ornamental lighting system, costing approximately \$251,000.

That the cost of the distribution system must be on the basis of entirely new construction, and the important consideration of sharing construction with other companies was not to be thought of.

On the whole, I regard the estimate by Mr. Stannard as being entirely unreasonable, and it would be difficult to load a project up with greater cost than embraced in the "lay-out" proposed by him.

Stands By His Figures.
It is reasonable to presume that the city would use ordinary business methods and would defer actual purchase of materials until the present war conditions had passed.

There is nothing in Mr. Stannard's report that in any way changes my opinion, and my conclusions that the city's estimate on this project, under normal conditions, is sufficient, and that the plan contemplated can be constructed within the amount named, of \$1,777,000. True, much more money might be invested in this project, but with normal conditions and normal prices for material it would be wasteful to expend any greater sum than contemplated in the first estimate presented to the council.



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