

*Annual Financial Statement*  
*Divisions of Sewage*  
*Disposal*

*1922-1923*



1922-23

## ANNUAL REPORT.

The annual financial statement of the divisions of sewage disposal and sewer reconstruction is as follows:

	<u>APPROPRIATION</u>	<u>EXPENDITURES</u>	<u>BALANCE</u>	<u>OVERDRAFT</u>
<b>B-20</b>				
<b>SEWAGE DISPOSAL</b>				
Salaries	2000.00	3071.16		1071.16
Office Exp.	50.00	63.83		13.83
Auto Exp.	300.00	353.50		53.50
Construction	900.00	660.00	240.00	
Land	12300.00	12300.00		
Testing	1000.00	75.05	924.95	
Misc. (Land, rent, etc.)	280.00	551.39		271.39
Consulting Service	1018.76	72.93	945.83	
Water		10.06		10.06
	<u>17848.76</u>	<u>17157.92</u>	<u>2110.78</u>	<u>1419.94</u>
<b>B-21</b>				
<b>SEWER RECONSTRUCTION</b>				
Contracts		486.10		486.10
Salaries	8780.00	6560.23	2219.77	
Office Expense	500.00	99.37	400.63	
Auto Exp.	550.00	509.40	40.60	
Material	70.00	158.66		88.66
Miscellaneous	3816.15	6706.78		2890.63
Engineering		88.32		88.32
Advertising		16.09		16.09
Inspection		245.70		245.70
Trans. from Cent. Fund				
File #18091	<u>12000.00</u>		<u>12000.00</u>	
	25716.15	<u>14870.65</u>	<u>14661.00</u>	<u>3815.50</u>
Bonds	<u>132000.00</u>		<u>132000.00</u>	
	<u>157716.15</u>		<u>146661.00</u>	

The past year saw the completion of payment of \$67,000. for the city's sewage disposal site, with the item of \$12,300, the major portion of the sewage disposal budget for 1922-3. The balance of the expenditures in this division cover sewage disposal activities; such as, - trade wastes elimination; preliminary surveys for intercepting sewers; topographic survey of plant site; experimental site, land rental and maintenance.

Sewer reconstruction expenditures were almost exclusively devoted to the completion of the city's sewerage plan, a preliminary report of which was made to the city commission in May 1922 by the consulting engineers, Messrs. Hoad, Decker and Drury of Ann Arbor. This work has consisted in the necessary field investigation of existing sewers, computation of capacities of existing storm water carrying sewers and the location and determination of capacity of proposed necessary relief and overflow sewers



after an engineering study of all the factors presented by each individual district. This work has been far reaching and exhaustive in its scope, so that the division is now prepared to recommend changes in existing structures or the installation of reliefs ahead of proposed street improvements in any part of the city. The amount of such work that can be done, however, on this "piece-meal" basis is limited in amount as well as difficult to finance, because of the lack of adequate storm water outlets in any district of the city today into which existing sewers can be relieved.

Two members of the engineering staff of the consulting engineers, Mr. Gill and Mr. Walker followed by Mr. Dodge, have devoted their entire time to this work during the past year, taking it up on completion of the preliminary work in April 1922. The sewerage plan was substantially completed during Jan. 1923, and the division was authorized to retain the services of these two engineers to prepare the detailed contract drawings for the proposed 1923 reconstruction program. Coincident with the city's acceptance of the preliminary report on sewerage, this division has prepared all sewer design for new sewers and passed on existing sewers under proposed improvements. It was necessary to recommend holding up the improvement of about 100 or 50% of the streets proposed for 1923 improvement, because of inadequate or defective sewerage that could not be remedied by reconstruction of the local sewer. This is a measure of the truly serious condition in which Grand Rapids finds itself today with respect to the necessity for relief sewers.

On June 21, 1922, the sinking fund made available the \$132,000. authorized by vote of the people in March preceding. This covered the Louis St., Comstock St. and Howland Relief Sewers. The Louis St. contract was let to Mc Dermott & Cooper on January 14, 1923 for \$63,800.00

Comstock and Howland St. projects are now ready for contract as soon as the rights of way have been secured.

The Goodrich-Logan, Silver Creek, and First St. projects were proposed for 1923, and aside from borings and a few other engineering details are practically ready to trace to form the contract drawings. The consulting engineers are preparing the specifications for this work.

The College Ave., Grand Ave. and Carlton-Lake Drive reliefs proposed for 1923 will be ready on short notice.

The division expects to retain the services of Mr. Gill and Mr. Dodge or their equivalent, and will be entering upon the design of sewage lifting station, river crossing and west side connections and pumping station additions at an early date.

Occasional visits to review the work, outlining new studies and passing on or recommending changes in work already done have been made from time to time by Mr. Head and Mr. Drury. Lacking any persons in its employ of the reputation and experience of the above engineers, their advice is deemed to be essential, but an attempt has been made to make the most economical use of this consulting service consistent with the magnitude of the work, by preparing as many details as possible here in the local office.

The firm has submitted in addition to the preliminary report on sewage, recommended changes in catch basins, inlets and other sewer appurtenances. A plan for the ultimate and recommended present additions with power demand at the several sewage pumping stations is in process of preparation at Ann Arbor.

The city's forces are now securing the underground information by borings and test holes, and have also done most of the field work necessary to the preparation of the contract drawings.



The divisions have maintained a special field party, Mr. B. Moll, C. E.; Mr. C. Edison, instrument, Mr. A. Mershon, rodman, whose work can be summarized as follows:

1. Engineering inspection of existing sewers to determine:-
  - a. The value of existing sewers to be included in or excluded from the ultimate sewerage plan.
  - b. The accuracy of existing sewer records where inconsistencies or doubts now occur.
  - c. The size, grade and location of unrecorded sewers.
  - d. The location and connection of small lateral sewers to lateral, sub-main, and trunk sewers at street intersections, for the purpose of making recommended changes preceding street improvements to avoid future excessive maintenance expense.
  - d. Special trouble complaints.
2. Topographic Survey of Sewage Disposal Site.
3. Location surveys for all relief sewers (1923) and proposed intercepting sewers.
4. Conducting and recording of borings along routes of proposed 1923 relief sewers. Recording of results of test hole where made.
5. Conducting of flooded basement survey of city following storm of July 11, 1922.

On the basis of nearly 10,000 occupants of property canvassed (about 1/3 of city), it was conservatively estimated that 3,000 residential and 300 commercial and industrial basements were flooded in 1922 by sewage and storm water (once or oftener per year) with an annual economic loss to the city of \$200,000.00 not to speak of the health menace caused thereby. The back water trap or valve as now used to combat this present nuisance was found to be less than 50% effective in combatting the trouble.
6. Conducting trade wastes investigation at G. R. Gas Works and special hydraulic work at Butterworth and Lowe shop.

The work of your sanitary engineer during the past year has been highly diversified in its nature. It can be summarized as follows:-

1. General supervision and direction of the work of field party, including
  - a. Special sewer inspection problems.
  - b. Topographic survey - sewage disposal site.
  - c. Location surveys - relief and intercepting sewers.
  - d. Borings.
  - e. Planning and directing flooded basement survey.
  - f. Planning and directing Gas Company wastes investigation.
  - g. Planning and directing the gathering of engineering facts for solution of the Butterworth and Lowe tail race problem.



It is worthy of note that this division has produced engineering facts substantiated by actual tests, that the proposed Huron St. diversion of tail race water to Grand River would result in an increase of available power over present operating conditions for the company; while the proposed Lyon St. diversion would give the company substantially the same operating conditions as existed in the original tail race prior to the construction of the East Side Trunk Sewer.

The company has as yet refused to concede and acknowledge the above, but have not presented any facts to disprove the city's claims.

The above work should result in a net saving to the city of more than \$30,000.00 based on the estimate of cost of elimination of this tail race water made in a showing before the State Supreme Court in 1914.

2. Following up other industrial wastes investigations and reports to accomplish the elimination of those industrial wastes responsible for the halting of our experimental sewage testing program.

- a. Personal calls and joint conferences with the officials of the American Box Board Company and the city's officials during the past year have resulted in the expressed desire on the part of the company to cooperate with the city in the elimination from the public sewers of its industrial wastes.

The present status of this elimination is as follows:-

The company has submitted plans for the removal of these wastes from the sewer by diverting them directly to the river. This necessitates crossing two public sewers and the elimination of all sewage flow from the older one (now threatening collapse). Further progress by the company awaits action by the city in providing a cutoff from the present 7'-0" Market Ave. sewer at Godfrey Ave. into the East Side Trunk Sewer at this point. This short piece (about 120 feet) of construction will serve as outlet for the Godfrey Ave. Relief Sewer to be built in the near future, and should also prolong the life of the Market Ave. pavement south of Godfrey Ave.

- b. The gas house tests run off in July 1922 were formally reported upon to the Director of Public Service in September 1922. The results of the tests were informally discussed with the company officials following this date, and the company consented to cooperate with the city in the elimination of its wastes in January 1923.

A suggested plan for the collection and pre-treatment of the objectionable gas wastes was informally presented to Mr. N. G. Caputis, works superintendent, on Mar. 23, 1923. The division is now awaiting the calling of a joint conference, which should lead to the putting into effect of the proposed plan.

Elimination of the Butterworth and Lowe, American Box Board, and gas house wastes will permit the resuming of final sewage treatment experiments, from which the design of the future plant will issue.



3. To cooperate with the consulting engineers in every way possible furnishing information and data of importance to the sewerage plan. This material has been largely collected during the past four years in conducting the sewage testing station, industrial wastes investigation, gauging and sampling surveys, etc.
4. To prepare from the ultimate sewerage plan, programs of units of construction to give the greatest benefit to the greatest number at the earliest possible date consistent with assumed reasonable limits of public expenditure. These programs as given from time to time are a five-year \$3,500,000 including construction of the treatment works and major relief sewers, and a ten year \$5,000,000 program including treatment works, major and minor relief sewers. Extensions of sewerage facilities into new areas have been anticipated in the sewerage plan but will probably require expenditures in excess of the above.

5. Special and general report writing for various purposes and on various phases of the work, as required. All of the foregoing subjects have been the subject of more or less formal report writing at various times.  
The report of the division in behalf of the city before the engineering division of the state board of health may be worthy of special mention here. This report consisted of a complete summary, by exhibits, of the history of the development and past work done toward the construction of a sewage treatment plant, and was prepared in answer to an order of the state board of health dated Nov. 25, 1922, requiring the city to commence construction of the plant within ninety days. The report of the city was given before a joint meeting of state and city officials and the city's consulting engineers on February 16, 1923 at Lansing, and on that date, it was the consensus of opinion among city officials, at least, that the five year program as submitted calling for the expenditure of about \$3,500,000 was sufficient evidence, to demonstrate the good faith of the city in meeting its obligations.

It was shown among other things that for the carrying out of this program and to prevent the city's coming openly into contempt of court in case of an adverse vote of the people in voting the necessary funds, state legislation authorizing the city to issue bonds for this work without submission of the project to the people, was necessary. City Attorney Taggart presented a draft of the proposed bill, stating that it was in the hands of Rep. Baxter to initiate. The fate of this bill is as yet unknown, but favorable action is hoped for daily since this is the key to the carrying out of the reconstruction and disposal problems as proposed.

The formal reply of the State Board of Health on March 20, 1923 in reply to the city's showing came as somewhat of a surprise to this division, in asking changes in the proposed program, which, it is contended, would permit an earlier operation of the sewage treatment plant. This view is particularly difficult to understand in view of the fact that completion and operation of the treatment plant rests not alone on the earlier completion of certain relief and intercepting sewers, but on the trade wastes elimination and completion of the experimental testing program previously mentioned.



It was not thought advisable, however, at the time of receipt of this reply to continue negotiations on the above subject with the financial problem still <sup>since the carrying out of any</sup> unresolved, contemplated project is dependent solely on the provision of the necessary funds.

Another report of recent date, contemplating the reorganization and combination of present and anticipated future sewerage works functions into a municipally operated utility was recently submitted to the director of Public Service. This is in keeping with new thought just developing in this line of municipal endeavor, and presented the writer's idea of such an innovation.

The advantages claimed were:

- a. The removal of substantial tax burdens, for which is substituted a rational, thoroly equitable method of paying for a sewerage works service at cost. The method is superior to either the direct assessment or bond issue method required by assessed valuation, since it is based on service-demand. The method originates from the standpoint of rendering a specific service with a graduated service charge for different types of service rendered, and not on the basis of "buying the sewer" such as is the case today. The method possesses flexibility in that its application recognizes and provides for the increase and change in sewerage works demand with the development of the city.
  - b. The method provides the simplest and most equitable method of assessing sewerage works costs against territory adjacent to and just outside the present city limits.
  - c. The method provides the ideal solution of the industrial wastes problems.
  - d. The method will act to penalize water waste of all kinds, since this becomes the sewage load, reacting to the benefit of both water and sewerage works departments.
  - e. The method makes sewerage works "self-supporting" thereby greatly lessening the administration's financial problems.
  - f. The method will permit the rendering of a superior sewerage works service not possible by present methods.
  - g. The difficulty in enactment of such a plan is, of course, the lack of established precedent, and the need for constructive legislation to make it operative.
6. Preparation and presenting of various kinds of publicity bearing on the problems introduced by the city's sewage disposal and sewer reconstruction necessities.

Wall exhibits consisting of suitable maps, charts and diagrams have shown the city's problems at the Good Road's, Michigan Apple and Potatoe and the Better Homes Show during the past winter.

The writer has presented various phases of the problem at public meetings as requested.

Considerable time has been expended during the past year in explaining the sewerage plan to interested property holders calling at this office -- how they will be affected by the relief sewers, the theory of sewer relief, the true causes of their sewer complaints, etc., etc.



7. During the time, not otherwise engaged as related above, the writer and Mr. Moll have devoted their time to the sewer reconstruction problems in various parts of the city working with Messrs. Dodge & Gill. Details of the Howland St. Relief with backwater gate are now practically complete which will allow the preparation of contract drawings at an early date. In fact this relief project will be ready before the necessary right of way is secured.

Much work has been done by the combined divisions during the past year which cannot be itemized here, and will not show up until the several projects are under contract and in operation.

Looking forward into the coming year, one great outstanding obstruction is blocking our progress - MONEY. The city has now committed itself to the carrying out of a huge reconstruction and sewage disposal program, that greatly eclipses anything that it has attempted along this line before. The fact that each year's program depends upon the completion, as scheduled, of the preceding year's work, means a greatly augmented engineering organization, outside contractors, more tightly drawn specifications, adoption of new standards, etc., etc.

The city's and this division's first interest is the securing of the necessary funds and financing plan to enter upon this work.

The city should also stand by the division in demanding a show-down of the Butterworth and Lowe problem, the elimination of the boxboard and gas house wastes from the public sewers during the present season. The engineering work in all cases has been completed. The pressure of public sentiment will greatly aid in securing the desired results.

In connection with the box board problem funds should be made available at once to install the cutoff from Market Ave. to the East Side Trunk Sewer at Godfrey Ave. as mentioned heretofore.

Funds should also be made available to construct the diversion outlet for the Butterworth and Lowe tail race when the proper time comes.

The need of the passage of an adequate roof water ordinance for the protection of the separate sewers and their connected basements is of the first order. Very strict regulations control the installation of house plumbing in this city to obtain the highest sanitary condition possible. Then everything gained by such regulation is ruthlessly thrown away by permitting the wholesale and uncontrolled flooding of separate sewers with its accompanying back-wash of filth and disease-producing bacteria into basements connected to these sewers.

Economic factors of sewer reconstruction and future treatment costs also demand such an ordinance.

All of which is respectfully submitted

*Milton P. Adams*

SANITARY ENGINEER.