

STATE OF NEVADA

FIRST BIENNIAL REPORT

OF THE

STATE ENGINEER

1903-1904

A. E. CHANDLER
State Engineer of Nevada

PROPERTY OF
NEVADA STATE ENGINEER



CARSON CITY, NEVADA

STATE PRINTING OFFICE,

: : : : :

ANDREW MAUTE, SUPERINTENDENT

1905

LETTER OF TRANSMITTAL.

CARSON CITY, NEVADA, December 31, 1904.

HON. JOHN SPARKS, *Governor of Nevada.*

SIR: As provided for in Section 8, Chapter IV, Statutes of 1903, I have the honor to submit the first biennial report of the work of this office, together with suggestions as to the amendment of existing laws and the enactment of new laws which I believe will work towards the betterment of irrigation conditions in this State. A draft of certain sections aimed to carry out these suggestions is given at the close of this report, and I hope that you will sufficiently approve to recommend them in your message to the Legislature.

Very respectfully yours,

A. E. CHANDLER,
State Engineer.

REPLICA OF
THE STATE ENGINEER

ACKNOWLEDGMENTS.

Acknowledgments are due to Mr. L. H. Taylor, Supervising Engineer of the Reclamation Service, and his principal assistants for their readiness in furthering the work of this office; to the Southern Pacific Railroad Company for transportation furnished the State Engineer and his assistants in hydrography; and to the San Pedro, Los Angeles and Salt Lake Railroad Company for transportation furnished to the State Engineer.

In the work preliminary to the determination of water rights in the Carson River basin much printing has been necessitated. We wish to acknowledge the promptness and excellence of the work done under the direction of State Printer Andrew Maute and his assistant, Will U. Mackey.

REPLICA OF
THE STATE ENGINEER

REPORT OF STATE ENGINEER.

The real incentive to the passage of the Irrigation Law of 1903, by which the office of State Engineer was created, is clearly shown in the last clause of the preamble introductory to the Act, which reads as follows:

"WHEREAS, It is the desire of the State of Nevada to cooperate in every way with the Secretary of the Interior in the construction, operation, management, and maintenance of irrigation works in the State of Nevada under the Reclamation Act, and it is to the interest of the State of Nevada that every inducement should be held out to the Secretary of the Interior by cooperation and helpful State legislation to enter upon the work of construction, operation, management and maintenance as aforesaid; now, therefore, the people of the State of Nevada, represented in Senate and Assembly, do enact as follows."

It is gratifying to note that within eight months of the passage of the new law the construction of the Truckee-Carson project was commenced and Nevada was thereby given the honor of being the State in which the actual building of irrigation works under the Congressional Reclamation Act was initiated. The following description of the Truckee-Carson project has been taken from a report furnished by L. H. Taylor, Supervising Engineer of the United States Reclamation Service, and in charge of all Government work in Nevada.

OPERATIONS OF THE RECLAMATION SERVICE IN NEVADA.

"The Truckee-Carson project contemplates the utilization of the Truckee and Carson Rivers for irrigation purposes. Each of these rivers has its collecting basin on the eastern slope of the high Sierra Nevada, mostly in the State of California, in a forest-clad region, which ranges in elevation from 5,000 to over 11,000 feet above sea level, and in which the precipitation, mainly in the form of snow, is heavy.

"Upper Truckee River has a generally northerly course and flows into Lake Tahoe, which has an elevation of 6,225 above sea level, and an area of 193 square miles. From the lake the river continues in a northerly direction for a short distance, receiving a number of tributaries, after which it turns eastward. After passing Verdi the river, entering what has been called the lower portion of the Truckee River basin, continues eastward for a distance of 45 miles, passing through Reno Valley and Lower Truckee Cañon to Wadsworth, whence it turns northward, flowing about 20 miles farther and discharging into Pyramid and Winnemucca Lakes.

"The east and west branches of Carson River have a general northerly course, and after debouching from the main Sierra Nevada, cross the California-Nevada boundary, and unite in Upper Carson Valley near Genoa, forming Carson River. This stream then flows north

easterly, traversing Upper Carson, Dayton, and Churchill Valleys, and three intervening cañons, a distance of about 80 miles, to a point in Carson Sink Valley between Leetville and Fallon, where it divides into three branches, one of which discharges into Carson Lake; one, Old River, continues northeast a distance of about 18 miles to Carson Sink; and the third, New River, flows easterly into Stillwater Slough and thence northeasterly into Carson Sink.

WATER SUPPLY AND RESERVOIR SITES.

"For a number of years systematic measurements of the discharge of both Truckee and Carson Rivers have been carried on at several different points for the purpose of determining the character and quantity of their water supply. Since 1900 numerous surveys of reservoir sites have been made at points where it appeared practicable to impound flood waters to aid in regulating the stream flow. In the basin of the Truckee seven of these reservoirs surveyed are recommended for construction, and estimates of their costs have been prepared. In the basin of Carson River twenty-one storage sites were examined, of which four only are recommended for construction.

IRRIGABLE LANDS.

"The irrigable lands within reach of the Truckee and Carson River waters, outside of about 90,000 acres now under cultivation, comprise a total area of about 460,000 acres, situated as follows:

IRRIGABLE LANDS COMMANDED BY TRUCKEE AND CARSON RIVERS.

	Acres.
"In Reno Valley, commanded by existing ditches from Truckee River and by small mountain tributaries	12,000
Along foothills north of Truckee River, and in Lemmon, Prosser, Hungry, Spanish Springs, and Warm Springs Valleys	73,000
On Pyramid Lake Indian Reservation and adjacent to Wadsworth.....	35,000
In Carson Sink Valley.....	200,000
In Churchill Valley.....	15,000
In Upper Carson Valley	35,000
In Dayton Valley.....	15,000
In Lower Humboldt or Lovelock Valley	75,000

"Of the foregoing lands, all in Reno Valley, as well as the greater part of those which can be supplied by a high-line canal from Truckee River, and in Upper Carson, Dayton, Churchill, and Lovelock Valleys are held in private ownership, the Central Pacific Railroad Company being the largest proprietor, though there are a number of persons owning from 1,000 to 25,000 acres each. In Carson Sink Valley about two-thirds of the land still belongs to the public domain.

"The investigations of the water supply have not progressed sufficiently to warrant a close estimate of the irrigation possibilities, but it is confidently believed that the water can be controlled so as to reclaim at least 375,000 acres.

CANAL SURVEYS AND CONSTRUCTION.

"In the development of the Truckee-Carson project the first canal line surveyed was the Truckee River high-line canal, designed to supply water to 73,000 acres of land in the several valleys north of Reno.

This comprised a main diversion canal, heading in the left bank of the river at Floriston, California, and after traversing a rough, mountainous country for a distance of 31 miles, terminating at the divide between Reno and Lemmon Valleys, whence about 100 miles of main branches, largely through rugged country, are required to deliver the water to the various valleys.

"The estimated cost of the diversion canal is \$1,103,457, being \$15.12 per acre of land to be irrigated. While the branches surveyed have not been closely estimated upon, they would cost over half as much more, and when to this is added a proper proportion of the cost of necessary storage works the charge upon the land becomes so nearly prohibitory that it was deemed wise to drop this work for the time being. Accordingly the project of taking water from Truckee River at a point about 10 miles above Wadsworth for the irrigation of lands in that vicinity and in Carson Sink Valley was investigated, and it was found that not only could this be done within reasonable limits of cost, but also that the main diversion canal, extending from the Truckee to the Carson River, could be employed to convey water from the former stream to the Lower Carson reservoir site, situated on the latter at the canal terminus, where it could be impounded, thus permitting the use of a considerable portion of the Truckee waters for power purposes during the non-irrigating season, and at the same time conserving them for irrigation purposes.

"This project also permits of the union of the Truckee and Carson waters in the valley of Carson Sink where, below the lower Carson reservoir, are fully 150,000 acres of irrigable sagebrush lands, while there are fully 125,000 acres more at higher elevations which can be supplied from the canal directly.

"Accordingly it was decided to undertake construction of the Lower Truckee canal, and in April its final location was begun.

"Plans and specifications were completed early in June, and proposals for its construction were opened by the Secretary of the Interior in Washington on July 15, 1903.

"Contracts were awarded to Messrs. C. A. Warren & Co. of San Francisco, California, and E. B. & A. L. Stone Company, of Oakland, California, the former for the construction of divisions 1 and 2, aggregating about 13 miles in length and the latter for division 3, about 18 miles in length, they being the lowest bidders.

"These contracts were executed by E. B. & A. L. Stone Company on August 28, 1903, and by C. A. Warren & Co. on September 3, 1903. Actual construction was begun on division 3 on September 11th, and on divisions 1 and 2 on October 2, 1903.

"Division 3 was completed September 30, 1904, and divisions 1 and 2, on which an extension of time was asked on account of increased quantity of excavation, especially of class 4 material, are rapidly nearing completion.

"Plans and specifications for a portion of the main distributing canals and structures for supplying water to lands in the Carson Sink Valley were perfected in April, and proposals for the construction of 37 miles thereof, involving about 1,500,000 cubic yards of earthwork, with diverting dam, regulating gates, spillways, falls, weirs and highway bridges, were opened at Reno, Nevada, on July 15, 1904.

"Contracts were awarded to Pacific Coast Construction Company of

Portland, Oregon, for canal excavation; to R. C. Mattingly of San Francisco, California, for headworks; to San Francisco Construction Company of San Francisco, California, for spillways, falls and lateral headgates; and to Clarence W. Swain of Ione, California, for highway bridges, they being the lowest bidders.

"These contracts were executed by Clarence W. Swain on August 19, 1904; by Pacific Coast Construction Company, September 9, 1904; San Francisco Construction Company, September 17, 1904; by R. C. Mattingly, September 29, 1904. The entire work is required to be completed not later than April 29, 1905.

"Plans and specifications for lateral irrigation and waste ditches and Carson River Old Channel Canal were prepared early in October, and proposals for their construction were opened at Hazen, Nevada, on December 15, 1904. Contract for this work has not yet been awarded.

"It having been deemed advisable, in order to insure the delivery of water to a larger portion of the irrigable lands of Carson Sink Valley during the irrigation season of 1905, to start the construction of a portion of the lateral system not later than the month of November, 1904, it became necessary, to avoid the delay incident to advertising for proposals and awarding contracts, to undertake the excavation of some 60 miles of minor irrigation and waste ditches on force account. Accordingly, teams, implements and laborers have been employed and work was begun on November 21, 1904, and is progressing satisfactorily.

EXISTING WATER RIGHTS.

"There are under irrigation and cultivation in the basins of Truckee and Carson Rivers about 90,000 acres of land. Of this about 2,000 acres are supplied from the Truckee below the head of the canal now under construction, including lands cultivated by Indians on the Pyramid Lake Indian Reservation, while about 15,000 acres are irrigated in Carson Sink Valley below the Lower Carson reservoir, making a total of approximately 17,000 acres of land for which water rights have been acquired within the district designed to be supplied by the irrigation works now projected and under construction.

"To obviate possible future complications agreements have been secured from all but four or five of the owners of these lands, exclusive of the Indians, whereby the United States Government agrees to supply from the canals to be constructed by it, free of cost, water for the irrigation of all land now under cultivation and irrigation, and in consideration therefor the land owners agree to convey all the water rights owned or claimed by them, together with all dams and ditches for the diversion of water, to the United States."

LAND IN CARSON SINK VALLEY.

On September 1, 1904, the local Land Office at Carson City received from Washington maps of four townships in Carson Sink Valley showing the lands for which water will be available in the spring of 1905. The townships have been subdivided into so-called "farm units" of 40, 80, 120 and 160 acres in extent. In fixing the size of these units careful consideration was given to the location, character of the soil, roughness of the surface, and irrigability of the tract—the controlling idea being to make each allotment sufficient to comfortably support one

family. As the four townships mentioned contain large areas in private ownership and public land that cannot be irrigated in 1905, there are but 239 units subject to entry—comprising 21,580 acres.

The price of these Carson Sink Valley lands has been fixed at \$26 per acre, "payable in ten annual installments commencing on the 1st day of December of the year in which the water shall be delivered to the lands during the April of that year." As the land must be taken up under the homestead law, the charge is really for the water alone. It is so fixed that the sale of all the land under the project will reimburse the Government for its expenditures in construction. The irrigation works will be maintained and operated under the direction of the Secretary of the Interior until all payments are made for the major portion of the lands irrigated. The system will then pass to the owners of the irrigated lands and be maintained at their expense under such organization as may be acceptable to the Secretary of the Interior. The management and operation of the reservoirs and works necessary for their protection and operation must remain under control of the Government.

SURVEYS IN BASINS OF WALKER AND HUMBOLDT RIVERS.

The water users in the Walker River basin have petitioned the Secretary of the Interior to take charge of the regulation of the Walker River and its branches under the provisions of the Reclamation Act. Engineering parties will begin reservoir and canal surveys in that region early in 1905 in order to learn the irrigation possibilities in the basin.

Similar surveys will be made in the Humboldt basin in 1905. A number of reservoir sites and canal lines have already been surveyed in the Humboldt and Walker basins and the work in 1905 will result in very definite information in regard to what construction can be recommended.

GAGING OF STREAMS AND DITCHES.

The United States Geological Survey began the measurements of Nevada streams in 1889. As appropriations were small, the work was continued rather irregularly until 1900, when the funds available allowed the stream gagings to be well systematized. Until the appointment of the State Engineer, the hydrographic work in Nevada was under the direction of L. H. Taylor, now Supervising Engineer for the Reclamation Service.

As Section 12 of the new Irrigation Law provides that the State Engineer shall measure all streams and ditches, an agreement was entered into between F. H. Newell, Chief Engineer of the Reclamation Service, and the State Engineer, whereby the State Engineer acts, without salary, as Resident Hydrographer of the United States Geological Survey. Under this agreement all the United States Geological Survey stream stations on Nevada rivers were placed under the control of the State Engineer and all United States Geological Survey field assistants engaged in stream and ditch measurements reported to him directly—copies of all measurements being forwarded to Washington. Although the law provides that the State Engineer shall be allowed "actual traveling expenses" when "called away from his office," an old decree of the Supreme Court having construed "actual traveling expenses" *not* to include hotel bills, the State Controller can allow no

subsistence expenses. As such a construction is absolutely foreign to modern engineering and business practice, the United States Geological Survey, in return for his services as Resident Hydrographer, has paid the hotel bills of the State Engineer, when absent from Carson on business in connection with his office.

During 1903 and 1904 regular stream-gaging stations have been maintained on Nevada rivers and their tributaries as follows:

Truckee River Basin:

- Donner Creek, at Donner Ice House, near Truckee, California.
- Independence Creek, below Lake Independence, California.
- Prosser Creek, near Hobart Mills, California (established June 27, 1903).
- Little Truckee River, near Boca, California (established June 25, 1903).
- Truckee River, below Lake Tahoe, California.
- Truckee River, at Mystic, California.
- Truckee River, at Vista, Nevada.
- Truckee River, at Pyramid Indian Agency.
- Lake Winnemucca Inlet, at Pyramid Indian Agency.

Carson River Basin:

- West Carson River, at Woodfords, California.
- East Carson River, at Rodenbahs, Nevada.
- Carson River, near Empire, Nevada.

Walker River Basin:

- West Walker River, near Coleville, California.
- East Walker River, near Yerington, Nevada.
- Walker River, near Wabuska, Nevada.

Humboldt River Basin:

- Mary River, at Malovista (discontinued July 14, 1903).
- Pine Creek, near Palisade, Nevada.
- South Fork Humboldt, at Mason Ranch, Nevada.
- North Fork Humboldt, near Elburz, Nevada.
- Humboldt River, at Palisade, Nevada.
- Humboldt River, at Golconda, Nevada.
- Humboldt River, at Oreana, Nevada.

Muddy River Basin:

- Muddy River, near Moapa, Nevada (established January 1, 1904).

Besides the measurements made at regular stream stations in 1903, field assistants of the United States Geological Survey made measurements of all ditches and mountain streams in the basins of the Truckee, Carson, and Walker Rivers and the lower valleys of the Humboldt River at different times during the irrigation season. In 1904 a long series of measurements were made on the ditches in the Reno Valley, or Truckee Meadows, in order to ascertain the amount of "return water" at the lower end of the valley.

All measurements made in 1903 have been published in Water Supply and Irrigation Paper No. 100, of the United States Geological Survey. This office has compiled all measurements on record for

Nevada streams and ditches in addition to those made in 1903 and 1904. The compilation covers a period of fifteen years and consists of over two hundred pages of typewritten manuscript and tables. As it is too voluminous to be appended to this report, it will be published separately.

TOPOGRAPHIC SURVEYS OF IRRIGATED VALLEYS.

Under the provisions of Section 12 of the new law, the State Engineer is required "to make or cause to be made a map or plat, on a scale of not less than one inch to the mile, showing, with substantial accuracy, the course of said stream, the location of each ditch or canal diverting water therefrom and the legal subdivisions of lands which have been irrigated, or which are susceptible of irrigation from the ditches and canals already constructed. In performing such work the State Engineer or his assistant may avail himself of the works, records and information of the United States Geological Survey."

Under the provisions of Section 6 the State Engineer is limited to an expenditure of \$500 per annum for assistants other than the Assistant State Engineer. As \$500 would go but a short way in making such surveys as contemplated in Section 12, assistance was gladly accepted from the Reclamation Service. In order to plan distributing systems from the main canals, the Government engineers were engaged in making topographic surveys in Carson Sink and Churchill Valleys when this office was established. An agreement was entered into between F. H. Newell, Chief Engineer of the Reclamation Service, and the State Engineer, for the survey of the Upper Carson Valley. The Assistant State Engineer was placed in charge of a topographic party; instruments and teams were furnished by the State of Nevada, and the salary of all field assistants and subsistence expenses of the entire party were paid by the United States Geological Survey. This arrangement continued until May 1, 1904, when the Assistant State Engineer was placed in charge of all the Government topographic parties engaged in mapping irrigated and irrigable lands in the Carson River basin and in Lovelock Valley.

The survey of all of the irrigated valleys in the Carson River basin was completed in November, 1904, and parties are now engaged in Truckee Meadows and in Lovelock Valley.

The surveys have been made with plane tables. The scale of the maps is four inches to the mile and the contour interval is five feet. Streams, sloughs, ditches, and principal laterals are shown in blue, and the roads, fences and buildings in black. The ownership of land, the kind of crops and the limits of irrigated areas are clearly marked.

DETERMINATION OF WATER RIGHTS.

The most important work of the State Engineer is the determination of the priority of water rights. Other duties, like the gaging of streams and the mapping of irrigated lands, are but preliminary to this. As no steps could be taken towards a determination until the surveys of the irrigated lands were completed, the work was not commenced until last August.

Section 9 provides that the State Engineer, in order to make a list of the appropriations of water according to priority, "shall enclose to each person having a claim to the waters of such stream a blank form

on which said claimant shall present in writing all the particulars showing the amounts and dates of appropriations to the use of said stream to which he lays claim; the said statement to include the following. * * *” As these blanks could not be intelligently filled out without a map of the irrigated land, the State Engineer decided to personally visit every water user on the East and West Forks of the Carson River and assist him in making his “proof of appropriation,” as the blank forms are called.

Meetings of all water users were first held in Gardnerville and Sheridan in order to explain the requirements of the new law. A few farmers at first failed to recognize the wisdom of the law, but, after discussing it fully, they agreed that it was a much needed measure and their only regret now is that it was not in operation in this State many years ago.

All the “proofs of appropriation” for the Upper Carson Valley are now in this office. In order to give each claimant an opportunity to examine the claim of every other claimant a brief abstract of the essential part of each claim will be published and a copy sent to each claimant. Thirty days will be allowed in which to file sworn statements of errors known to exist in any claim. It should be stated here that each farmer in making out his “proof of appropriation,” knowing that his claim would be open to examination by all other claimants, did his best to secure definite information from old settlers and records. From the friendly manner in which the different water users assisted each other in making out the proofs of appropriation, it is believed that all contests that may arise after publishing abstracts of claims will be quickly settled. After that time all the information necessary to the preparation of the list of priorities in the Upper Carson Valley will be on file in this office, and the work can be quickly finished.

SUGGESTIONS AS TO NEEDED LEGISLATION.

The following eight States now have State Irrigation Engineers: Colorado, Idaho, Montana, Nebraska, Nevada, North Dakota, Utah, and Wyoming. Realizing that they have many interests in common, and that much good would result from regular meetings, these engineers formed the Association of State Engineers at Salt Lake City in May, 1904. The first regular meeting was held at Boise City, Idaho, in September, 1904. At this meeting all of the eight States, with the exception of Colorado and North Dakota, were represented, and the following resolutions were unanimously adopted:

1. “*Resolved*, That it is the sense of this Association that the various States have the authority to regulate the diversion, appropriation and the use of water under the irrigation administrations now provided.
2. “*Resolved*, That it is the sense of this Association that rights to the use of water should be limited to a definite volume for each season rather than to a definite flow for an indefinite period, and that the relation between the two should be regulated in accordance with average local conditions, some latitude being given to the irrigation administration.
3. “*Resolved*, That it is the sense of the Association that the State Engineers should have discretionary powers in the approval of applications for new appropriations, subject to the review of the Courts.
4. “*Resolved*, That it is the sense of this Association that the maps

accompanying applications for permits should be drawn from actual surveys, and that sufficient time should be allowed for perfecting maps, at the discretion of the State Engineer.

5. "*Resolved*, That it is the sense of this Association that all water rights should be appurtenant to the land irrigated and inseparable therefrom except through a regular legal procedure of which the public has full knowledge, and beneficial use should be the basis, the measure and limit of the right.

6. "*Resolved*, That it is the sense of this Association that the State Engineer should be made the responsible executive of the administration of water rights, and should be authorized to appoint, or at least nominate, his subordinates in the service."

The only important point in irrigation legislation on which there was any difference of opinion was the manner of determining the priority of water rights. Wyoming and Nebraska have for years successfully determined water rights by a Board of Engineers, subject to review by the Courts. Utah and Idaho, at the last session of their Legislatures, passed a law providing for the adjudication of water rights by the Courts directly. As adjudications of regular Courts have generally been characterized by long delays, heavy expenditures, and barrenness of results, the Association decided to delay action on this matter until the system adopted by Utah and Idaho is given a trial.

Besides the eight States named above, Washington and Oregon are so much interested in irrigation legislation that the Governor of each State has appointed a commission to draft an irrigation code. These commissions have decided to recommend a draft prepared by Morris Bien, legal adviser of the United States Reclamation Service. Although Montana and North Dakota have State Engineers, they virtually have no irrigation law, and an effort will be made by their respective Legislatures to pass an approved code at the coming session. We will then have ten States possessing irrigation laws quite similar in design.

There are three main features involved in all of the better codes: First, the control of all new appropriations by the State Engineer; second, a direct and inexpensive method for the determination of existing rights; and, third, provision for the division of the stream flow according to priorities in time of scarcity.

The law passed in Nevada in 1903 possesses the last two features, but the first is absent, and new appropriations are still governed by the original law of 1866.

This law provides that any person desiring to construct a ditch should file with the County Recorder of the county or counties in which the proposed ditch is to be located a certificate, previously sworn to, specifying the name of the ditch and the location of its termini. In this way the ditch filings are scattered through the counties of the whole State. In order to determine what recent filings have been made on a stream, an examination must be made of the records of every county through which the stream flows. And, after the records have been found, there is nothing to show whether or not the ditch has been constructed. Such records are of very doubtful utility.

The method that is now generally recognized as the best is to make every intending appropriator apply to the State Engineer for permission to make the diversion, the application showing the proposed point of diversion, the amount of water required, the purpose of intended use,

and, if for irrigation, the land to be irrigated. If there be water available, permission will be granted, otherwise it will be denied. Such a plan brings the whole matter of water rights within the control of one office and makes all information about ditch rights, both old and new, easily accessible. It also prevents the construction of ditches where there is no water unappropriated, and thus saves many useless expenditures.

A supplementary bill (Senate Bill No. 50) was introduced at the last session of the Legislature which provided that the State Engineer should control all new appropriations, as suggested above. This bill passed the Senate with but one dissenting vote, but was not reported upon by the Committee on Agriculture in the Assembly, as information had been received that such a provision would hamper the work under the Reclamation Act. This fear was entirely unfounded, and the Government engineers in every State are heartily in favor of such a provision. A draft of a number of sections, which this office wishes to recommend to the next session of our Legislature, is given at the end of this report.

As stated in Resolution No. 5 of the State Engineers' Association, quoted above, water rights should be appurtenant to land and inseparable therefrom except through a regular legal procedure. Our new law makes the water right appurtenant to land, but provides no way for the transfer of the right to other land when it becomes impracticable to use water beneficially or economically on the land for which the right was acquired. This change in conditions often takes place through no fault of the land owner, and it is only equitable that a transfer should be allowed, provided no existing right is injured. A section of the draft of a State Irrigation Code prepared for the Commissions of Washington and Oregon by Morris Bien covers this point so well that it is recommended to be inserted in our law. A copy is given at the end of this report.

Section 2 of the new law provides that "the maximum quantity of water which may be appropriated or used for irrigation purposes in the State of Nevada shall not exceed three acre feet per year for each acre of land supplied."

This section is unique in irrigation legislation, as it limits water rights to a definite volume and not to a definite flow for an indefinite period as prescribed in all other State laws which specify any limitation. As far as its form of expression is concerned it is therefore in accord with Resolution No. 2 of the State Engineers' Association. Nevertheless, it is believed to be the one section in the law which will cause trouble, and should be repealed.

Three acre feet is a liberal allowance of water and is in excess of the amount used at present in some sections of this State—especially in Lovelock Valley. But, as in a number of instances a greater amount is used, and used in such a manner that under present conditions it would have to be called beneficial use, Section 2 will conflict with vested rights and prove unconstitutional.

Section 1 provides that "beneficial use shall be the basis, the measure, and the limit of the right." This limitation to beneficial use is deemed sufficient limitation at this stage in our irrigation development. Our irrigation industry is but in its infancy. Farmers are just beginning to believe that a more economical use of water will result in not only a saving of water but also in great benefit to their land and crops.

Irrigation communities in other States now celebrated for the scientific and economical way in which water is handled were once where we are now. The amount that is used beneficially on an acre of land under present methods will cover a much greater area by the methods that will be practiced ten years from now. But these better methods cannot be permanently brought about by any action of the Legislature or order of an Irrigation Board. To be lasting they must be the product of a slower, normal growth. As stated by Judge Hawley (in *Rodgers vs. Pitt*, 89 Fed. 420): "In determining the amount of water which a user applies to a beneficial use, and to which he is entitled to the prior right, the system of irrigation in common use in the locality is to be taken as the standard, though a more economical method might be adopted."

If Section 2 is repealed the determination of priorities by the State Engineer will be by irrigated areas and not by quantity of water. Such a determination has been held to be indefinite by a number of Courts, but, under the operation of our law, it should prove sufficient. Section 15 provides that in time of scarcity the water of streams upon which the priorities have been determined shall be divided by Water Commissioners according to the list of priorities. These Water Commissioners being on the ground and conversant with all local conditions, are well fitted to judge of where beneficial use ends and waste begins. This method has been successfully practiced for many years in Colorado, Idaho, Nebraska, Utah, and Wyoming, and should prove equally so in Nevada.

Section 18 gives the Board of Irrigation the power to appoint Water Commissioners and to "make such rules and regulations as to it shall seem advisable for the proper and economical administration of the waters of such streams." The Board thus has full authority to take quick action in case of disputes arising between water users and the Water Commissioners.

The amount of water used on a tract of land varies with a great number of conditions, among which are the character of the soil, the kind of crop, method of irrigation used, experience of irrigator, and the climate. But little data has thus far been collected on this subject in Nevada. During the past four years such measurements have been made by the United States Geological Survey and the Irrigation Investigations of the United States Department of Agriculture in cooperation with the Nevada Board of Irrigation, but the work has not progressed far enough to be used satisfactorily in the determination of water rights involving a great range of conditions.

It is therefore believed that, for the present at least, Section 2 should be repealed, and the determination of priorities made with the irrigated acreage as a basis.

DISBURSEMENTS OF STATE ENGINEER'S OFFICE.

The State Engineer took his oath of office on May 29, 1903, so that no expenditures were made from the Irrigation Fund prior to that date. L. L. Richard served as Assistant State Engineer from June 9, to December 20, 1903. B. B. Smith was Assistant State Engineer for the year 1904. The segregated expenses of this office are shown in the table below. There is an unexpended balance of \$1,348.70. As the fund was drawn upon but for seven months in 1903, the whole appro-

priation would not have been adequate for the full two years. It is believed, however, that the office can be maintained during the coming two years for \$15,000, and an appropriation of that amount is asked for.

EXPENDITURES OF STATE ENGINEER'S OFFICE DURING 1903-1904.

Months.	Field and Office Expenses.	Livery and Forage.	Transportation.	Engineering Instruments.	Services.
<i>1903.</i>					
May					\$19.35
June	\$14.70	\$106.55	\$31.00		273.35
July	138.41	92.05	33.75	\$398.95	300.00
August	27.60	64.60	16.50	160.89	300.00
September	80.75	59.35	20.00		300.00
October	103.95	46.45	8.00		300.00
November	61.79	71.10	24.50	129.35	300.00
December	9.22	43.45	87.00		764.37
Totals for 1903	\$436.42	\$483.55	\$220.75	\$689.19	\$2,557.07
<i>1904.</i>					
January	\$523.25	\$33.00	\$17.45	\$105.00	\$300.00
February	169.09	69.10	9.00	25.35	300.00
March	377.30	74.95	24.35	7.20	300.00
April	93.20	139.15	21.25	103.15	300.00
May	99.70	108.85	34.50		300.00
June	221.03	165.12	56.90		300.00
July	190.43	128.99	36.45		300.00
August	169.40	151.99	33.35		300.00
September	90.95	150.00	76.00		300.00
October	196.68	133.70	32.65	84.00	300.00
November	149.16	119.20	65.00		397.50
December	501.17	370.50	11.50		697.81
Totals for 1904	\$2,781.36	\$1,644.55	\$418.40	\$324.70	\$4,095.31
Appropriation for 1903 and 1904					\$15,000.00
Expenditures for 1903					\$4,386.98
Expenditures for 1904					9,264.32
					13,651.30
Unexpended					\$1,348.70

SUMMARY OF REQUESTS.

This office asks that an appropriation of \$15,000 be made to carry on its work during 1905 and 1906; that Section 2 of Chapter IV, Statutes of 1903, be repealed; and that the following supplementary sections be made part of the Irrigation Law of this State:

APPROPRIATION OF WATER.

SECTION 1. Any person, association or corporation desiring to appropriate any of the public waters shall before performing any work in connection with such appropriation make an application to the State Engineer for permission to make the same. Said application shall set forth the name and postoffice address of the applicant, the source from which said appropriation shall be made, the amount thereof, location of proposed works in connection therewith, the time required for their completion, said time to include the period required for construction of ditches or other works and the time at which the application of the water to beneficial use shall be made, which time

shall be limited to that required for completion of the work when prosecuted with diligence, the purpose for which the appropriation is desired, and if for irrigation a description of the land to be irrigated and the area thereof, and any additional facts required by the State Engineer. On receipt of this application, which shall be of a form prescribed by the State Engineer and to be furnished by him without cost to the applicant, it shall be his duty to make a record thereof in his office, and to carefully examine the same to ascertain whether it sets forth all facts necessary to determine the nature and amount of the proposed appropriation. If the application be defective it shall be the duty of the State Engineer to return the same to the applicant for correction, and sixty days shall be allowed for the refileing thereof. If refiled, corrected in proper form, within such time, the application shall, upon being accepted, take priority as of date of original filing, subject to compliance with the further provisions of the law and the regulations thereunder.

SEC. 2. If not corrected as required, no further proceedings shall be had on such application, but when filed in compliance with this Act, the State Engineer shall at once at the expense of the applicant, to be paid in advance, publish in some newspaper having a general circulation within the boundaries of the river system or water system or water source from which said appropriation is to be made, a notice of the application, showing by whom made; the quantity of water sought to be appropriated; the stream from which the appropriation is to be made, and at what point on the stream; the use for which it is to be appropriated, and by what means; which notice shall be published once a week for four weeks.

SEC. 3. Any person, corporation or association interested may, at any time within thirty days after completion of the publication of said notice, file with the State Engineer a written protest against the granting of said application, stating the reasons therefor, which shall be duly considered by said Engineer. He may, in his discretion, hear evidence in support of or against such application, and shall take such action thereon as he may deem proper and just.

SEC. 4. If there is unappropriated water in the source of supply named and the appropriation is not detrimental to the public welfare, the State Engineer shall approve the same by endorsement thereon, shall make a record of such endorsement in his office and return the same so endorsed to the applicant, who shall, on receipt thereof, be authorized to take such measures as may be necessary to perfect such appropriation; *provided, however*, that the State Engineer may approve an application for a less amount of water or a shorter period of time for perfecting the appropriation than that named in the application; *and provided further*, that an applicant feeling himself aggrieved by the endorsement made upon his application may bring action in any court having jurisdiction against the State Engineer to compel him to modify such endorsement. Such action must be brought within sixty days after date of the endorsement complained of. If there is no unappropriated water in the source of supply the State Engineer shall refuse such appropriation and the party making the application shall not prosecute work in connection therewith so long as such refusal shall be in force, under penalty of being deemed guilty of, and punished for, misdemeanor.

SEC. 5. Upon approval of an application the applicant shall send to the State Engineer within six months thereafter a map on a scale of not less than two inches to the mile, showing the location of the works necessary to perfect the appropriation, the source of the appropriation, and, if for irrigation, the land upon which the water is to be applied, which map shall be filed in his office.

SEC. 6. Upon satisfactory proof being made to the State Engineer that any application to appropriate water has been perfected in accordance with the provisions of this Act, said State Engineer shall issue to the applicant a certificate setting forth the name of the appropriator, date, source, purpose and amount of the appropriation, and if for irrigation a description of the land to be irrigated, which certificate shall within thirty days after its issuance be recorded in the county in which the point of the diversion of the appropriation is, as well as in the county where the water is used, in books specially kept for that purpose, and the fee for such record shall be one dollar (\$1), payable by the party in whose favor the certificate is issued. The priority of such appropriation shall date from the filing of the application in the State Engineer's office.

WATER APPURTENANT TO LAND FOR IRRIGATION PURPOSES.

SECTION 1. All water used in this State for irrigation purposes shall remain appurtenant to the land upon which it is used; *provided*, that if for any reason it should at any time become impracticable to beneficially or economically use water for the irrigation of any land to which the right of use of the same is appurtenant, said right may be severed from said land, and simultaneously transferred, and become appurtenant to other land, without losing priority of right theretofore established, if such change can be made without detriment to existing rights, on the approval of an application of the owner to the State Engineer. Before the approval of such application the applicant must give notice thereof by publication once a week for four weeks in a newspaper of general circulation in the stream system in which the tracts of land are located, in the form required by the State Engineer. Upon the receipts of the proofs of publication, the State Engineer shall render his decision thereon in writing. Any party interested in the same source of water supply may bring appropriate action in the District Court of the county in which the land is located, for a review of such decision.

PROPERTY OF
STATE ENGINEER

IRRIGATION ACT OF 1903,

AS AMENDED AND SUPPLEMENTED IN 1905.

PROPERTY OF
NEVADA STATE ENGINEER

PROPERTY OF NEVADA STATE ENGINEERS THE IRRIGATION ACT.

An Act providing for the coöperation of the State of Nevada with the Secretary of the Interior of the United States in the construction and administration of irrigation works for the reclamation of arid lands in the State of Nevada, for the measurement, appropriation and distribution of water, determination of water rights, preserving and certifying records thereof, creating officers for the enforcement hereof, defining the tenure of office, powers and duties and fixing their compensation; providing for penalties for infringements hereof, and enacting a standard measure of water, and conferring upon the Secretary of the Interior such rights and powers under the laws of Nevada as are necessary to enable him to carry out and execute an Act of the Congress of the United States, approved June 17, 1902, entitled "An Act appropriating the receipts from the sale and disposal of public lands in certain States and Territories to the construction of irrigation works for the reclamation of arid lands."

[Approved February 16, 1903: amended and approved March 1, 1905.]

WHEREAS, The Congress of the United States did by an Act approved June 17, 1902, enact the following law:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled: That all moneys received from the sale and disposal of public lands in Arizona, California, Colorado, Idaho, Kansas, Montana, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Utah, Washington and Wyoming, beginning with the fiscal year ending June thirtieth, nineteen hundred and one, including the surplus of fees and commissions in excess of allowances to registers and receivers, and excepting the five per centum of the proceeds of the sales of public lands in the above States set aside by the law for educational and other purposes, shall be, and the same are hereby reserved, set aside and appropriated as a special fund in the Treasury to be known as the "reclamation fund," to be used in the examination and survey for and the construction and maintenance of irrigation works for the storage, diversion, and development of waters for the reclamation of arid and semi-arid lands in the said States and Territories, and for the payment of all other expenditures provided for in this Act; provided, that in case the receipts from the sale and disposal of public lands other than those realized from the sale and disposal of lands referred to in this section are insufficient to meet the requirements for the support of agricultural colleges in the several States and Territories, under the Act of August thirtieth, eighteen hundred and ninety, entitled "An Act to apply a portion of the proceeds of the public lands to the more complete endowment and support of the colleges for the benefit of agriculture and the mechanical arts, estab-

lished under the provisions of an Act of Congress approved July second, eighteen hundred and sixty-two," the deficiency, if any, in the sum necessary for the support of said colleges shall be provided for from any moneys in the Treasury not otherwise appropriated.

Sec. 2. That the Secretary of the Interior is hereby authorized and directed to make examinations and surveys for, and to locate and construct, as herein provided, irrigation works for the storage, diversion, and development of waters, including regular artesian wells, and to report to Congress at the beginning of each regular session as to the results of such examinations and surveys, giving estimates of cost of all contemplated works, the quantity and location of the lands which can be irrigated therefrom, and all tracts relative to the practicability of each irrigation project; also the cost of works in process of construction as well as of those which have been completed.

Sec. 3. That the Secretary of the Interior shall, before giving the public notice provided for in section four of this Act, withdraw from public entry the lands required for any irrigation works contemplated under the provisions of this Act, and shall restore to public entry any of the lands so withdrawn when, in his judgment, such lands are not required for the purpose of this Act; and the Secretary of the Interior is hereby authorized, at or immediately prior to the time of beginning the surveys for any contemplated irrigation works, to withdraw from entry, except under the homestead laws, any public lands believed to be susceptible of irrigation from said works; *provided*, that all lands entered and entries made under the homestead laws within areas so withdrawn during such withdrawal shall be subject to all the provisions, limitations, charges, terms, and conditions of this Act; that said surveys shall be prosecuted diligently to completion, and upon completion thereof, and of the necessary maps, plans, and estimates of cost, the Secretary of the Interior shall determine whether or not said project is practicable or advisable, and if determined to be impracticable or unadvisable, he shall thereupon restore said lands to entry; that public lands which it is proposed to irrigate by means of any contemplated works shall be subject to entry only under the provisions of the homestead laws in tracts of not less than forty or more than one hundred and sixty acres, and shall be subject to the limitations, charges, terms and conditions herein provided; *provided*, that the commutation provisions of the homestead laws shall not apply to entries made under this Act.

Sec. 4. That upon the determination by the Secretary of the Interior that any irrigation project is practicable, he may cause to be let contracts for the construction of the same, in such portions or sections as it may be practicable to construct and complete as parts of the whole project, providing the necessary funds for such portions or sections are available in the reclamation fund, and thereupon he shall give public notice of the lands irrigable under such project, and limit of area per entry, which limit shall represent the acreage which, in the opinion of the Secretary, may be reasonably required for the support of a family upon the lands in question; also of the charges which shall be made per acre upon said entries, and upon lands in private ownership which may be irrigated by the waters of the said irrigation project, and the number of annual installments, not exceeding ten, in which said charges shall be paid and the time when such payments shall commence. The

said charges shall be determined with a view of returning to the reclamation fund the estimated cost of construction of the project, and shall be apportioned equitably; *provided*, that, in all construction work, eight hours shall constitute a day's work, and no Mongolian labor shall be employed thereon.

Sec. 5. That the entryman upon lands to be irrigated by such works shall, in addition to compliance with the homestead laws, reclaim at least one-half of the total irrigable area of his entry for agricultural purposes, and before receiving patent for the land covered by his entry shall pay to the Government the charges apportioned against such tract, as provided in section four. No right to the use of water for land in private ownership shall be sold for a tract exceeding one hundred and sixty acres to any one land owner, and no such sale shall be made to any land owner, unless he be an actual bona fide resident on such land, or occupant thereof residing in the neighborhood of said land, and no such right shall permanently attach until all payments therefor are made. The annual installments shall be paid to the receiver of the local land office of the district in which the land is situated, and a failure to make any two payments when due shall render the entry subject to cancelation, with the forfeiture of all rights under this Act, as well as of any moneys already paid thereon. All moneys received from the above sources shall be paid into the reclamation fund. Registers and receivers shall be allowed the usual commissions on all moneys paid for lands entered under this Act.

Sec. 6. That the Secretary of the Interior is hereby authorized and directed to use the reclamation fund for the operation and maintenance of all reservoirs and irrigation works constructed under the provisions of this Act; *provided*, that when the payments required by this Act are made for the major portion of the lands irrigated from the waters of any of the works herein provided for, then the management and operation of such irrigation works shall pass to the owners of the lands irrigated thereby, to be maintained at their expense under such form of organization and under such rules and regulations as may be acceptable to the Secretary of the Interior; *provided*, that the title to and the management and operation of the reservoirs and the works necessary for their protection and operation shall remain in the Government until otherwise provided by Congress.

Sec. 7. That where in carrying out the provisions of this Act it becomes necessary to acquire any rights or property, the Secretary of the Interior is hereby authorized to acquire the same for the United States by purchase or by condemnation under judicial process, and to pay from the reclamation fund the sums which may be needed for that purpose, and it shall be the duty of the Attorney-General of the United States upon every application of the Secretary of the Interior under this Act, to cause proceedings to be commenced for condemnation within thirty days from the receipt of the application at the Department of Justice.

Sec. 8. That nothing in this Act shall be construed as affecting or intending to affect or to in any way interfere with the laws of any State or Territory relating to the control, appropriation, use, or distribution of water used in irrigation, or any vested right acquired thereunder, and the Secretary of the Interior, in carrying out the provisions

of this Act, shall proceed in conformity with such laws, and nothing herein shall in any way affect any right of any State or of the Federal Government or of any land owner, appropriator, or user of water in, to, or from any interstate stream of the waters thereof; *provided*, that the right to the use of water acquired under the provisions of this Act shall be appurtenant to the land irrigated, and beneficial use shall be the basis, the measure, and the limit of the right.

Sec. 9. That it is hereby declared to be the duty of the Secretary of the Interior in carrying out the provisions of this Act, so far as the same may be practicable and subject to the existence of feasible irrigation projects, to expend the major portion of the funds arising from the sale of public lands within each State and Territory hereinbefore named for the benefit of arid and semi-arid lands within the limits of such State or Territory; *provided*, that the Secretary may temporarily use such portion of said funds for the benefit of arid or semi-arid lands in any particular State or Territory hereinbefore named as he may deem advisable, but when so used the excess shall be restored to the fund as soon as practicable, to the end that ultimately, and in any event, within each ten-year period after the passage of this Act, the expenditures for the benefit of the said States and Territories, shall be equalized according to the proportions and subject to the conditions as to practicability and feasibility aforesaid.

Sec. 10. That the Secretary of the Interior is hereby authorized to perform any and all acts and to make such rules and regulations as may be necessary and proper for the purpose of carrying the provisions of this Act into full force and effect. And

WHEREAS, The Secretary of the Interior of the United States, acting by and through the United States Geological Survey, has entered upon the examination, survey and location of irrigation works on the Truckee, Carson, Walker and Humboldt Rivers, in the State of Nevada, as provided for in Section 2 of said Act, and is or soon will be prepared to let contracts for the same as provided in Section 4 of said Act; and

WHEREAS, A sum approximating ten million dollars is now collected in a special fund in the Treasury of the United States, known as the "Reclamation Fund" referred to in Section 1 of said Act, and is applicable to the construction and maintenance of irrigation works for the reclamation of arid and semi-arid lands in the arid and semi-arid States and Territories, and it is desirable that a portion thereof be immediately applied to the construction, maintenance and operation of irrigation works in and for the State of Nevada; and

WHEREAS, It is estimated by the United States Geological Survey that the waters of the Truckee River now irrigating only forty-two thousand (42,000) acres of land in Nevada can, by conservation and economical use, be made to supply two hundred and eighty thousand (280,000) acres; and the Carson River now irrigating in Nevada only fifty thousand (50,000) acres can, by conservation and economical use, be made to supply one hundred and seventy-five thousand (175,000) acres; and that the waters of the Walker River now irrigating forty thousand (40,000) acres in Nevada can, by conservation and economical use, be made to supply two hundred thousand (200,000) acres; and that the waters of the Humboldt River now irrigating in whole or in part three hundred thousand (300,000) acres can, by conservation and eco-

nomical use, be made to supply seven hundred and fifty thousand (750,000) acres; thus increasing the total irrigated area of the aforesaid rivers from four hundred and thirty-two thousand (432,000) acres to one million four hundred and five thousand (1,405,000) acres of land in the State of Nevada; thus vastly increasing its population and wealth; and

WHEREAS, Similar work of examination, survey and location is being done in other arid and semi-arid States and Territories, and each and every of said States and Territories is applying to the Secretary of the Interior for the immediate commencement of work of construction; and

WHEREAS, It is within the discretion of the Secretary of the Interior to expend the whole or any part of said fund in any arid or semi-arid State or Territory; and

WHEREAS, It is understood to be the disposition of the Secretary of the Interior to commence work immediately upon such irrigation projects as are feasible and along the lines of least resistance, and which are located in such States and Territories, as indicate by their laws and the action of their public officers the best spirit of coöperation and helpfulness; and

WHEREAS, In Section 6 of said Act, the Secretary of the Interior is authorized to use the said reclamation fund for the operation and maintenance of all reservoirs and irrigation works constructed under the provisions of said Act; *provided*, that when the payments required thereby are made for the major portion of the lands irrigated from the waters of any of the works therein provided for, then the management and operation of such irrigation works shall pass to the owners of the lands irrigated thereby, to be maintained at their expense under such form of organization and under such rules and regulations as may be acceptable to the Secretary of the Interior; *provided*, that the title to and the management and operation of the reservoirs and the works necessary for their protection and operation shall remain in the Government of the United States until otherwise provided by Congress; and

WHEREAS, It is deemed advisable by the State of Nevada that during the period of the construction of such works in or for the State of Nevada by the Federal Government, and during the operation, management and maintenance thereof by the Federal Government, unity of control of the river on which such works are constructed is essential; and it is desirable that such unity of control be exercised by the Secretary of the Interior until the management, operation and maintenance of such works shall pass to the owners of the lands irrigated thereby, as provided in Section 6 of said Act; and

WHEREAS, It may become necessary for the Secretary of the Interior in carrying out the provisions of said Act to proceed to condemn rights or property in the State of Nevada, and it is desirable that every facility should be given to the Secretary of the Interior for the speedy adjudication of such proceedings in the courts of Nevada; and

WHEREAS, It is expressly declared by Section 8 of said Act, that nothing therein shall be construed as in any way interfering with the laws of any State or Territory relating to control, appropriation, use, distribution of water used in irrigation, or any vested right acquired thereunder; and

WHEREAS, It is the purpose of the Secretary of the Interior not to impair or injure vested rights, but on the contrary to confirm the same, and to provide by storage such an abundance of water as to make such vested rights more full, certain and assured in their beneficial operation than at present; and

WHEREAS, It is essential that the Secretary of the Interior, before proceeding to actual construction on any river in Nevada, shall be informed as to the extent of the present actual appropriation and beneficial use of water by existing communities, in order that the Secretary of the Interior may be informed as to what quantity of water will be necessary to fully supply existing uses, and what quantity of water will be available for the supply of new lands and new uses; and

WHEREAS, It is the desire of the State of Nevada to cooperate in every way with the Secretary of the Interior in the construction, operation, management and maintenance of irrigation works in the State of Nevada under said Act; and it is to the interest of the State of Nevada that every inducement should be held out to the Secretary of the Interior by cooperative and helpful State legislation to enter upon the work of construction, operation, management and maintenance as aforesaid; now, therefore

The People of the State of Nevada, represented in Senate and Assembly, do enact as follows:

SECTION 1. All natural water courses and natural lakes, and the waters thereof which are not held in private ownership, belong to the public, and are subject to appropriation for a beneficial use, and the right to the use of water so appropriated for irrigation shall be appurtenant to the land irrigated, and beneficial use shall be the basis, the measure, and the limit of the right; the use of all water now appropriated, or that may hereafter be appropriated, is hereby declared to be a public use.

SEC. 2. [*Repealed, Stats. 1905, Chap. XLVI.*]

SEC. 3. The office of State Engineer is hereby created. He shall be appointed by the Governor, and shall receive a salary not exceeding twenty-four hundred (\$2,400) dollars per annum, payable in equal monthly installments by the State Treasurer upon warrants drawn by the State Controller. He shall keep his office at the State Capitol. No person shall be appointed as such State Engineer who does not have such training in hydraulic engineering and such practical skill and experience as shall fit him for the position. He shall hold his office at the pleasure of the Governor, but his successor shall, in all cases, have the foregoing qualifications. [*As amended, Stats. 1905.*]

SEC. 4. Before entering upon the duties of his office the State Engineer shall take and subscribe an official oath such as is provided by law for said officers before some officer authorized by the law of the State to administer oaths, and shall file with the Secretary of State said oath and his official bond in the penal sum of five thousand dollars, with not less than two sureties, to be approved by the Governor of the State, and conditioned for the faithful discharge of his official duties, and for the delivery to his successor, or other person appointed by the Governor to receive the same, all moneys, books and other property

belonging to the State then in his hands, and under his control, or with which he may be chargeable as such officer.

SEC. 5. The State Engineer shall perform such duties as are prescribed herein. He shall become conversant with the State and the needs of the State as to irrigation matters, and in his reports to the Governor he shall make such suggestions as to the amendment of existing laws, or the enactment of new laws, as his information and experience shall suggest; and he shall keep in his office full and proper records of his work, observations and calculations; all of which shall be the property of the State. He shall cooperate with the Secretary of the Interior in all work of construction, operation, maintenance and management of irrigation works constructed by the Secretary of the Interior in and for the benefit of Nevada, under an Act of Congress of the United States, approved June 17, 1902, entitled "An Act appropriating the receipts from the sale and disposal of public lands in certain States and Territories to the construction of irrigation works for the reclamation of arid lands," and shall in every way facilitate the work of the Secretary of the Interior in carrying out the provisions of said Act in the State of Nevada.

SEC. 6. The State Engineer shall have the power to employ an assistant engineer at an expense not to exceed \$1,200 per annum, and to employ other assistants at a total additional expense not to exceed \$500 per annum; such assistant engineer and such additional assistants to be paid out of any money appropriated for that purpose, on the certificate of the State Engineer and the approval of the State Board of Examiners. He may also appoint as assistant engineers and as additional assistants such persons in the service of the United States Geological Survey as may be designated by the Secretary of the Interior or the Director of the United States Geological Survey; but such assistant engineers and such additional assistants shall be entitled to no pay from the State of Nevada.

SEC. 7. When the State Engineer, or his assistant engineer, is called away from his office he shall be entitled to his actual traveling expenses, which shall be paid out of any money appropriated for that purpose, on the certificate of said State Engineer approved by the State Board of Examiners.

SEC. 8. The State Engineer shall prepare and render to the Governor, biennially, and oftener if required, full and true reports of his work, touching all the matters and duties devolving upon him by virtue of his office, which report shall be delivered to the Governor on or before the 31st day of December of the year preceding the regular session of the Legislature.

SEC. 9. Such State Engineer shall prepare for each stream in the State of Nevada a list of the appropriations of water according to priority, and in order to make such list, he shall enclose to each person having a claim to the waters of such stream a blank form on which said claimant shall present in writing all the particulars showing the amounts and dates of appropriations to the use of water of said stream to which he lays claim; the said statement to include the following:

The name and address of the claimant.

The nature of the use on which the claim for an appropriation is based.

*

The time of the commencement of such use, and if distributing works are required.

The date of beginning of survey.

The date of beginning of construction.

The date when completed.

The date of beginning and completion of enlargements.

The dimensions of the ditch as originally constructed and as enlarged.

The date when water was first used for irrigation or other beneficial purposes, and if used for irrigation, the amount of land reclaimed or irrigated the first year; the amount in subsequent years, with the dates of reclamation, and the amount of land such ditch is capable of irrigating. The character of the soil and the kind of crops cultivated, and such other facts as will show a compliance with the law in acquiring the appropriation and the rank of priority claimed.

SEC. 10. Each of said claimants shall be required to certify to his statements under oath, and any officer authorized to administer oaths is hereby authorized to administer such oaths.

SEC. 11. The failure of any claimant to make such a sworn statement within sixty days after notice that such statement is required by the State Engineer, shall be punishable as a misdemeanor on the complaint of the State Engineer or any of his assistants.

SEC. 12. It shall be the duty of the State Engineer, or some qualified assistant, as soon as practicable, to make an examination of such stream and the works diverting therefrom, said examination to include the measurement of the discharge of said stream unless adequate proof is available from the measurements made by the United States Government, and of the carrying capacity of the various ditches and canals diverting water therefrom; an examination of the irrigated lands, and an approximate measurement of the lands irrigated, or susceptible of irrigation, from the various ditches and canals, which said observations and measurements shall be reduced to writing, and made a matter of record in his office, and it shall be the duty of the State Engineer to make or cause to be made a map or plat, on a scale of not less than one inch to the mile, showing with substantial accuracy, the course of said stream, the location of each ditch or canal diverting water therefrom and the legal subdivisions of lands which have been irrigated, or which are susceptible of irrigation from the ditches and canals already constructed. In performing such work the State Engineer or his assistant may avail himself of the works, records and information of the United States Geological Survey.

SEC. 13. Within thirty days after the preparation of the list of priorities of appropriation of the use of waters of any stream, it shall be the duty of the State Engineer to issue to each person, association or corporation, represented in such list, a certificate to be signed by said State Engineer, setting forth the name and postoffice address of the appropriator, the priority number of such appropriation, the amount of water appropriated and amount of prior appropriations, and if such appropriations be for irrigation, a description of the legal subdivisions of the lands to which said water is to be applied. And he shall also send such certified list, by registered mail, to the County Recorder of the county in which such appropriations shall have been made, as well as to the County Recorder of the county in which the waters appropri-

ated are used, and it shall be the duty of said County Recorder, within ten days after the receipt of such certificate, to record the same in a book specially prepared and kept for that purpose, and the fee for such record shall be fixed by the Governor, and shall be allowed and paid by the Board of Examiners out of funds in the treasury applicable thereto.

SEC. 14. Any party, or number of parties acting jointly, who may feel themselves aggrieved by the determination of the State Engineer, may bring an action in any court having jurisdiction against such State Engineer and all persons having interests adverse to the party or parties bringing the action to have their respective rights determined. Such action must be brought within two years after the record of such list of priorities of appropriation has been recorded. Such action shall be tried as speedily as possible; and the Court is hereby authorized to employ a hydraulic engineer or other expert to examine and make report under oath upon any subject matter in controversy, the cost of such employment to be equitably apportioned by the Court and charged against the parties to the suit as costs.

SEC. 15. The Water Commissioners hereafter provided shall make apportionment of the waters of such stream according to the list of priorities recorded as aforesaid, unless such list be corrected by the judgment of some court having jurisdiction of the subject matter.

SEC. 16. Within sixty days from the passage of this Act, it shall be the duty of the County Recorder in each of the counties of this State to prepare a full and complete transcript of all the claims and appropriations of water now on file in their respective offices, and to transmit the same, without delay, to the State Engineer by express or registered mail. It shall also be the duty of the Clerk of each District Court in the State, within thirty days of the passage of this Act, to transmit to the State Engineer, in like manner, certified copies of all decrees of said District Courts affecting water rights on file in the offices of the said Clerks of the said District Courts of the State. The State Engineer shall also obtain copies of all decrees of the United States Court for the District of Nevada affecting water rights. Said Recorders and said Clerks of the said State District Courts shall receive, in compensation for their services in the preparation of said transcripts and copies, twelve and one-half cents per folio, which shall be paid by the county in which such court is situated; and the same allowance shall be made for certified copies of decrees of the United States Court for the District of Nevada, and shall be paid out of the State Treasury.

SEC. 17. The State Engineer shall be a member of the State Board of Irrigation created by an Act of the Legislature of the State of Nevada, approved March 16, 1901, entitled "An Act to provide for the measurement of streams, the survey of reservoir sites, the determination of irrigation possibilities, and for the best methods of controlling and utilizing the water resources of the State of Nevada in cooperation with the United States Geological Survey and the United States Department of Agriculture, and the Nevada Experiment Station." The said State Engineer shall be the Secretary of said Board of Irrigation and shall keep the records thereof in his office.

SEC. 18. The said Board of Irrigation shall divide the State of Nevada into such water divisions or water districts as seem to it advisable, and may change the same from time to time. It may appoint

Water Commissioners, whose duty it shall be to measure and divide amongst the appropriators the water of such streams according to priority of right and the amount to which each is entitled. It may make such rules and regulations as to it shall seem advisable for the proper and economical administration of the waters of such streams, and may fix penalties for the violation of such rules and regulations. *As amended, Stats. 1905, Chap. XLVI.*

SEC. 19. The Board of Irrigation shall determine the number and compensation of the Water Commissioners appointed under this Act, and said Water Commissioners shall be and act under the direction of the State Engineer. The compensation of said Water Commissioners shall be paid, upon the approval of the Board of Irrigation, by the county in which the work of such Commissioners is performed, in the same manner as other county bills are presented and allowed.

SEC. 20. Any person interfering with, obstructing or resisting the State Engineer, Assistant State Engineer, or any Water Commissioner, in the performance of his duty or duties as prescribed by this Act, or by the rules or regulations adopted by the Board of Irrigation, shall be deemed guilty of a misdemeanor.

SEC. 21. The Secretary of the Interior is hereby authorized and empowered to institute proceedings in any of the courts of the State of Nevada, for the condemnation of any rights or property deemed by him to be necessary for any of the works to be constructed by him or under his direction under the said Act of Congress of June 17, 1902, or necessary to carry out the provisions of said Act. Such proceedings shall be expedited by said courts as rapidly as possible.

SEC. 22. The sum of fifteen thousand dollars is hereby appropriated for the purpose of carrying out the provisions of this Act.

SEC. 23. Any person, association or corporation desiring to appropriate any of the public waters shall before performing any work in connection with such appropriation make an application to the State Engineer for permission to make the same. Said application shall set forth the name and postoffice address of the applicant, the source from which said appropriation shall be made, the amount thereof, location of proposed works in connection therewith, the time required for their completion, said time to include the period required for construction of ditches or other works and the time at which the application of the water to beneficial use shall be made, which time shall be limited to that required for completion of the work when prosecuted with diligence, the purpose for which the appropriation is desired, and if for irrigation a description of the land to be irrigated and the area thereof, and any additional facts required by the State Engineer. On receipt of this application, which shall be of a form prescribed by the State Engineer and to be furnished by him without cost to the applicant, it shall be his duty to make a record thereof in his office, and to carefully examine the same to ascertain whether it sets forth all facts necessary to determine the nature and amount of the proposed appropriation. If the application be defective it shall be the duty of the State Engineer to return the same to the applicant for correction, and sixty days shall be allowed for the refiling thereof. If refiled, corrected in proper form, within such time, the application shall, upon being accepted, take priority as of date of original filing, subject to compliance with the further

provisions of the law and the regulations thereunder. *Added, Stats. 1905, Chap. XLVI.*

SEC. 24. If not corrected as required, no further proceedings shall be had on such application, but when filed in compliance with this Act, the State Engineer shall at once at the expense of the applicant, to be paid in advance, publish in some newspaper having a general circulation within the boundaries of the river system or water system or water source from which said appropriation is to be made, a notice of the application, showing by whom made; the quantity of water sought to be appropriated; the stream from which the appropriation is to be made, and at what point on the stream; the use for which it is to be appropriated, and by what means; which notice shall be published once a week for four weeks. Any person, corporation or association interested may, at any time within thirty days after completion of the publication of said notice, file with the State Engineer a written protest against the granting of said application, stating the reasons therefor, which shall be duly considered by said Engineer. He may, in his discretion, hear evidence in support of or against such application, and shall take such action thereon as he may deem proper and just. *Added, Stats. 1905, Chap. XLVI.*

SEC. 25. If there is unappropriated water in the source of supply named and the appropriation is not detrimental to the public welfare, the State Engineer shall approve the same by endorsement thereon, shall make a record of such endorsement in his office and return the same so endorsed to the applicant, who shall, on receipt thereof, be authorized to take such measures as may be necessary to perfect such appropriation; *provided, however*, that the State Engineer may approve an application for a less amount of water or a shorter period of time for perfecting the appropriation than that named in the application; *and provided further*, that an applicant feeling himself aggrieved by the endorsement made upon his application may bring action in any court having jurisdiction against the State Engineer to compel him to modify such endorsement. Such action must be brought within sixty days after date of the endorsement complained of. If there is no unappropriated water in the source of supply the State Engineer shall refuse such appropriation and the party making the application shall not prosecute work in connection therewith so long as such refusal shall be in force, under penalty of being deemed guilty of, and punished for, misdemeanor. *Added, Stats. 1905, Chap. XLVI.*

SEC. 26. Upon approval of an application the applicant shall send to the State Engineer within six months thereafter a map on a scale of not less than two inches to the mile, showing the location of the works necessary to perfect the appropriation, the source of appropriation, and if for irrigation, the land upon which the water is to be applied, which map shall be filed in his office. *Added, Stats. 1905, Chap. XLVI.*

SEC. 27. Upon satisfactory proof being made to the State Engineer that any application to appropriate water has been perfected in accordance with the provisions of this Act, said State Engineer shall issue to the applicant a certificate setting forth the name of the appropriator, date, source, purpose and amount of the appropriation, and if for irrigation, a description of the land to be irrigated, which certificate shall within thirty days after its issuance be recorded in the county in which

the point of diversion of the appropriation is, as well as in the county where the water is used, in books specially kept for that purpose, and the fee for such records shall be one dollar (\$1) payable by the party in whose favor the certificate is issued. The priority of such appropriation shall date from the filing of the application in the State Engineer's office. *Added, Stats. 1905, Chap. XLVI.*

SEC. 28. All water used in this State for irrigation purposes shall remain appurtenant to the land upon which it is used; *provided*, that if for any reason it should at any time become impracticable to beneficially or economically use water for the irrigation of any land to which the right of use of the same is appurtenant, said right may be severed from said land, and simultaneously transferred, and become appurtenant to other land, without losing priority of right theretofore established, if such change can be made without detriment to existing rights, on the approval of an application of the owner to the State Engineer. Before the approval of such application the applicant must give notice thereof by publication once a week for four weeks in a newspaper of general circulation in the stream system in which the tracts of land are located, in the form required by the State Engineer. Upon the receipt of the proofs of publication, the State Engineer shall render his decision thereon in writing. Any party interested in the same source of water supply may bring appropriate action in the District Court of the county in which the land is located, for a review of such decision. *Added, Stats. 1905, Chap. XLVI.*

SEC. 29. All Acts and parts of Acts inconsistent with the provisions of this Act are hereby repealed.