Report of the

STATE ENGINEER
OF NEVADA

For the Fiscal Years Ending June 30

1943-1944

ALFRED MERRITT SMITH
State Engineer of Nevada

STATE OF NEVADA

BIENNIAL REPORT

OF THE

STATE ENGINEER

For the Period
July 1, 1942, to June 30, 1944, Inclusive

ALFRED MERRITT SMITH
State Engineer of Nevada

CARSON CITY, NEVADA
STATE PRINTING OFFICE - - JACK McCARTHY, SUPERINTENDENT
1944

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UNION LABEL

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LETTER OF TRANSMITTAL

STATE OF NEVADA,
OFFICE OF STATE ENGINEER,
CARSON CITY, July 31, 1944.

To His Excellency, HONORABLE E. P. CARVILLE, *Governor of Nevada, Carson City, Nevada.*

SIR: In compliance with the provisions of section 14, chapter 140, Nevada Statutes 1913, and section 1, chapter 171, Nevada Statutes 1931; I have the honor to transmit herewith the Biennial Report of the State Engineer for the period ending June 30, 1944.

Respectfully submitted,
ALFRED MERRITT SMITH,
State Engineer.

STATE ENGINEERS SINCE CREATION OF OFFICE

A. E. Chandler.....May 29, 1903, to May 1, 1905
Henry Thurtell.....May 1, 1905, to May 1, 1907
Frank R. Nicholas.....May 1, 1907, to March 3, 1910
Emmet D. Boyle.....March 8, 1910, to March 21, 1911
W. M. Kearney.....March 21, 1911, to May 15, 1917
J. G. Scrugham.....May 16, 1917, to January 10, 1918
Seymour Case.....January 25, 1918, to March 28, 1919
J. G. Scrugham.....March 28, 1919, to October 7, 1922
Robert A. Allen.....October 7, 1922, to March 28, 1927
Geo. W. Malone.....March 29, 1927, to May 28, 1935
Alfred Merritt Smith.....May 28, 1935—

OFFICIAL ROSTER DEPARTMENT OF STATE ENGINEER

OFFICE PERSONNEL

Carson City, Nevada

July 1, 1942, to June 30, 1944

Alfred Merritt Smith	State Engineer
Hugh A. Shamberger	Assistant State Engineer
Edmund Muth	Deputy State Engineer
F. N. Dondero	Office Engineer
C. E. Thiex	Chief Clerk
Marie Graham Anderson	Stenographer
Reta S. Arkell[1]	Secretary
Phyllis Anker[2]	Secretary
Nada Novakovich[3]	Secretary
Vena Mae O'Downell	Extra Clerical
Alta Thiex	Extra Clerical

WATER DISTRIBUTION PERSONNEL

Humboldt River, 1942

J. A. Millar, Supervising Water Commissioner	Entire River
F. E. Backus, Water Commissioner	Winnemucca District
Myron Clark, Water Commissioner	Battle Mountain District
Edward King, Hydrographer	Battle Mountain District
Orvis Stock, Water Commissioner	Elko District
John Franklin, Hydrographer	Lovelock

Humboldt River, 1943

J. A. Millar, Supervising Water Commissioner	Entire River
F. E. Backus, Water Commissioner	Winnemucca District
Sam King, Water Commissioner	Battle Mountain District
Orvis Stock, Water Commissioner	Elko District
Roy Meffley	Lovelock

Humboldt River, 1944

J. A. Millar, Supervising Water Commissioner	Entire River
Don O'Dell, Water Commissioner	Winnemucca District
Sam King, Water Commissioner	Battle Mountain District
Albert Quill, Water Commissioner	Elko District
Orval Ames, Water Commissioner	Lamoille and South Fork District
Roy Meffley, Hydrographer	Lovelock

Little Humboldt River, 1942

E. H. Green, Water Commissioner	Entire District

Little Humboldt River, 1943

E. H. Green, Water Commissioner	Entire District

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[1]Resigned June 15, 1943.
[2]June 16, 1943, to August 15, 1943.
[3]September 6, 1943, to June 30, 1944.

Little Humboldt River, 1944

E. H. GREEN, Water Commissioner.....Entire District

Currant Creek and Duckwater Creek, 1942

NYE TOGNONI, Water Commissioner.....Entire District

(No Water Distribution for Currant Creek, 1942)

Currant Creek and Duckwater Creek, 1943

W. E. HAWKINS, Water Commissioner.....Entire District

(No Water Distribution for Currant Creek, 1943)

Currant Creek and Duckwater Creek, 1944

W. E. HAWKINS, Water Commissioner.....Entire District

(No Water Distribution for Currant Creek, 1944)

White River, 1942

MILTON CAMERON, Water Commissioner.....White River

White River, 1943

MILTON CAMERON, Water Commissioner.....White River

White River, 1944

(Distribution by water users)

Muddy River, 1942

DAVE MARSHALL, Water Commissioner.....Entire District

Muddy River, 1943

ERNEST GUBLER, Water Commissioner.....Entire District

Muddy River, 1944

ERNEST GUBLER, Water Commissioner.....Entire District

Pahranagat Lake, 1942

DONALD K. PERRY, Water Commissioner.....Entire District

Pahranagat Lake, 1943

DONALD K. PERRY, Water Commissioner.....Entire District

Pahranagat Lake, 1944

DONALD K. PERRY, Water Commissioner.....Entire District

Baker and Lehman Creeks, 1944

DON BECK, Water Commissioner.....Entire District

SUMMARY OF THE WORK OF THE STATE ENGINEER

STATE COMMISSIONS AND BOARDS

The State Engineer upon taking office automatically becomes a member of the following Commissions:

1. The Nevada Public Service Commission.
2. The Nevada State Board of Irrigation.
3. The Nevada State Irrigation District Bond Commission.
4. The Bureau of Industry, Agriculture and Irrigation.
5. The State Range Commission.
6. The Nevada State Planning Board.

By gubernatorial appointment the present State Engineer is also a member of the following:

7. The Colorado River Commission of Nevada.
8. State Board of Registered Professional Engineers.

RECLAMATION ORGANIZATIONS

1. The Association of Western State Engineers (seventeen Western States).
2. The National Reclamation Association.
3. The "Committee of Fourteen and Sixteen." Two members from each of the Colorado River Basin States, appointed by respective Governors.

STATUS OF ADJUDICATION OF STREAM SYSTEMS

The work of adjudicating the waters of the Nevada stream systems has proceeded since the inception of this office in 1903 to the present time:

1. Stream systems adjudicated, 1903 to date	29
2. Acres under adjudicated streams	384,628
3. Vested water users under adjudicated streams	613
4. Adjudicated stream systems supervised by this office during the past biennium	7
5. Adjudicated stream systems not supervised by this office during the past biennium	22
6. Streams in process of adjudication	27
7. Adjudications completed during past biennium	1
8. Stream systems on which decrees have been entered by civil suit not under supervision of this office	11
9. Stream systems adjudicated by United States District Court	3
10. Stream systems under process of adjudication by United States District Court	2

STATUS OF WATER APPLICATIONS AND PROOFS OF APPROPRIATION

1. Water applications filed 1903 to June 30, 1944	11,137
2. Water applications acted upon, 1903 to June 30, 1944	10,713
3. Water applications on which no action has been taken	424
4. Water applications acted on, July 1, 1942, to June 30, 1944	542
5. Water applications filed, July 1, 1942, to June 30, 1944	293

6. Proofs of commencement of work filed, July 1, 1942, to June 30, 1944	178
7. Proofs of completion of work filed, July 1, 1942, to June 30, 1944	182
8. Proofs of beneficial use filed, July 1, 1942, to June 30, 1944	136
9. Protests filed against the granting of applications, July 1, 1942, to June 30, 1944	76
10. Certificates of appropriation issued under permitted water rights, July 1, 1942, to June 30, 1944	160
11. Proofs of appropriation filed, 1903 to June 30, 1944	2,327
12. Proofs of appropriation filed, July 1, 1942, to June 30, 1944	8

COOPERATIVE WORK

The State Engineer also carries on cooperative work in the compilation of stream gaging and stream runoff observations through the medium of two State appropriations. The cooperating agencies are:

The Water Resources Branch of the United States Geological Survey.

The Nevada Cooperative Snow Surveys.

The activities of the State Engineer in each of the fields are briefly related under their proper headings elsewhere.

PUBLIC SERVICE COMMISSION

The Nevada Public Service Commission is composed of the following members:

Charles B. Sexton, Chairman, Carson City.
Charles V. Williams, Yerington.
Alfred Merritt Smith, Carson City.
Lee S. Scott, Secretary, Carson City.

The work of this Commission is published by the Chairman in a biennial report. During the past biennium many hearings have been held in various parts of the State on matters concerning the rate schedules of public utilities, rail and motor vehicle carriers, complaints as to public service, and requests for certificates of convenience and necessity for the operation of public utilities.

THE NEVADA STATE BOARD OF IRRIGATION

The board is composed of the following members:

E. P. Carville, Governor of Nevada, Carson City.
Wayne T. McLeod, Surveyor General, Carson City.
Gray Mashburn, Attorney-General, Carson City.
Alan Bible,[1] Attorney-General, Carson City.
Alfred Merritt Smith, State Engineer, Carson City.

This board was created by the provisions of section 2, chapter 59, Nevada Statutes of 1901 (Nevada Compiled Laws 1929, section 8231), for the purpose of administering an appropriation of $4,000 made by that Legislature to carry on hydrographic work, irrigation studies, and stream measurements in cooperation with the United States Geological Survey and the United States Department of Agriculture, in association with the Nevada Agricultural Experiment Station. The State

[1]Since January 1, 1943.

appropriation was contingent upon an equal amount of money being appropriated by the Government. The State Printing Office was authorized to publish additional copies of the Government reports. The board was also authorized to have printed copies of or extracts from any United States report on irrigation or related matters which, in the opinion of the board, would be of value to the people of Nevada.

The activities of the Board of Irrigation were continued by the last Legislature through an appropriation of $3,000 for cooperative work with the United States Geological Survey, Water Resources Branch, and the State Engineer (section 20, chapter 191, 1941 Nevada Stats.). This work, which has been continuously carried on since 1916, is continually adding to the valuable information regarding Nevada's water resources and supply.

THE STATE IRRIGATION DISTRICT BOND COMMISSION

The State Irrigation District Bond Commission was created by an Act of the Legislature approved February 26, 1921, being sections 8217–8228 Nevada Compiled Laws 1929. The Commission consists of the following members:

E. P. Carville, Governor of Nevada.
D. G. LaRue, Bank Examiner.
Alfred Merritt Smith, State Engineer.

It is the duty of the Commission to pass upon the eligibility of bonds of irrigation districts as legal investments within Nevada.

THE STATE RANGE COMMISSION

This Commission consists of the following members:

E. P. Carville, Governor of Nevada.
Charles B. Sexton, Chairman, Public Service Commission.
Alfred Merritt Smith, State Engineer.

The 1929 Legislature created the "State Range Commission" for the purpose of determining the principles, laws, or policies that should apply to the grazing use of the natural range forage resources of publicly owned lands within Nevada.

The work of this commission has been dormant, since the major part of the range area in Nevada has come under the supervision of the Taylor Grazing Division of the Department of the Interior. It should be noted, however, that in the areas not within Division of Grazing Districts the State Engineer bases decisions and makes rulings on water filings according to the Nevada Stockwatering Act of 1925.

BIENNIAL REPORT OF STATE ENGINEER, 1942-1944

CHAPTER I

Office Engineering and Miscellaneous Office Work

By F. N. Dondero, *Office Engineer*

While our State has been and is now exerting all efforts with available manpower, material, and resources in winning the war, the work in this office has by no means diminished; in fact, there has been a marked increase, due partly to the desire of our people to increase the output of farm products, livestock, and metals, and also due to the establishment of Army and Naval bases, airports, and landing facilities.

With low taxes and liberal State laws as inducements, much new wealth has moved into the State. Ranching and stock properties acquired by people with means have undergone many changes. Numerous canals, ditches, and irrigation systems have been greatly improved, and new homes and farm buildings built. The exchange of farm properties is evidenced by the greatly increased number of deeds submitted and filed with the State Engineer for the purpose of placing water rights of record in the names of the new owners. Partly due to conditions existing by reason of the continued state of war and partly to increase in the value of agricultural lands and farm products, many pending filings for the appropriation of water were brought to perfection, in addition to the many new applications filed.

Much attention, time, and effort has been given to postwar planning, insofar as developing our natural water resources is concerned. Records, maps, reports, and much other data has been made available to both State and Federal postwar planners.

Due to increased work as evidenced by this report very little was accomplished in the adjudication of vested water rights, other than in matters requiring immediate attention. A final decree on McFaul Creek in Douglas County was prepared by this office and brought to completion in the District Court. Field investigations have been delayed somewhat by the burden of the additional work.

Plans for headgates for use of water commissioners and water users, many maps, plats, and compilations of data in connection with conflicting water rights were prepared. A complete compiled map showing the Little Humboldt River and ditch systems was made to facilitate the work of the water commissioners.

An index system for giving notice to the applicants of the dates the various proofs and maps become due under the terms as provided by their permits and the dates on which applications become ready for action was initiated and put into effect. By this system applications not in conflict with existing water rights are immediately approved and permits issued and kept in good standing by giving notices of the dates when the various proofs become due, thus clearing the way to new appropriations.

A compilation of data on wells and filings for the waters of the Pahrump artesian basin was made. From this a general map of the

basin showing the locations of the wells was prepared for use by the office and water users. The map of the Las Vegas Valley artesian basin was brought up to date.

Discharge data of the Muddy River in Clark County was compiled and brought up to date in connection with investigations by Federal agencies on the possibilities of expanding the use of water.

A complete audit was made of the water commissioners' budgets on the various streams under the jurisdiction of this office and a new system of keeping a complete record of all money received and expended was initiated.

The submission of range maps by stockmen, showing the boundaries of the range claimed, has dwindled down to the one submitted by the United States Department of the Interior, National Park Service, showing the boundaries of the Death Valley National Park Monument. The boundaries of this area have been placed on the State range map. This brings to 340 the number of range maps received to date.

There has been a notable increase in the submitted number of documents in connection with applications, as shown by the filing of 178 proofs of commencement of work; 182 affidavits of completion of work; 136 proofs of application of water to beneficial use, and 76 protests to the granting of applications. Also, $1,011 has been collected in fees covering the filing of applications for extension of time within which to complete certain obligations as provided by permits issued, filing of deeds, together with stenographic work for making copies of documents of record in this office. At least 100 maps under proofs of application of water to beneficial use have been carefully examined and filed. The filing of proofs of application of water to beneficial use and supporting maps made it possible to issue some 160 certificates of appropriation of water. At least 250 blueprints of maps of record in this office were made available on request, for which the sum of $292.80 was received for this service.

Much of our time was occupied in daily routine office work, including office correspondence. During the biennium 816 registered articles have been sent out, in addition to substantially increased regular mail.

Although many other activities and accomplishments are not listed, the foregoing will serve to give an idea of the volume of office work.

CHAPTER II

State Water Right Surveyors of Nevada

Following is a complete list of licensed State Water Right Surveyors authorized to practice before the Office of the State Engineer during the past biennium:

NEVADA

Alamo—W. F. Thorne.
Beatty—Charles G. Walker.
Caliente—Wayne Cox.
Carson City—John B. Chattin.
Wayne McLeod.
Harry E. MacNelly.
Robert A. Allen.
W. T. Holcomb.
Albert Quill.
Elko—W. H. Settelmeyer.
R. A. Kinne.
John W. King.
W. S. Raine.
Ely—F. W. Millard.
Neil A. McGill.
Eureka—M. M. Harcourt.
Floyd Sadler.
Nye Tognoni.
Geo. Hellerich.
Fallon—L. W. Crehore.
Hugh M. Wilson.
E. P. Osgood.
J. C. Coniff.
Fernley—W. A. Pray.
Gardnerville—O. L. Hussman.
S. Krummes.
Goldfield—Ed. S. Giles.
Henderson—Ernest H. Clary.
Las Vegas—J. F. Hesse.
William Clark.
Harlan Brown.
Ralph L. Motz.
Chas. L. Knaus.
Van O. Eastland.
Frank D. Rathbun.
Lovelock—Robert S. Leighton.
J. H. Causten.
Manhattan—Arthur E. Smith.
Mina—L. B. Spencer.
Minden—J. A. Millar.
Walter G. Reid.
Mountain City—Edward C. Stephens.
Montello—John D. Smith.
N. A. Miller.
Paradise Valley—F. B. Stewart.
Pioche—Frank Walker.
Reno—R. W. Prince.
L. H. Taylor.
C. V. Taylor.
D. H. Updike.
Thos. R. King.
John V. Mueller.
M. A. Pray.
Carl Stoddard.
Harold Layman.
David Mitchell.
William J. Moran.
C. J. Preece.
C. C. Taylor.
John D. Franklin.
A. E. Holgate.
Rio Tinto—William T. Swensen.
Round Mountain—J. W. E. Taylor.
Sparks—James N. Nelson.
Robert F. Guinn.
Sulphur—J. G. Huntington.
Sprucemont—J. L. Vandiver.
Tonopah—D. S. Johnson.
C. A. Liddell.
Tuscarora—Chester L. Woodward.
Winnemucca—F. R. O'Leary.
H. H. Sheldon.
Yerington—George Parker.

CALIFORNIA

Alturas—J. W. Archer, P. O. Box 167.
Benton—Joseph Markert.
Berkeley—R. E. Tilden, 2829 Benvenue Avenue.
Sacramento—G. F. Engle, 1857 Forty-fourth Street.
San Francisco—T. L. Phillips, Chief Engineer, W. P. R. R. Co., Mills Bldg.

OREGON

Burns—Mott V. Dodge.

UTAH

Ogden—Louis H. Boukol, Care of Southern Pacific Company.
K. W. Kennedy, 1544 Twenty-seventh Street.
Salt Lake City—Norman Blye, 503 Scott Building.
St. George—Leo A. Snow, Snow Building.

CHAPTER III

Applications for Water Rights

During the biennial period dating from July 1, 1942, to June 30, 1944, there have been 293 applications filed with this office for permission to appropriate water, as compared to 318 filed during the preceding biennium:

MANNER OF USE COMPARISON

	1942–1944	1940–1942	1938–1940	1936–1938
Irrigation	96	101	73	47
Mining and milling	26	75	130	110
Stockwatering	103	46	40	48
Domestic	7	21	10	9
Migratory waterfowl refuge	....	....	....	3
To change point of diversion, manner or place of use	26	11	9	19
Municipal	9	8	2	8
Bathing	1	2	....	2
Gravel and sand washing	1	....	....	2
Power	....	6	6	6
Recreational	....	4	2	6
Fish rearing	....	....	....	1
Manufacturing	3	3		
Quasi-municipal	19	37		
Railroad	1	4		

Definite action has been taken on 542 applications during this biennium. This represents action on 395 applications filed prior to July 1, 1942, and 147 filed during this period.

Pertinent information regarding water applications filed in this office since its creation will be found on page 9. The status of applications filed and certificates issued will be found as follows:

1. Status of applications filed during the biennium 1942–1944, Chapter XIII.
2. Status of applications filed prior to July 1, 1942, upon which action has been taken during the past biennium, Chapter XIV.
3. Certificates issued under permits during the past biennium, Chapter XV.

CHAPTER IV
Adjudication of Water Rights

Section 1, chapter 4, Statutes of 1903, provided a law creating the office of State Engineer and furnished a method for the determination of the relative rights in and to waters already appropriated. Several amendments were subsequently made, with the result that our water law is now admirably adapted to conditions in Nevada, and has been declared constitutional in its entirety by decisions rendered by the Supreme Court of Nevada.

Amendatory Acts were passed during the 1907 and 1909 sessions of the Legislature. In 1913 a new water law was enacted and the old water law in its entirety was repealed. The new law was approved on March 22, 1913. Under this Act the water law was greatly broadened, both as to the adjudication procedure on the determination of vested rights and the appropriation of water procedure by application to the State Engineer. Subsequent amendments to the laws relating to the adjudication procedure were enacted in the following sessions of the Legislature, viz, 1915, 1917, 1919, 1921, 1925, 1927, 1931, 1933 and 1937. A brief description of these various amendments may be found in chapter 6 of the 1936–1938 report, wherein a summary of the laws enacted by the Nevada Legislature relating to water and the office of the State Engineer is given. A summary of the statutory procedure to determine the relative rights in and to the waters of a stream system under a claim of vested right may be found in our 1934–1936 Biennial Report and also in the compiled edition of the water laws of this State published in 1941 by this office, both of which are available upon request.

PROOFS OF APPROPRIATION FILED DURING THE YEARS OF THE PRESENT BIENNIUM

During this period the following proofs of appropriation, which are claims of vested water rights, have been filed for future use in the determination of the relative rights and also to make of record such claims. A condensed statement giving the salient data is herewith given in the order of:

1. Proof serial number.
2. Date filed.
3. Name of claimant.
4. Source of water supply.
5. Location by county.
6. Use claimed.

02320.... 9–14–42....John H. Conaway; Choke Cherry Creek; Lincoln County; Stockwatering.
02321.... 9–14–42....John H. Conaway; South Willow Spring; Lincoln County; Stockwatering.
02322.... 7–12–43....Mrs. D. C. Gardner; Mud Spring; White Pine County; Stockwatering.
02323.... 4–28–44....Directors of the State Orphans' Home; Home Springs and Tributaries; Ormsby County; Irrigation.
02324.... 6– 7–44....James Hunter; Wood Trough Spring; Eureka County; Stockwatering.
02325.... 6– 7–44....James Hunter; Green Spring; Eureka County; Stockwatering.
02326.... 6– 7–44....James Hunter; Simpson No. 1 Spring; Eureka County; Stockwatering.
02327.... 6–15–44....Charles E. and Lena E. McLeod; Pasco or Crook Creek; Nye County; Irrigation.

ADJUDICATIONS COMPLETED

BASSETT CREEK

Bassett Creek is located on the easterly slope of the Shell Creek Range and drains into Spring Valley in and about Township 18 N., Range 66 E., M. D. B. & M. There are two claimants to the waters of this source.

December 16, 1938—Petition requesting the determination of relative rights filed in the State Engineer's office.

December 21, 1938—The report of the investigation of the stream system was filed in the office of the State Engineer.

December 22, 1938—State Engineer entered order granting the petition.

December 23, 1938—State Engineer entered notice and order for taking proofs.

August 29, 1940—Abstract of Claims filed in State Engineer's office.

August 21, 1941—Final Order of Determination filed in State Engineer's office.

September 12, 1942—Decision of District Judge L. O. Hawkins filed with the Clerk of the Seventh Judicial District Court.

October 30, 1942—District Court denies motion for new trial.

November 10, 1942—Decree filed.

November 19, 1942—Notice of appeal from the decision of the District Court.

June 30, 1944—In process of determination by Supreme Court.

McFALL CREEK

McFaul Creek is located in Township 13 N., Range 18 E., M. D. B. & M., and flows westerly into Lake Tahoe. There is one claimant to this water.

June 19, 1939—Petition requesting the determination of relative rights filed in the State Engineer's office.

July 6, 1939—The report of the investigation of the stream system was filed in the office of the State Engineer.

July 11, 1939—Order granting petition filed.

October 30, 1941—Order of Determination filed.

October 6, 1942—Decree filed. 24.78 acres.

CHAPTER V

Humboldt River Distribution System—July 1 to December 31, 1942

By J. A. Millar, *Supervising Water Commissioner*

ORGANIZATION

J. A. Millar, Supervising Water Commissioner.....Entire River
Orvis Stock, Water Commissioner.....Elko District
Roy Meffley, Water Commissioner.....Lovelock District
John Franklin, Water Commissioner.....Lovelock District
Melvon Preston, Hydrographer.....Lovelock District

After an exceptionally heavy runoff from January to June, inclusive, an average daily flow of 635 c.f.s. was recorded at the Palisade Gaging Station during the month of July. In August the discharge of the river dropped to an average daily flow of 56 c.f.s., and during the month of September the flow dropped to an average daily flow of 28 c.f.s. Several small storms during the month of October increased the flow to an average daily flow of 40 c.f.s. On the first day of November the flow at this point was 58 c.f.s. and increased to 204 c.f.s. on the last day of the month. A gradual increase in flow took place during the month of December, and a flow of 342 c.f.s. was recorded on the last day of the year. The total discharge during this six-month period amounted to approximately 64,000 acre-feet.

Rock and Pine Creeks that enter the river below Palisade failed to go dry as usual, and contributed an influence to the river flow during the above-named period. The flow at the Comus Gaging Station, which also goes dry during the months of August and September, never dropped below 30 c.f.s, and like the flow at the Palisade Gaging Station gradually increased.

On September 15th, part of the river flow was diverted into the H. L. I. L. & P. Company feeder canal, and the balance was allowed to enter Rye Patch reservoir. Some irrigation of land planted to winter wheat took place in the Lovelock Valley after September 15, but after this program was finished only a small flow was released from the Rye Patch reservoir for stock-watering purposes.

The diversions of water into the Lovelock District ditches was conducted by Roy Meffley, John Franklin, and Melvon Preston, under a cooperative agreement with the Pershing County Conservation District, and the H. L. I. L. & P. Company.

The distribution of irrigation water in the Elko district from July 1 to August 15, was conducted by one commissioner. In the Lamoille, South Fork, and Starr Valley districts, irrigation of tame hay lands was allowed until September 15. After this time only water for stock was allowed in the ditches.

January 1 to December 31, 1943

By J. A. Millar, *Supervising Water Commissioner*

ORGANIZATION

J. A. Millar, Supervising Water Commissioner.....Entire River
Orvis Stock, Water Commissioner.....Elko District
Sam King, Water Commissioner.....Battle Mountain District
Fred Backus, Water Commissioner.....Winnemucca District

ROY MEFFLEY, Water Commissioner.....Lovelock District
GEORGE NUGENT, Water Commissioner.....Lovelock District
MELVON PRESTON, Hydrographer.....Lovelock District

Heavy snowstorms during the first part of January followed by subzero weather, in the upper reaches of the Humboldt River watershed, retarded the flow passing the Palisade gaging station. The recorded flow of 362 c.f.s. on January 1, gradually decreased to a flow of 114 c.f.s. on January 18. The snowfall during this period was exceptionally heavy on the watersheds of the northern feeders, and laid upon deeply frozen ground. On January 20, the cold wave gave way to rising temperatures which started the snow to melt, and within two days the Marys and North Fork rivers were at flood stage, discharging large flows into the Humboldt River at their respective confluences, and inundating all river bottom land in the wake of the high water. On or about the 24th of January, the high water reached the city of Elko, flooding the entire southern portion of the city, driving the residents out of their homes and doing great damage to their property.

After passing the city of Elko, the flood spread over the river bottom lands to the west and more or less spent itself before it reached the Palisade gaging station. Fortunately the warm wave only lasted a few days and was followed by another period of storm, which lasted until February 18. On this date the weather again became warm, creating a greater and more disasterous flood than the one that occurred in January, again flooding the southern portion of the city of Elko and driving the residents from their homes. The already flooded area west of Elko did not serve to abate the flood this time, and most of the flood waters reached the Palisade gaging station. The hydrographic record shows a maximum flow to have been 4,500 c.f.s. on February 26, but it is estimated that sometime during the night of the 26th the flow got very much higher.

On February 27 all that part of the town of Beowawe located north of the Western Pacific Railroad tracks was flooded to a depth of at least three feet. The river bottom lands to the west were soon under water, and the flooding continued until all river bottom lands from Beowawe to Winnemucca were under water. This condition existed all during the months of March, April, and part of May. A cold wave during the last part of May decreased the flood condition materially, and the fact that the northern feeders had completed their runoff also played some part in decreasing the flow.

About June 1 the weather again became warm and the Ruby Mountain tributaries began to show signs of runoff, and within a week were at flood stage and continued at flood stage all during the month of June and most of July.

Rock and Pine Creeks also discharged large flows into the Humboldt River during the entire spring period, greatly augmenting the flood conditions in the Battle Mountain basin, causing widespread flooding to Golconda. The river channel at Comus proved too small to accommodate the flood and several hundred c.f.s of water went around the gaging station at this point. So great was the overflow conditions along the entire length of the river that it was impossible to obtain any diversion measurements.

The compiled record of flow at the Palisade gaging station for the entire year of 1943 showed that 547,000 acre-feet went past this station.

The recorded flow of water in the river channel at the Comus gaging station amounted to 290,730 acre-feet. No record was obtained of the water that passed around the gaging station, but it is safe to say that at least 100,000 acre-feet by-passed the station.

On March 15 there was about 35,000 acre-feet stored in the H. L. I. L. & P. Company reservoir, and about 165,000 acre-feet stored in the Rye Patch reservoir. The high water began to reach the Rye Patch reservoir area about March, and by April the reservoir was full. The spillway gates were then opened and the entire inflow of the river was released through the spillway and the outlet tunnels.

Sometime in April the dam between the upper and lower H. L. I. L. & P. Company reservoirs began to give way, and it was only after many hours of hard and dangerous work that the embankment was saved. About this time it was noted that the lower dam showed signs of weakness, and it was then that the State Engineer was called upon to inspect the dams and reservoirs. After an entire day spent inspecting the dams and reservoirs, the State Engineer condemned them, and ordered that the impounded water be released as soon as possible. In order to provide additional safety for the Lovelock Valley, he also ordered that one-foot planks be installed on top of the spillway gates which would give Rye Patch reservoir an additional foot of storage and provide sufficient space for all the water stored in the H. L. I. L. & P. Company reservoirs. Over 20,000 acre-feet were released under this order, leaving about 15,000 acre-feet in the reservoirs.

From January 1 to November 30, inclusive, 461,500 acre-feet of water was released from Rye Patch reservoir. Of this amount less than 70,000 acre-feet were used for irrigation. The remainder was allowed to flow into the Humboldt River sink. After the Humboldt River sink filled to a point where the water could flow into the drainage canal excavated through the so-called Mason-Dixon dyke, the excess water was conveyed into the White Plains area or the northeastern portion of the Carson River sink.

After the floods of January and February had subsided the City Council of Elko requested the State Engineer and the State Highway Engineer to inspect the channel of the Humboldt River within the confines of the city limits, and to recommend channel improvements so as to eliminate any danger from floods in the future. On an appointed day, the requested investigation was made by R. A. Allen and August Berning of the Highway Department, several members of the City Council, and J. A. Millar, Supervising Water Commissioner of the Humboldt River Stream System. As a result of the investigation, a program was outlined to widen the river channel, remove several abandoned dams, and build dykes on both sides of the river. During the fall months, the city of Elko, together with the State Highway Department, carried out the program and now the city is provided with security from floods for all time.

In July, Alfred Merritt Smith, Edmund Muth, J. E. Church, and J. A. Millar attended a conference in Salt Lake City, Utah, with Milton Wilson and A. B. Purton, representatives of the Geological Survey, Water Resource Branch. At this conference a cooperative agreement was reached, whereby the sum of $1,500 expended annually by the Humboldt River Distribution System for hydrographic purposes was matched by the Geological Survey, creating a fund of $3,000 to be

expended annually for stream gaging of the Humboldt River Stream System, and installation of gaging stations. In September and October the following new gaging stations were installed:

Mary's River Station, 14 miles north of Deeth.
North Fork Station, located at Devil's Gate.
Lamoille Creek Station, located below Power House.
Moleen Station, located 17 miles west of Elko.

As soon as the stations were installed, a representative of the Geological Survey office began the program of taking current meter measurements, and operating the continuous water stage recorders.

January 1 to June 30, 1944

By J. A. Millar, *Supervising Water Commissioner*

ORGANIZATION

J. A. Millar, Supervising Water Commissioner.....Entire River
Albert M. Quill, Water Commissioner.....Starr Valley and North Fork
Orval Ames, Water Commissioner.....Lamoille and South Fork
Sam King, Water Commissioner.....Winnemucca District
Donald O'Dell, Water Commissioner.....Lovelock District
George Nugent, Water Commissioner.....Lovelock District

Most of the storms that occurred in the Humboldt River watershed during the month of January were light and were followed by severe cold weather. As a result the snow cover over the entire area was very light, and very little runoff occurred. The average daily flow passing the Palisade gaging station was 67 c.f.s. The precipitation during the month of February was somewhat greater and created nearly double the runoff that occurred in January. The daily average flow passing the Palisade gaging station was 122 c.f.s. In March the spring thaw began, increasing the runoff materially, and created a daily flow of 387 c.f.s. At this time the snow cover did not indicate that there would be a normal runoff for the spring months. The snow had completely disappeared from the lower elevations and the river bottom lands and the foothills were dry. Several heavy storms took place in April, but dryness of the ground prevented much increase in the runoff, and the outlook for a normal runoff was far from bright. The average daily flow passing the Palisade gaging station was 580 c.f.s. Although these storms did not increase the runoff materially, they did bring up the water table, and the entire watershed was thoroughly drenched, and there was no immediate need for irrigation. The many storms of May not only increased the wet condition of the watershed, but added to the snow cover in the higher elevations. The average daily flow passing Palisade gaging station was increased to 884 c.f.s. In June it stormed nearly every day, causing the river flow to increase rapidly. The peak flow of the season occurred on June 15, and amounted to 1,890 c.f.s. and the average daily flow for the month was 1,389 c.f.s. On June 30, the Palisade gaging record showed that 206,300 acre-feet had passed the station since the first of the year. From this record it appears that the discharge was about 43,700 acre-feet short of the normal of 250,000 acre-feet for the March to June period.

General irrigation did not start in the Lovelock district until the

middle of April. It was May 10 before irrigation began in the Winnemucca and Battle Mountain districts. On several ranches in the Battle Mountain district, the low flow of the river failed to divert sufficient water into some of the ditches to create irrigation heads. The river bottom lands in the Elko district did not begin irrigation until about May 20, and general irrigation on the tributaries began about the same time. However, in many instances the water was turned off shortly after it was turned on because of the heavy storms, and it was not until the first week in June that the general irrigation was begun again.

By the last of June all the river bottom lands from Wells through Winnemucca had completed irrigation for the year, and the water was turned off and allowed to flow down stream. About this time Rye Patch reservoir became full, and the excess water not required for irrigation in the Lovelock Valley was diverted into the H. L. I. L. & P. Company reservoirs.

Irrigation in the Lovelock Valley was greatly retarded this spring, due to the lack of an adequate ditch system. The water commissioner was compelled to overload the Union canal in an effort to serve lands not embraced in the Union canal ditch system. These large heads eventually proved too much of a strain on the canal, and about the middle of May a large flume collapsed causing a big wash back into the river channel, and destroying the alignment of the canal. This failure of the flume was nothing short of a catastrophe, for it left the entire south end of the valley without water at a critical growing period. However, no time was lost in securing a new right of way, and the dragline shovel was on the ground and at work shortly after the collapse. This particular section of the Union canal was always the weakest part of the ditch, and the new section is bigger and stronger than it has ever been before. In spite of the inadequate ditch system, the water commissioners were able to fully irrigate all lands in the valley, and a bumper crop is being harvested.

As soon as the country roads were passable in March, Mr. McConkie of the Geological Survey office began the hydrographic work on the Humboldt Stream System. Since that time many current meter measurements have been made at the five major gaging stations, and hydrographic curves have been developed for each station. During the month of May, Mr. Milton Wilson visited the Elko district, and while there selected a site for a new gaging station at Rendon, twelve miles east of Elko, which will probably be installed this fall.

LITTLE HUMBOLDT RIVER DISTRIBUTION SYSTEM

July 1, 1942, to June 30, 1944

By E. H. Green, Water Commissioner

The Little Humboldt River Stream System furnishes water for the irrigation of some 46,000 acres of land, most of which lies in Paradise Valley, Humboldt County, Nevada. The streams entering this system, and which have been declared by court decree to be tributary to the system, are as follows:

On the west side of the valley, going from south to north, are Provo Creek, Wash O'Neil Creek, Stone House Creek, Beef Creek, Colony Creek, Hansen or Handy Creek, Lamance Creek, and Little Cottonwood

Creek, all of which are tributary to Cottonwood Creek and flow generally from west to east. On the north side of the valley going from west to east are Cottonwood Creek, Mullinax Creek, and Indian Creek. These creeks flow generally from north to south. Mullinax and Indian Creeks bear somewhat to the west and are normally tributary to Cottonwood Creek. On the east side of the valley going from north to south are Martin Creek and the Little Humboldt River. Martin Creek flows south and a little west, and the Little Humboldt flows southwest.

There are now thirty-four owners of land with a decreed water right in this distribution system. The smallest acreage with a water right owned by an individual is 15 acres and the largest 13,034 acres.

In January of 1943 the streams in Paradise Valley reached the highest recorded flood flow since the first stations were placed in operation in 1921. Many of the older residents believe that this was the greatest flood since the valley was settled in 1864. The flow in the stream system remained somewhat above normal throughout the entire year. Many of the low-lying hay fields were under water for so long that only the "water grasses" matured, and little good hay was produced. Unfortunately, no records of the discharge of any streams except Martin Creek and the Little Humboldt were obtained.

During the months of April and May a complete investigation of the stream channels was made by the State Engineer's office and a report of the conditions and the recommended improvements submitted to the State Engineer. As a part of the report, and to assist the investigating engineers, a compiled map was made from all of the available surveys. This map was used in the field and compared with the actual conditions that existed at the time of the investigation.

As a result of the investigation, and following the recommendations of the State Engineer, the following work was done by the water users prior to the opening of the 1944 irrigation season:

1. Approximately one-quarter of a mile of the Cottonwood Creek Channel was cleared by the use of a small power shovel.
2. Approximately one and one-half miles of the channel of Martin Creek was cleared of brush and debris.
3. Three large steel regulatory gates were placed in existing structures on the Little Humboldt and two large river breaks were repaired.
4. Eighty diversion boxes were installed in the diversion ditches. Some of these boxes are first-class, while others are of a temporary nature.

There still remains much to be done before the abuses in the system are corrected. A continuing program of improvement should be followed for the next few years.

The 1944 irrigating season began on March 1. Below normal flows on all of the streams of the system made water distribution extremely necessary. Only because of the work done prior to the season's opening was it possible to deliver water to the lower ranches. There is no doubt but that the money spent for improvements to the system was repaid many times over during this one season.

The principal effort toward improving water distribution conditions this coming year should be centered on Martin Creek and the Cottonwood tributaries on the west side of the valley.

PAHRANAGAT LAKE AND TRIBUTARIES

By Donald K. Perry, Water Commissioner

The sources of water for Pahranagat Lake and Tributaries are three springs, namely, Hiko, Crystal, and Ash springs. Since each of these springs and the water flowing from it is treated as a separate unit in the distribution of water during the irrigating season, each spring and the method of water distribution for it will be described separately.

HIKO SPRING

Hiko spring is located at the extreme north end of Pahranagat Valley near the village of Hiko. This spring has a nearly constant flow of 6.4 c.f.s. Six individuals have lands with irrigation rights with water from this spring. The method of division is to allow the water to flow from a stilling pond through two flumes of the same dimensions which have been set upon an exact level. Thus the flow from this spring is automatically divided and there is no chance for anyone to tamper with the flow of either stream. Each of these streams is then rotated among the three users on each ditch on the basis of acreage to be irrigated. The rotation schedules on these ditches have been in use for several years and are approved by all concerned.

CRYSTAL SPRING

Crystal spring is located about six miles south of Hiko near Highway 93. It has a nearly constant flow of about 9.5 c.f.s. This measurement is very difficult to determine due to the lack of any kind of measuring device and to the swampy and moss-clogged condition of the channel. Land belonging to three operators is irrigated with the water from this spring. The method of distribution is to hold the entire flow, except for a small amount of stockwater, together in one head and rotate its use among the three land owners. This schedule is also based upon acreage and has proven satisfactory.

ASH SPRING

Ash spring is located near Highway 93 about eight miles north of the town of Alamo. This is the largest of the three springs in Pahranagat Valley and presents the most problems and consumes most of the time of the water commissioner. Most of the problems which arise are not problems of distribution, but are due to the lack of control devices and to the complete lack of maintenance of ditches and channels. Ash Spring had a constant flow of 17.36 c.f.s. from June 10 to July 4, 1943. On the latter date an increase to 18.56 c.f.s. was evident, and continued to hold constant at this point on through to September 3, when I left Pahranagat Valley. This rise in the flow from Ash Spring was very unusual as this was the first time that the spring had shown any increase, although it had been known to decrease several times.

The water from Ash spring is divided into four heads or streams which are in turn rotated among the users on each rotation schedule. The first group of users consists of the owners of the Middle ranch and the old W. H. Sharp properties. There are eight users on this schedule, and since most of them take water directly from Ash spring channel, it is necessary that the commissioner maintain the schedule and regulate

the turning off and on of the headgates in order to keep the flow of the main channel at a constant level.

The next group of users are the ones who irrigate from the Richards-Wedge ditch. The water commissioner keeps a constant flow through the headgate from the main channel and the users maintain a rotation schedule which is based on acreage. Occasional checks are made by the commissioner to see that the schedules are being followed, but little or no trouble has been encountered in this respect.

The third stream goes to the Anders and Highbee properties through their West ditch. This is a very small stream, amounting to only 1.07 c.f.s. and involves only two landowners, so no rotation schedule has been necessary. The flow is simply kept at a constant level and the two users trade back and forth according to need.

The last stream is that which is allowed for the Alamo Irrigation Company and cooperators and for the Floyd Lamb and J. L. Sharp properties below Alamo. A constant flow is maintained at the head of the Alamo canal and then the Alamo Irrigation Company's watermaster distributes the water to the various users under the company. There is more than enough return flow to the main channel from the Alamo Irrigation Company to take care of the needs of the Lamb and Sharp lands.

CHAPTER VI

Cooperative Stream Measurement Work in Nevada

M. T. Wilson, District Engineer, Water Resources Branch, United States Geological Survey

Stream gaging is principally the work of collecting basic data relative to the surface water supplies of the State. These records are used as a basis for all developments involving the use of water.

Nevada is located in an arid region, water is its most important natural resource. The development of all other resources is directly affected and usually limited by the available water supply. A knowledge of this information is fundamental to the distribution of water and the adjudication of water rights—two of the principal duties of the State Engineer—for the design of irrigation and power projects, municipal and industrial supplies, forecasting of runoff from snow measurements, flood control, replenishment of ground water supplies, war industries, national defense projects and many other related enterprises. The base data are used by many branches of the Federal Government, State, county, and municipal officials, by engineers, financiers, lawyers, and courts in the consideration of many kinds of activities in all sections of the State.

Inevitably the ultimate development of the State, with its capacity to provide homes and work for its people, will depend upon the proper conservation and utilization of this important resource. It follows that this imposes upon the State the necessity of intensive investigations of all sources of supply. It is of primary importance to every individual that adequate knowledge relative to the water resources be obtained and made readily available. Therefore, it is essential that the work of collecting this information is planned with careful consideration of present and future needs and that the work be satisfactorily supported.

As early as 1888 the United States Geological Survey began a systematic program of measuring the flow of the principal streams of the Western States, with a view to making a continuous inventory of this resource and its utilization for the greatest public good. Until 1905 the work was accomplished without State cooperation, but since that time it has been done in cooperation with the States or other political subdivisions. The Congress of the United States recognizes a joint national and local responsibility and interest in developing the water resources of the country. However, Federal funds for stream gaging are only available for cooperative work requested by local interests.

For the fiscal year ending June 30, 1943, and several preceding years the State of Nevada has appropriated funds for the operation of eleven river and reservoir stations. This cooperative program has been supplemented by the maintenance of four stations in the Owyhee River Basin for the Office of Indian Affairs. Likewise, Nevada's interest in the Colorado River has been served by a special congressional appropriation, since 1928, for stream measurement, silt determination, and quality of water studies in the Colorado River Basin. Records for the station on the Carson River at Fort Churchill have been furnished by the Newlands Project, while those for the Truckee River were made available by H. C. Dukes, Federal Court Water Master.

The demand for additional stream-flow records has been continually increasing. Since State cooperative funds were not available for collecting the desired basic runoff data, the Nevada Agricultural Experiment Station in cooperation with the Humboldt River Water Users operated several gaging stations in the Humboldt River Basin independent of the State cooperative program. During the winter floods of 1942–1943 most of these stations of temporary construction were partly or completely destroyed.

In order to more effectively use the experienced and technical personnel of the interested parties, a program was developed prior to July 1943 for the centralization of stream-measurement work in the Federal-State cooperative program under the technical supervision of the Geological Survey. Consequently, the State appropriation for the work was increased by $750 for the fiscal year ending June 30, 1944; and the Humboldt River Water Users made $1,650 available for the coordinated program. Both of these amounts were matched by Federal funds. The new program has also been aided by the usual keen interest and financial support of the Nevada Agricultural Experiment Station.

As a result of the increased funds gaging stations were constructed or rehabilitated on the following streams:

Humboldt River near Carlin, Nevada.
Marys River near Deeth, Nevada.
Lamoille Creek near Lamoille, Nevada.
North Fork Humboldt River near Halleck, Nevada.
Little Humboldt River near Paradise Valley, Nevada.

Galvanized corrugated pipe gage-house structures and stilling wells with continuous type water-stage recorders were installed at all five locations. Standard cableways for making high water discharge measurements were constructed at four of the stations. The cost of this work was approximately $800 per station. The balance of the increased funds was used for operation of the stations for the remainder of the year. It is planned that three or four new stations will be added during the coming year, two or three the following year, and etc., until all available funds are needed for operation and maintenance work.

Although these funds assisted materially in improving the stream-gaging program, the State should carefully consider the urgent need of providing sufficient financial support in order to collect the necessary information for postwar projects and for the ultimate complete development of all water resources within the commonwealth of Nevada.

Stream flow for the biennium covered by this report was exceptionally good. At the key gaging station on the Humboldt River at Palisade the records show that the discharge for the water years ending September 30, 1942 and 1943 was 222% and 235% of a 35-year average. Only twice during the past 39 months has the runoff at that location been below the median. On February 26, 1943, a peak discharge of 6,250 second-feet passed Palisade, exceeding the previous recorded maximum by 2,000 second-feet. During the flood periods material damage occurred to highways, bridges, railroads, diversion dams, livestock and other private and public properties. With upstream storage much of that loss could have been avoided and the retarded waters

would have been available in the dry part of the season for irrigation and other valuable uses. Large flows passed the Rye Patch reservoir, the last available storage space, and will be eventually lost by evaporation from the Carson-Humboldt sink without benefit to the State of Nevada. Similar damages and losses of water supply occurred during the past two years in other sections of the State, particularly in the Little Humboldt River Basin.

Detailed information collected as a result of these cooperative investigations are published in the annual water supply papers of the Geological Survey. The publications are avialable for consultation at the State Engineer's Office, Carson City, Nevada, and at the district office of the Geological Survey, 303 Federal Building, Salt Lake City, Utah. Data in advance of publication and those for previous years at individual stations can be furnished in blue-print form upon application to the District Engineer.

CHAPTER VII

Snow Surveys

By H. P. Boardman, Chairman Forecast Committee, Nevada Cooperative Snow Surveys, July 1, 1942, to June 30, 1944

1. CENTRAL SIERRA

The agencies cooperating in the snow surveys on the eastern slope of the Central Sierra during this biennium are: The Nevada Cooperative Snow Surveys, including the State of Nevada, through the State Engineer's Office, the Truckee-Carson Irrigation District, the Washoe County Water Conservation District, and the Sierra Pacific Power Company; the California Cooperative Snow Surveys headed by the Division of Water Resources of the Department of Public Works at Sacramento and including the Pacific Gas and Electric Company and the Nevada Irrigation District, whose employees make the surveys of several of the snow courses used in this forecast; and the Division of Irrigation of the U. S. Soil Conservation Service. The Division of Irrigation is the organization which is developing and coordinating the snow surveys throughout the western States. All of the above organizations contribute financially to the work.

The U. S. Weather Bureau and the Nevada Agricultural Experiment Station at the University of Nevada also cooperate in various ways.

1943

The fall and winter precipitation of 1942–1943 was above normal in the Central Sierra except for the month of February which was low. November precipitation was unusually high, ranging from 194% of normal at Blue Canyon to 465% at Truckee. The actual November excess above normal for several stations was as follows: 8.37″ at Sierraville, 10.02″ at Bowman Dam, 8.19″ at Soda Springs, 7.12″ at Truckee, 5.61″ at Tahoe City, 3.8″ at Tamarack (Blue Lakes), 7.09″ at Twin Lakes and 8.44″ at Lake Eleanor.

This November precipitation was largely in the form of rain below 7,500 altitude and snow in the higher altitudes. In line with this the April 1 snow surveys were relatively high in the high altitudes for the Truckee, Tahoe, and Carson watersheds, being above 100% of normal for most of the courses, while the low level courses were relatively lower, in general between 50% and 85% of normal in water equivalent.

Considerable difficulty in taking snow samples was encountered by the field parties because of several layers of crust formed by intermittent winter rains or warm spells.

In working up the forecasts for the Tahoe and the Truckee-exclusive-of-Tahoe basins, the snow surveys are weighted according to low versus high levels and east versus west and relative areas, west meaning the main Sierra range and east meaning the Carson range situated east of Tahoe and between Boca and Verdi where the Truckee River cuts through. In general, the high-level courses, above 7,000 feet, have higher water content than the low-level courses, and the west or main range courses have higher water content than the east or Carson range courses because most of the heavy storms come from the west.

This year more than usual drifting due to wind action was noticed in high altitudes.

Because of high level carry-over of Lake Tahoe and heavy November-January precipitation the lake reached elevation 6,228.59 on January 25, only .51 feet below the maximum permissible elevation of 6,229.10. It was therefore necessary to open the gates and draw out large quantities of water to prevent danger of damage suits. The maximum controlled elevation of 6,229.02 was reached July 13. The actual rise after April 1 corrected for draft was 1.62 feet as compared with the forecast of 1.70 feet, assuming gates kept closed. The difference, .08 feet or 1 inch, is 4.8% of the normal rise of 1.68 feet.

The actual natural April-July runoff at Farad of the Truckee River exclusive of Tahoe obtained by correcting for storage on the Little Truckee was 297,830 acre-feet or 0.7% of normal less than the 300,000 acre-feet forecast. The normal is 325,700 acre-feet.

The Carson river runoff at Ft. Churchill for April-July was 234,900 acre-feet or 102.1% of normal, while the forecast was for normal or 230,000 acre-feet.

The West Walker river above Coleville and below the east fork, discharged 175,650 acre-feet during April-July or 91.9% of normal, as compared with the forecast of 174,000 acre-feet—the difference being 0.9% of the normal, which is 191,200 acre-feet.

The East Walker River was the bad one this season as compared with the forecast, but not bad from the water user's point of view, for during the April-August period it discharged 82,330 acre-feet or 112.8% of normal when we forecast only 60,000 acre-feet or 82.2% of normal. Probably the main reason for this large discrepancy is the carry-over of ground water storage in Bridgeport Valley from the heavy November rains.

1944

This is a very different year from last year. In the Central Sierra the winter precipitation was much below normal and the April 1 snow surveys likewise showed low water equivalent, most of the courses ranging between 60% and 80% of normal. Some of the low-level courses were relatively better than most of the main range or west side high-level courses. Also, most of the Carson range high courses were a little better in percents of normal than the average of the west side high courses. This is explained by the fact that several fairly good snowstorms came from the east giving actually greater precipitation on the Carson range than on the main range.

The Tahoe situation was very different from that of 1943—the lake not being high enough at any time to necessitate opening the gates until more water was needed down the river.

The Truckee River exclusive of Tahoe and corrected for Little Truckee storage discharged 178,990 acre-feet or 55.0% of normal during April-July. The forecast was for 195,000 acre-feet or 59.9% of normal.

The rise of Tahoe from April 1 to high water, assuming gates closed, was 0.91 feet or 54.2% of normal, while the forecast was for 0.90 feet or 53.6% of normal. The forecast was for a maximum elevation of 6,227.70 to be reached about June 15, assuming gates closed. The actual maximum of 6.227.67 was reached June 29, but had gates been

closed since April 1 the elevation would have been 6,227.70. However, on July 6 with an actual elevation of 6,227.66 a correction for draft brings it up to 6,227.71 with gates closed.

The Carson River behaved about as expected, giving a discharge of 96,740 acre-feet or 42.1% of normal against a forecast of 90,000 acre-feet or 39.1% of normal.

The West Walker similarly exceeded the forecast by a small amount, giving a discharge of 116,300 acre-feet or 60.8% of normal for a forecast of 110,000 acre-feet or 57.5% of normal.

Again, as in 1943, the East Walker has overrun our estimate. The forecast was for April-August discharge of 33,000 acre-feet or 45.2% or normal. The April-July runoff has been 49,670 acre-feet and an estimate of August when added on gives about 53,000 acre-feet or 72.5% of the normal 73,000 acre-feet.

It is probable if we can organize and continue some well observations in Bridgeport Valley we may in a few years be able to establish a relationship which will help improve the accuracy of the forecasts. There is apparently some similarity between the East Walker and the Humboldt River problems in the matter of ground-water effect.

For both years of this biennium the actual results differed less than 5% of normal from the forecast for all basins except the East Walker.

One new snow course has been established this biennium near the west end of Donner Lake.

II. HUMBOLDT RIVER BASIN; EAST, CENTRAL AND SOUTHERN NEVADA; AND WILDLIFE REFUGES

1942–1943

Plans rather than progress have attended the routine work of snow surveying and reports rather than forecasts have resulted from the accumulation of weather influences.

In snow-surveying, the possibility of snowslides in late March in the pass leading into Marys River Basin and preventing access to the snow course there has caused the laying out of an alternate snow course in 76 Creek Basin adjoining Marys River Basin on the west. A cabin will be erected in Bear Creek Basin to complete the chain of shelters leading southward into this area from Jarbidge.

In the Salmon Falls Basin, adjoining Marys River Basin on the east, a series of snow courses reached from Pole Creek via Jarbidge or Contact would provide a complete index of snow cover in northeastern Nevada for both the Humboldt and Snake River tributaries.

Across the floor of the upper Humboldt Basin a series of low-level snow courses should be maintained to determine the character of the low snow that may affect particularly the early runoff and cause floods. Precipitation measurements alone are insufficient.

To assure rescue in case of accident, on overnight trips, snow-survey parties should consist of at least three members, and the more remote shelter cabins should be supplied with toboggans and web snowshoes for transport. A two-way radio also should be installed. The Humboldt National Forest is leading in these precautions.

Stream gaging has been suffering not only from lack of observers but also from floods that have carried out staff gages and recorders on North Fork, Susie, and Mary Creeks, and on the little Humboldt

River and Martin Creek. The cable at Moleen Canyon on the main Humboldt was undermined.

Because of the varying fluctuation of the streams in the mountains, continuous recorders must replace staff gages on the feeders of the Humboldt, and because of difficulty of access, weight-driven instruments with capacity of at least a month should be installed.

Furthermore, to avoid split channels at the outlet of the tributaries and assure a record during the period of winter freezing, stream measurements should be made of the main Humboldt below each large feeder or set of smaller ones.

The light cables used in metering the streams must be replaced by heavier wire and more enduring anchorage.

Marys River Basin, an excellent provider of snow, still awaits the installation of a recorder above diversions before definite forecasts of runoff can be attempted or the effect of obstructions in the channel can be determined.

In Lamoille Basin the recorder should be protected against surging by laying a concrete apron in the bed of the stream.

In Charleston Mountain area of Southern Nevada, the snow surveys should be extended to the west to serve Pahrump Valley and automatic recorders for temperature and precipitation should be installed at Charleston Ranger Station to assure continuous records throughout the winter and spring when the station usually is closed. The Las Vegas and Boulder City stations are too low to provide records comparable to those at Charleston Mountain.

The Legislature has restored the appropriation for snow surveying to $1,500 a biennium. This and more will be necessary because of the increase in the size of snow survey parties, the additional snow surveys desired, and the necessity of closer observation of streams during runoff. Fortunately some cooperative funds have been provided by others.

The cooperative fund for stream measurements has been increased to $3,000 for the biennium. The Division of Irrigation of the United States Soil Conservation Service has provided several stream-flow recorders. More stations and longer-period recorders are necessary. The initial cost is necessarily high. A start in replacement and expansion can now be made.

1943–1944

The plans of establishing a substitute snow-survey course at 76 Creek for upper Marys River Basin, a series of courses in Salmon Falls River Basin, and a line of low-level snow courses across the floor of upper Humboldt Basin still await realization but have lost none of their insistence.

Controlling them all is the present lack of manpower that has temporarily caused the curtailment of some of the snow surveys. Great credit is due the Forest Service, however, for the high priority given snow surveying that comes just when rangers are being transferred to other forest posts. To meet emergencies, rangers are sent from other forests. The members of the C. O. camp in Antelope Valley have eagerly shared in snow surveying in the Mono and Toiyabe Forests.

Stream gaging in the Humboldt Basin has now entered its final stage of development. An increase in appropriation by the Legislature has

made possible the further extension of cooperative stream gaging, especially in the Humboldt River Basin. The U. S. Geological Survey has installed continuous recorders on lower Marys River, North Fork, upper Lamoille Creek, and upper Humboldt River at Moleen Canyon near Carlin, and with aid of the Nevada Agricultural Experiment Station will perfect the station at Boltons on upper South Fork.

A series of gaging stations is now planned for the Humboldt below each principal feeder to determine the contribution of various cross-sections of the watershed, such as the Wells-Bishop Creek, Marys River, Starr-Secret, North Fork, Lamoille, South Fork, and Maggie-Susie areas. These will be provided with continuous recorders which will be maintained throughout the year. The South Fork station has been established since 1897, but the North Fork station is only now established permanently.

Supplementing these should be gages where possible on the principal tributaries where they emerge from the mountains to determine the difference in essential character between the runoff of the mountain streams and the broad valley stream of the main Humboldt.

The stations on upper Starr, Secret, and South Fork are still being maintained by the Agricultural Experiment Station, and a new station has been established this spring on Maggie Creek at Carlin and another is planned on Susie Creek. Most essential, though difficult to maintain, is a proposed station at the head of Marys River to compare the upper mountain stream and the lower alluvial stream made sluggish by practically continuous dams.

The effect of high water table surmised as the cause of the excess runoff in the upper Humboldt above the percentage indicated by the snow cover seems now to be proved by the near normal runoff of the south feeders in 1943 and the double normal runoff of the main stream at Palisade. Evidently much of the snow melt usually absorbed by the alluvial basin was turned directly into the stream channel.

The winter runoff, being immediately subject to temperature, is not so reliable as indicator of the relative height of the water table as are the wells, but should be further studied for its possible value.

In Southern Nevada through cooperation of the U. S. Forest Service and Army, continuous measurements of precipitation and temperature are being made on Charleston Mountain in the vicinity of the snow fields, thus providing weather data more indicative of snow accumulation and melting.

An enlarged snow-weather station is now under consideration by the U. S. Weather Bureau at Paradise Valley as an index for the Little Humboldt Basin, and permanent precipitation-temperature stations have become a feature of the wild-life refuges at Sheldon and Ruby Lake.

For purposes of confirmation and comparison the precipitation recorded by the U. S. Weather Bureau as well as the survey of the snow cover will be continued as a permanent feature of the forecasts.

WELL MEASUREMENTS

The well measurements on the upper Humboldt, accumulated since 1935, are now being analyzed to determine their relationship to the snow cover and to irrigation which greatly affects the water table in the summer.

Two series of wells are under observation: one consists of fifteen

wells in Lamoille Valley from the foothills of the Ruby Range to the main valley of the Humboldt, and the other of nine wells along the northern shoulder of the Humboldt Valley from Carlin to Deeth. To these have been added two wells of the Grazing Service near Lamoille and Deeth to determine the fluctuation of the water level at greater depths.

Snow data are being accumulated at Mount Charleston to determine the effect of the snow cover on the flow of the artesian wells near its foot.

General forecasts are now being issued for the Steptoe, Baker, and Reese River areas and for the Sheldon and Ruby Lake Wildlife Refuges.

SUMMER PRECIPITATION

Through joint cooperation of the U. S. Soil Conservation Service and the Weather Bureau, the Experiment Station is now making weekly measurements of summer precipitation up the slope of Ruby Range from Lamoille Valley (5,600 feet) to the head of Lamoille Canyon (9,000 feet) to determine the relative intensity of rain in the valley and adjoining mountains.

This knowledge will be valuable in areas where the summer precipitation is relatively heavy as in eastern Nevada, the eastern slope of the Rocky Mountains, and in Arizona, and is the result of thunderstorms.

These measurements are now in their second successful year.

It has been found that a film of oil will prevent evaporation completely for indefinite periods even in the height of summer and so assures accuracy of measurement even after protracted absence. Both in the Ruby and Sierra Nevada areas, periods of seven weeks without rain have occurred during which the contents of the cans remained undiminished. It has since been learned that laboratory tests have shown that even a thin film of oil will insulate against evaporation for months or even years.

This offers an inexpensive opportunity to the Forest Service and others to determine the seasonal precipitation in remote areas where visits can be made only occasionally or even at long intervals.

THE HIGH WATER TABLE IN THE UPPER HUMBOLDT BASIN DURING 1942–1943 and 1943–1944

For water engineers who desire details on the exaggerated flow in the upper Humboldt during the past two seasons, the following paper prepared for the American Geophysical Union is appended:

EFFECT OF HIGH WATER TABLE IN EXAGGERATING STREAM FLOW; FURTHER ANALYSIS OF THE UNUSUAL YEAR OF 1942–1943 ON THE UPPER HUMBOLDT RIVER, NEVADA.

By J. E. Church and H. P. Boardman

The water year of 1942–1943 because of the normality of its weather features has provided further opportunity to confirm the potency of high water table on the runoff of the upper Humboldt and determine its relative effect.

The only questionable factor is that of precipitation and snow cover. The former for November-February was 137.6 percent of normal, and the snow cover March 1, 91.5 percent of normal but at low-levels only 42.1 percent. Fortunately in the Central Sierra with almost identical

conditions of precipitation and snow cover, the percentage of runoff was closely similar to that of the snow at the higher levels. Therefore, for purposes of comparison the snow cover in the Humboldt basin may be considered reliable and its effectiveness as approximating 91.5 percent of its normal.

The precipitation during March-July, the period of runoff, was near or slightly below normal except for the month of June when the precipitation was 100 to 240 percent in excess of normal.

On the other hand, at Elko and Lamoille, except for excess temperature of +4.8° and +7.4° F., respectively, in April, the temperature was at or below normal, and in June when the precipitation was heaviest the temperature departure was lowest or, respectively, —5.6° and —5.0° F. at the two stations.

The winter runoff at Palisade was 125,330 acre-feet or 435.2 percent of normal, an unprecedented occurrence, but a part of this was flood water in January and February.

The wells in Humboldt and Lamoille Valleys in March were higher than for previous years of record, except 1942 in the former. More exactly, in Humboldt Valley the wells were 1.65 feet higher than the group normal of 11.62 feet (below the surface of the ground) and in Lamoille Valley were 0.84 feet higher than their group normal of 4.24 feet.

This excess, intensified probably by the heavy priming of the soil in the floods of January and February, created a total runoff for March-July of 216.2 percent of normal or 125 percent of normal above the 91.5 percent of the snow cover.

On the other hand, South Fork (near Elko) where it enters the main Humboldt failed to be affected by the high water table noted in the alluvial valley of the main stream, and flowed at approximately the percentage of normal represented by the snow cover (snow cover 70.1, runoff 90.0).

Though not earlier realized, this harmony between snow cover and runoff is understandable, for South Fork has a steep gradient and quick return-flow in its V-shape valley.

Fortunately the record on South Fork is based on a normal of 38 years; the station is rated as good by the U. S. Geological Survey, and the record for 1942–1943 is continuous.

The records of three neighboring streams, upper South Fork, Lamoille Creek, and Starr Creek where they leave the foothills of the high Ruby Mountains show the same trend despite their fragmentary condition caused by withdrawal of the State Hydrographer into war service.

These records as interpolated for missing months are as follows:

	March 1		April–July	
	Pctg. of Normal		Pctg. of Normal	
South Fork (Boltons)	Snow cover	70.1	Runoff	114.6 est.
Lamoille Creek (near Lamoille)	Snow cover	97.9	Runoff	121.2 est.
Star Creek	Snow cover	97.4	Runoff	121.8 est.
Main Humboldt (Palisade)	Snow cover	91.4	Runoff	193.0

Because of lack of records, the seasonal period of the tributaries except lower South Fork (near Hiko) is confined to April-July. During this period the main Humboldt flowed 193.0 percent as contrasted with 216.2 percent for the period of March-July.

Since upper South Fork (at Boltons) has no alluvial valley above it and scant water table, its percentage of runoff should be even less than on the lower South Fork (near Elko). Both are the selfsame stream except for tributaries entering below. By the new normal of 44,000 acre-feet (mean of the six years, 1937–1942) the percentage is 114.6 percent. Similarly by a new 6-year normal on the other streams compared, the trends are visible.

At the lower end of Lamoille Valley, where the water table has a wide fluctuation, and in Marys River basin, known for its gentle gradient and continuous dams, the runoff tends upward toward that of the main Humboldt in the former and far exceeds it in the latter.

The percentages for April–July are as follows:

Lower Lamoille Creek (McIntyres)	140.1 percent
Marys River (Cabin Field)	279.3 percent
Main Humboldt River (Palisade)	193.0 percent

Since the gage at McIntyres was by-passed by much water in the higher stages of Lamoille Creek, the percentage of runoff must be considerably higher than recorded.

Lamoille Creek flows quickly and only a relatively short distance from its mountain rim to the south, while Marys River flows far and sluggishly from its mountain basin to the far north.

If more and better records were available, it would be possible to trace the influence of the ground-water table up the various finger basins of the Humboldt which comprise its source. But plainly this influence does not extend above the canyon throats nor up the V-shape valleys where the gradient is steep.

1943–1944

The flow of the main Humboldt the current year appears to confirm the effect of the water table.

On March 1 and April 1 the water table was still slightly above normal and the winter runoff was 63.7 percent of normal despite a minus departure of 9° to 2° F. in January-February.

The snow cover in the basin average 74.1 percent (65.4 on northern feeders and 82.8 on southern). On the assumption that the excess effect of the water table should be at least 20 percent, the forecast of runoff at Palisade for March-July was raised to 95 percent.

The runoff near the end of this period (July 22) has actually reached 120 percent or 45 percent above the average percentage of the snow cover.

The temperature departure for March-April was —5° F. and has probably been nearly as low in May-June. The precipitation during runoff was greatly deficient in March, May and July, but greatly in excess in April and June. For the period of March-June, when most effective, it totaled 143.0 percent of normal.

The monthly phases of runoff with precipitation and temperature are shown in the following table:

	Snow cover	Precipitation (Lamoille only)	Temperature departure	Runoff
November-February	74.1%	70.3%	—2.0°F	63.7%
March	.....	47.3	—5.0	92
April	.....	262.3	—5.0	87
May	.....	50.7	—5.0	108
June	.....	349.0	—5.0 (?)	150
July 1–22	.....	0	.....	181.2
March-July	.....	131.2	.....	119.7

The low temperature has delayed the melting and caused it to increase toward the close of the period. At the end of May the precipitation was only 13.5 percent in excess of normal. The heavy precipitation of June increased the excess to 43.0 percent and accentuated the peak of the flow.

This accentuation, on basis of earlier measurement in June, 1913, should increase the monthly flow 45 percent but the March-July flow only 12.8 percent. The excess flow in July will be approximately 8 percent as applied to the flow, making the total excess due to rain approximately 20 percent. The excess due to high water table would therefore be 25 percent, or 5 percent more than forecasted.

The behavior of the tributaries has not yet been computed, except Starr Creek that has been found to correspond with the snow cover, if correction is made for the effect of excessive precipitation in June.

WINTER RUNOFF v. WATER-TABLE AS INDEX OF BASE FLOW

The winter runoff should at minimum represent the effect of the water table, but at maximum can be the effect of high temperature and rain.

The following chart of mean departures (in feet) from normal in two series of wells in Lamoille and Humboldt Valleys and the corresponding winter flow of the main Humboldt (in percentage of normal, November-February) shows the diversity that can occur:

Year	Lamoille Valley Wells, departure from N.[1] in feet	Humboldt Valley Wells, departure from N.[2] in feet	Runoff Humboldt River at Palisade (Nov.-Feb. percentage of normal)
1935	—0.79	.....	30.5
1936	+0.52	.....	46.4
1937	+0.67	.....	49.0
1938	—0.26	.....	44.6
1939	+0.32	.....	76.2
1940	—0.26	.....	71.0
1941	—1.46	—1.28	69.2
1942	+0.44	+2.43	209.5
1943	+0.84	+1.65	435.2
1944	+0.10	+3.47*	89.8

[1]N. is mean depth to water in 7 wells or 4.24 feet (March 1).
[2]N. is mean depth to water in 7 wells or 11.62 feet (April 1).
*Mean of 5 wells.

Only in the last three years do the water table and winter runoff run at all parallel.

To provide a complete picture of all principal elements associated in stream flow—such as winter temperature, precipitation, and runoff, spring water table and snow cover, summer runoff and precipitation—the table appearing on pages 40 and 41 has been prepared by the junior author:

DISCUSSION

The following correspondence was elicited by the paper on "Three Unusual Runoff Years in the Humboldt Basin, Nevada, 1940-1941, 1941–1942 and 1942–1943 by J. E. Church and H. P. Boardman, *Trans.* A. G. U. 1943, pp. 67–71, and is so suggestive that it is appended to the present paper to which it also belongs.

The possibilities of winter or March runoff in forecasting have been mentioned in the forecast of the Humboldt for 1944:

W. G. BOYT—"Never having made any forecast of runoff based on snow measurements and being especially unfamiliar with methods used in Nevada, it is perhaps presumptuous on my part to enter into a discussion with you concerning your joint paper with Prof. Boardman. 'Three Unusual Runoff Years in the Humboldt Basin, Nevada,' published in the 1943 American Geophysical Union Transactions, Part 3.

"It appears from your discussion that the unusually wide divergence between the actual runoff and the forecast runoff during the spring of 1942 has emphasized the factors of soil moisture and ground-water levels that have 'previously seemed subordinate to those of snow cover and precipitation.' By making comparisons between the actual flow during the spring of 1943 and the forecast flow, you arrive at the conclusion that roughly 50,000 acre-feet of the difference between the forecast and the observed runoff can be attributed to excess water associated with the flood of April, 1942, and roughly 250,000 acre-feet to the effect of high ground-water table. During the spring of 1943 ground-water conditions were apparently similar to those during the spring of 1942 and by adding 250,000 acre-feet to the forecast runoff from snow you arrived at a total forecast under normal conditions of roughly 400,000 acre-feet and possible maximum of 430,000 acre-feet for the total runoff March through July, 1943. These forecasts agree closely with the actual runoff of 443,000 acre-feet.

"The question I raise is the extent to which you have made correlations between factors other than snowfall and precipitation in arriving at your forecast. If it is assumed that 250,000 acre-feet represents the maximum effect of high soil-moisture content and high ground water in the Humboldt River basin above Palisade, what amount would represent normal or minimum conditions?

"The point has long been stressed that in the absence of detailed observations of soil moisture and ground-water conditions, stream flow itself is a satisfactory index of natural storage conditions within a basin and that through a study of stream flow alone it is possible to arrive at rather definite conclusions of the effect of antecedent conditions on the amount of snow or rain which will be translated into stream flow. To the extent that this is so, it would seem that the rain, snow, and temperature elements could be superimposed on the correlations to arrive at the most probable answer concerning future runoff. For example, we may be correct in assuming that to a very large extent the flow of Humboldt River during October is more dependent on antecedent conditions than on either snow melt or precipitation during October. If this assumption is correct, there should be a good correlation between antecedent conditions and October flow. If we take the flow at the end of September as a measure of antecedent conditions, we find a very high degree of correlation between the October flow and this index. In fact, based on this index alone with no consideration given to meteorological conditions an outlook for the October runoff could be made which would deviate 10 percent or less from the observed October runoff for half of the time. During the spring and early summer months the problem is, of course, complicated by the fact that there may be a closer relation

HUMBOLDT BASIN—10-YEAR RECORD OF PRINCIPAL ELEMENTS ASSOCIATED IN STREAM FLOW

Year and Month	Temperature and Precipitation Departures from Normal at Elko-Wells-Lamoille: Temp.* ° F.	Precip. (in.)	Winter Runoff Palisade Nov.-Feb. Percent of Normal	Water Table (wells) Departure from Normal (Feet): Humboldt Valley wells April 1	Lamoille Valley wells March 1: Deep	Shallow	Snow Survey Humboldt Basin Percent of Normal	Precipitation March-July average at Elko-Wells-Lamoille: Percent of Normal	Dep. (in.)	Runoff Palisade March-July Percent of Normal	Year
1934–1935											
November	+3.1	+.96									
December		—.25									
January		—.49									
February		—.68									
		—.46	31	.....	—5.79	—.33	74	113	+.71	69	1935
1935–1936											
November	—3.9	—.49									
December		—.09									
January		+.36									
February		+1.10									
		+.90	46	.....	—2.53	+.42	135	112	+.60	117	1936
1936–1937											
November		—.79									
December		+.56									
January	—15.6	—.02									
February		—.08									
		—.33	49	.....	+.11	+.71	78	100	—.01	80	1937
1937–1938											
November	+3.7	+.22									
December		+.02									
January	+4.2	—.32									
February		—.64									
		—.72	45	—.95	—1.30	+.43	63	144	+2.41	98	1938
1938–1939											
November	—5.4	—.09									
December	+5.1	—.94									
January		—.70									

February	—9.8	—.90									
		—2.63	76	+.11	+1.46	—.71	69	96	—.21	68	1939
1939–1940											
November	+3.5	—.53									
December	+3.6	—.92									
January	+3.6	+.46									
February	+5.4	+.10									
		—.90	71	—1.60	+2.98	—.36	56	107	+.37	61	1940
1940–1941											
November		—.23									
December	+4.5	+.37									
January		—.51									
February	+4.3	—.35									
		—.72	67	—1.54	—3.73	—.94	71	176	+4.16	108	1941
1941–1942											
November		+1.27									
December	+3.9	+.84									
January		+.24									
February	—.63	0									
		+2.35	210	+2.46	+2.63	+.38	90	112	+.67	230	1942
1942–1943											
November		+1.93									
December	+5.9	+.70									
January	+4.6	+.82									
February		—.23									
		+3.22	446	+1.67	+4.66	+.66	91	126	+1.40	214	1943
1943–1944											
November		—.22									
December		—.48									
January	—7.5	—.34									
February		—.49									
		—1.53	90	.....	+1.43	+.14	74	.....	.....	.....	1944

*Temperature Departure from Normal is shown only for those months when its average for the three stations Elko, Lamoille, and Wells (or for Elko and Lamoille for 1934–1938, inclusive) was 3.0° greater. Temperature records for Wells are lacking for years 1934–1938, inclusive.

between runoff and meteorological factors than there is between runoff and natural storage conditions as measured by the deficiency or excess of soil moisture and ground water.

"During the period 1920–1943 the total runoff of the Humboldt River at Palisade has varied from a minimum of about 10,000 acre-feet in 1934 to a maximum of 554,000 acre-feet in 1921 with an average of about 195,000 and a normal value as measured by the median of about 155,000. (Incidentally, it is noticed that in your discussions you use arithmetical average as a normal rather than the median value. In other words, due to the fact that a relatively few high years raise the average, actually the flow reaches or exceeds your normal for considerably less than half the time. Is not a normal based on a median value more significant?) The question arises as to how much of the variation between seasonal runoff of 10,000 acre-feet and 554,000 acre-feet results from differences in snow melt and rainfall moisture and ground water. I find that using the flow during the last of March as an index and disregarding entirely the snow and rain factors, an outlook could have been made of the total runoff for the five months, March through October, which would have deviated 32 percent or less from observed runoff for half of the time. This outlook as of April 1 would correspond with the time of the making of your first preliminary statements concerning flow conditions in Nevada. If the flow during the latter part of April is taken as an index, and disregarding again all meteorological conditions, an outlook could have been made of the five months' flow which would have deviated but 23 percent or less from the actual flow for half of the time. This outlook would correspond in time to your final forecast made early in May when the March and April runoff are known. If the outlook as of May 1 is related to the prospective flow for the months of May, June, and July only, and the known March and April flow added, the total outlook would have deviated but 22 percent or less for half the time. If an outlook had been made at the beginning of each month, March to July, inclusive, using an index based on the flow during the latter part of the previous month, the combined monthly outlooks March to July would have deviated but 17 percent from the actual observed flow March to July. In other words, it seems that antecedent conditions reflect the amount of snow melt and precipitation that will be translated into runoff; otherwise the correlations such as have been outlined and which afford a measure of the effect would not have been obtained.

"We have not had time to make what might be considered anywhere near an exhautive study. Such correlations as have been made of the flow of various index streams, however, confirm our impression that stream-flow records can be used as a measure of antecedent conditions and through their use there would seem to be a possibility to work out correlations whereby the accuracy of forecasts based on snow melt and precipitation could be increased. It may well be that you have analyzed long-term ground-water observation and have correction factors established whereby you can adjust your forecasts based on snow and rain. Such correlations, if any, however, are not outlined in your interesting and instructing paper."

CHAPTER VIII

Las Vegas Artesian Basin, Clark County, Nevada

A great deal of work has been done in the Las Vegas Artesian Basin during the past biennium in continuing the program started in 1939 by the State Engineer's office. This program called for the taking of hydrostatic pressure readings on observation wells throughout the basin, of repairing leaky wells, of exercising a rigid control over the manner of well drilling and general conservation measures.

The Underground Water law enacted on March 25, 1939, and being chapter 178 of the 1939 Statutes of Nevada, provided in section 4 of said Act that upon receipt of a petition of the owners of wells in any particular basin having a legal right to appropriate underground water therefrom, requesting the State Engineer to administer the provisions of said Act, the State Engineer shall designate such area by basin and proceed with the administration of the Act on all wells drilled subsequent to March 22, 1913. In conformity with this section and upon receipt of a petition from a large percentage of the owners of wells in the Las Vegas Artesian Basin the State Engineer, on January 10, 1941, designated this basin as follows:

Commencing at the NW Corner of Sec. 1, T. 20 S., R. 60 E., thence easterly 11 miles to the NE Corner of Sec. 3, T. 20 S., R. 62 E., thence southerly 6 miles to the SE Corner of Sec. 34, T. 20 S., R. 62 E., thence westerly about 1,000 feet to the NE Corner of Sec. 3, T. 21 S., R. 62 E., thence southerly 8 miles to the SE Corner of Sec. 10, T. 22 S., R. 62 E., thence westerly 10 miles to the SW Corner of Sec. 7, T. 22 S., R. 61 E., thence northerly 8 miles to the NW Corner of Sec 6. T. 21 S., R. 61 E., thence westerly about 4,700 feet to the SW Corner of Sec. 36, T. 20 S., R. 60 E., thence northerly 6 miles to the NW Corner of Sec. 1, T. 20 S., R. 60 E., being the point of beginning, situated in Clark County, Nevada.

Subsequent development of artesian water in this area outside of the designated area caused the State Engineer to designate an extension to the already designated underground artesian water basin, which is as follows:

Being that area immediately to the north and northwest of the present designated area, and described as being that area included in Township 19 S., Range 60 E., and the south half of Township 19 S., Range 61 E., M. D. B. & M.

Section 5 of the 1939 Act as amended in 1943 (chapter 106), provides that an Artesian Well Supervisor may be employed and his salary paid from a special tax levied against all taxable property within the designated area. This section also provides that such salary may be paid by the State Engineer from "The Water Distribution Fund" created by chapter 232 of the Statutes of 1931, as amended by chapter 23, Statutes of 1943, pending the levy and collection of the tax as provided in this section.

In March of 1943 the Clark County Commissioner approved a budget of $5,000. In March of 1944 a budget was approved in the sum of $6,500.

On May 1, 1943, Harry Jameson was employed as Artesian Well Supervisor for the Las Vegas Artesian Basin. Under Mr. Jameson's supervision many wells in the Las Vegas Artesian Basin have been repaired and a careful supervision has been exercised over the drilling of new wells. There are now some 437 wells of record in the Las Vegas Artesian Basin.

The 1943 amendment to the Underground Water Law is briefly as follows:

Section 5. The 1939 Act provided that the revenue from special taxes shall not exceed $2,000 in any one designated area. This limitation was taken out of the 1943 amendment.

Provides for using "The Water Distribution Fund" created by chapter 232, Statutes of 1931, as amended by chapter 23, Statutes of 1943, for payment of salaries.

Section 6. The 1939 Act provided that before any person could sink a well in any designated area as provided for in the Act, he should first make application to appropriate water to the State Engineer's office. The 1943 amendment provides that in addition to making an application a permit must also be obtained to appropriate water.

Section 8. The 1943 amendment provides that the cost of repairing a well in a designated area as provided for in the Act may, in the first instance, be paid by the State Engineer from the Water Distribution Fund, as provided for in section 5 of the Act as amended.

The State Engineer's office has long felt the need of an intensive study of the Las Vegas Artesian Basin and to this end has discussed such a program with the United States Geological Survey on many occasions. This has resulted in a cooperative agreement between the State of Nevada and the Geological Survey being signed on June 29, 1944, whereby each party contributes an amount of $5,000. In this instance the State of Nevada is acting on behalf of the County Commissioners of Clark County and the amount contributed shall be furnished from the Las Vegas Artesian Basin Fund. The State is being allowed credit on Mr. Jameson's salary as part of the cooperative fund.

We have been advised by the Geological Survey that Mr. George B. Maxey, Assistant Geologist, would start work on about July 15, 1944.

In getting such a program started, which we hope will be a forerunner for a Statewide program of underground water investigation, we are indebted to the United States Geological Survey for their splendid cooperation. We especially appreciate the assistance and advice given us by O. E. Meinzer, Director, United States Geological Survey Underground Water Division, M. T. Wilson, District Engineer, United States Geological Survey, Ralph R. Woolley, Senior Hydraulic Engineer, United States Geological Survey, and P. E. Dennis, Assistant Geologist, United States Geological Survey.

PAHRUMP ARTESIAN BASIN

On March 11, 1941, the State Engineer designated the following area as the Pahrump Artesian Basin:

Commencing at the SE Corner of Section 26, T. 21 S., R. 54 E.,

thence northerly about 7 miles to the NE Corner of Section 26, T. 20 S., R. 54 E., thence westerly about 3 miles to the NW Corner of Section 28, thence northerly about 4 miles to the NE Corner of Section 5, T. 20 S., R. 54 E., thence westerly about 5 miles to the NW Corner of Section 3, T. 20 S., R. 53 E., thence southerly about 9 miles to the SW Corner of Section 15, T. 21 S., R. 53 E., unsurveyed, thence easterly about 3 miles to the SW Corner of Section 18, T. 21 S., R. 54 E., thence southerly about 2 miles to the SW Corner of Section 30, T. 21 S., R. 54 E., thence easterly about 5 miles to the SE Corner of Section 26, T. 21 S., R. 54 E., being the point of beginning, situated in Nye and Clark Counties, Nevada.

At the present time there are 26 wells of record in this area. Close supervision over drilling operations is being maintained and pressure tests are being made on designated wells.

The United States Geological Survey also will make a detailed study in this basin along with the Las Vegas Artesian Basin.

A yearly budget of $250 has been approved by the Nye County Commissioners since 1941.

CHAPTER IX

The Quality of the Water of the Humboldt River

By M. R. Miller, Chemist, Nevada Agricultural Experiment Station, University of Nevada, Reno, Nevada.

HUMBOLDT RIVER SALINITY CONDITIONS

January 1, 1942, to December 31, 1943

The results of analyses made on water samples taken from the Humboldt River for the period indicated are given herewith. Salinity data on samples taken previous to January 1, 1942, are reported in the Biennial Report of the State Engineer for 1940–1942. Mimeographed reports for the period July 1, 1941, to December 31, 1941, are available at the Chemical Laboratory of the Nevada Agricultural Experiment Station, University of Nevada, Reno.

The analyses here reported are of samples taken at the following gaging stations: Palisade, Comus, Callahan Bridge (inflow to reservoir), Ryepatch Dam (outflow of reservoir), Pitt Diversion Dam, and the Last Diversion on the River in the Lower Lovelock Valley. The exact locations of these stations are to be found in the reports referred to above and also in the Reports of the Nevada State Engineer.

At Palisade, weekly samples have been taken throughout the entire period and the results present a very fine record of the salt burden of the river at that point.

At Comus, the sampling periods represent practically the entire annual flow, or at least the greater part, past that station.

At the remaining stations systematic sets of samples for the two years were not obtainable. This has necessitated the introduction of estimates for parts of the year and resulting in the loss of information during these periods of no sampling.

The discharge data for Callahan Bridge station does not include that part the river flow taken from the river above the station and diverted by canal to the H. L. I. L. & P. reservoir. This water is eventually discharged into Ryepatch reservoir. The salt burden of this water is obviously added to that of Ryepatch reservoir while it is given no credit in passing the Callahan gaging station and into the reservoir.

Sampling at the Pitt diversion dam was abandoned in July, 1942, in favor of sampling at Ryepatch reservoir dam in November, 1942. While there may be a slight increment in the salt burden of the river between Ryepatch dam and the upper valley diversion dams, it is considered to be relatively unimportant, although positive. The distance is some fifteen miles, although due to meandering, the actual river length is somewhat greater.

The procedure in preparing and analyzing the samples has been described in the earlier reports and has been adhered to in preparing the samples collected within the present period.

Table I presents the values for electrical conductance given as the value of $K \times 10^5$ at 25°C., determined on each sample taken and on

the date given. This figure, derived from the electrical resistance of the sample, is a measure of the total amount of salts dissolved in the water and the records indicate the general increase in salinity as the water flows down the river. The table also indicates the seasonal fluctuations in salinity at the different stations and is roughly correlated with the volume of water flowing at the time.

Table II gives the results of the analyses, expressed as equivalents per million, of the monthly composites of the samples taken at each gaging station. This table also gives the monthly discharge at that point and the number of samples taken for each month. The procedure adopted on preparing the monthly composite samples for the chemical analysis has been to mix portions of the individual samples in proportion to the discharge at that station at the time the sample was taken. The resulting composite sample is then taken to represent a sample of the total flow past that station for the month and is subjected to chemical analysis.

The abbreviation T. D. S. stands for total dissolved solids and the values are given as parts per million.

The chemical symbols indicate the elements and radicals as follows: Ca (Calcium), Mg (Magnesium), Na (Sodium), HCO_3 (bicarbonate radical), SO_4 (sulfate radical) and Cl (chlorine).

To convert equivalents per million (e. p. m.) to parts per million (p. p. m.) multiply the value given in equivalents per million by the following factors: for Ca, 20; Mg, 12.2; Na, 23; HCO_3, 61; SO_4, 48; Cl, 35.5.

Since the chief objective of the work has been to determine the chemical constitution of the river water, no attention has been given to the silt carried by the stream, and which is always present and greatly variable. In collecting the samples, therefore, no effort was made to obtain samples which would represent the silt conditions.

Table III presents the results of the analyses in conjunction with the monthly discharge at the several points. The values in this table are given as tons of each of the six constituents determined in the chemical analysis, and the total tonnage of salts for the month. It must be noted that the term "total dissolved salts" does not mean common table salt or sodium chloride, but includes those chemicals commonly occurring in natural waters in greater or lesser amounts. These chemicals may be considered to consist principally of the sulfates, bicarbonates, chlorides, borates, etc., of calcium, magnesium, sodium, etc.

Table IV gives a summary of the discharge of water, the tonnage of each of the six salt constituents, and the total tonnage of salts passing the stations on the river for the years 1942 and 1943 so far as the data is complete. The last column shows the tons of dissolved matter per acre-foot of water for the water passing each station.

The values of Table V are derived from the analytical data and give the percent sodium and percent chloride.

The percent sodium is the percentage of the total cation constituents (Ca, Mg, Na) which is made up by sodium (Na), or, that percentage which sodium forms of the total cations or positive elements of the water. This value is included here since it is believed that the effect

of sodium on the physical properties of the soil is related to its relative or proportional concentration rather than the absolute concentration. Sodium in solutions in contact with the soil has been abundantly shown to be deleterious to the physical properties of the soil. The result of such action is that soils containing much combined sodium are more difficult to work into good tilth, and by dispersion of the soil particles the permeability of the soil to the absorption of water and the movement of water through it are impaired. It is believed that sodium percentage is a better expression of relative values between different waters than sodium concentration. There is no warrant for setting a definite limit as a permissible sodium percentage of irrigation water; it is generally agreed that, other things being equal, the lower the sodium percentage the better the quality of the water. It is also generally agreed that the same sodium percentage is likely to prove less harmful in waters of low total concentration than in waters of higher concentration.

The percent chloride is the percentage which chloride forms of the total anion or negative elements and radicals of the water. This figure, when considered in conjunction with the percent sodium, gives some indication of the general character of the water. It is probably true that water having the higher percent chloride with total dissolved solids about equal, would be less desirable since the chloride is regarded as more toxic than the sulfate or bicarbonate.

Without the cooperation of the officials of the Nevada State Engineer's office and of the Pershing County Water Conservation District in taking samples, furnishing discharge data, and affording other courtesies, this study of the Humboldt River could not well be undertaken. Grateful acknowledgment of such cooperation is therefore made here by the Nevada Agricultural Experiment Station.

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TABLE I-A

Humboldt River at Palisade, 1942

Concentration of dissolved solids as measured by specific electrical conductance ($K \times 10^5$ at 25°C).

1942 Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	46						
2	.....	50	54	.....	.....	.....	.....	.....	.....	.....	58	
3	.....	.....	.....	.....	.....	.....	.....	52				
5	60	.....	.....	.....	.....	.....	.....	.....	.....	58		
6	.....	.....	.....	43	46	.....	37					
7	.....	.....	.....	.....	.....	.....	.....	.....	60	.....	.....	56
8	.....	.....	.....	.....	.....	41						
9	.....	57	39	.....	.....	.....	.....	.....	.....	.....	58	
10	.....	.....	.....	.....	.....	.....	.....	56				
11	.....	.....	.....	.....	44							
12	52	.....	.....	.....	.....	.....	.....	.....	.....	57		
13	.....	.....	.....	42	.....	.....	37					
14	.....	.....	.....	.....	.....	.....	.....	.....	59	.....	.....	53
15	.....	.....	.....	.....	.....	42						
16	.....	62	43	.....	.....	.....	.....	.....	.....	.....	60	
17	.....	.....	.....	.....	.....	.....	.....	59				
18	.....	.....	.....	.....	44							
19	50	.....	.....	.....	.....	.....	.....	.....	.....	57		
20	.....	.....	.....	44	.....	.....	41					
21	.....	.....	.....	.....	.....	.....	.....	.....	58			
22	.....	.....	.....	.....	.....	38						
23	.....	53	51	.....	.....	.....	.....	.....	.....	.....	57	
24	.....	.....	.....	.....	.....	.....	.....	60				
25	.....	.....	.....	.....	39							
26	47	.....	.....	.....	.....	.....	.....	.....	.....	59		
27	.....	.....	.....	41	.....	.....	45					
28	.....	.....	.....	.....	.....	.....	.....	.....	59	.....	.....	53
29	.....	.....	.....	.....	.....	40						
30	.....	.....	44	.....	.....	.....	.....	.....	.....	.....	57	
31	.....	.....	.....	.....	.....	.....	.....	60				

Humboldt River at Palisade, 1943

Concentration of dissolved solids as measured by specific electrical conductance ($K \times 10^5$ at 25°C).

1943 Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	40	34	.....	.....	.....	.....	.....	.....	.....	58	
2	.....	.....	.....	.....	.....	.....	.....	51				
3	.....	.....	.....	.....	37							
4	56											
5	.....	.....	.....	34	.....	.....	39					
6	.....	.....	.....	.....	.....	.....	.....	.....	65	.....	.....	57
7	.....	.....	.....	.....	.....	46	.....	.....	.....	60		
8	.....	.....	45	.....	.....	.....	.....	.....	.....	.....	63	
9	.....	55	.....	.....	.....	.....	.....	56				
10	.....	.....	.....	.....	38							
11	56	.....	.....	.....	.....	.....	.....	.....	.....	56		
12	.....	.....	.....	37	.....	.....	42					
13	.....	.....	.....	.....	.....	.....	.....	.....	65	.....	.....	59
14	.....	.....	.....	.....	.....	42						
15	.....	50	40	.....	.....	.....	.....	.....	.....	.....	61	
16	.....	.....	.....	.....	.....	.....	.....	61				
17	.....	.....	.....	.....	41							
18	.....	.....	.....	.....	.....	.....	.....	.....	.....	61		
19	57	.....	.....	36	.....	.....	46					
20	.....	.....	.....	.....	.....	.....	.....	.....	62			
21	.....	.....	.....	.....	.....	43						
22	.....	.....	45	.....	.....	.....	.....	.....	.....	.....	57	
23	.....	35	.....	.....	.....	.....	.....	62				
24	.....	.....	.....	.....	45							
25	39	.....	.....	.....	.....	.....	.....	.....	.....	57		
26	.....	.....	.....	35	.....	.....	43					
27	.....	.....	.....	.....	.....	.....	.....	.....	64			
28	.....	.....	.....	.....	.....	39	.....	.....	.....	.....	.....	57
29	.....	.....	37	.....	.....	.....	.....	.....	.....	.....	56	
30	.....	.....	.....	.....	.....	.....	.....	64				
31	.....	.....	.....	.....	37							

TABLE I-B

Humboldt River at Comus, 1942 and 1943

Concentration of dissolved solids as measured by specific electrical conductance ($K \times 10^5$ at 25°C).

1942 Day	June	July	Aug.	Sept.	Oct.	Nov.	1943 Day	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
1	58	.....	.....	92											
2	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	62	.....	.....	84	141
4	.....	.....	73	.....	.....	.....	4	.....	.....	.....	.....	.....	64		
5	.....	.....	.....	.....	.....	82	5	.....	.....	58					
6	.....	57	.....	.....	102										
7	.....	.....	.....	.....	.....	.....	7	.....	52	.....	.....	54			
8	80	.....	.....	91											
9	.....	.....	.....	.....	.....	.....	9	.....	.....	.....	57	.....	.....	98	
11	.....	.....	79	.....	.....	79	11	.....	.....	.....	.....	.....	70		
12	.....	.....	.....	.....	.....	.....	12	.....	.....	56	.....	.....	.....	.....	116
13	.....	.....	.....	.....	111										
14	.....	53	.....	.....	.....	.....	14	.....	55	.....	.....	55			
15	63	.....	.....	108											
16	.....	.....	.....	.....	.....	.....	16	.....	.....	.....	60	.....	.....	95	
18	.....	.....	84												
19	.....	.....	.....	.....	.....	.....	19	.....	.....	55					
20	.....	.....	.....	.....	102	77									
21	.....	58	.....	.....	.....	.....	21	.....	68	.....	.....	58	76		
22	60	.....	.....	98	.....	.....	22	.....	.....	.....	.....	.....	.....	105	166
23	.....	.....	.....	.....	.....	.....	23	.....	.....	.....	57				
25	.....	.....	88	.....	.....	72									
26	.....	.....	.....	.....	86	.....	26	.....	.....	63					
27	.....	.....	.....	.....	.....	.....	27	.....	.....	.....	.....	.....	83		
28	.....	66	.....	.....	.....	.....	28	.....	58						
30	54	.....	.....	104	.....	.....	30	.....	.....	.....	53				
31	.....	.....	.....	.....	.....	.....	31	59	.....	.....	.....	.....	.....	.....	147

TABLE I-C

Humboldt River at Callahan Bridge, 1942 and 1943

Concentration of dissolved solids as measured by specific electrical conductance ($K \times 10^5$ at 25°C).

1942 Day	June	July	Aug.	1943 Day	Apr.	May	June	July	Aug.	Sept.
3	.....	.....	90	3	.....	77				
5	.....	.....	.....	5	72					
6	.....	72	.....	6	.....	.....	.....	64		
7	.....	.....	.....	7	.....	.....	75			
8	77									
10	.....	.....	94	10	.....	71	.....	.....	86	
13	.....	68	.....	13	.....	.....	.....	65		
15	92	.....	.....	15	.....	.....	69	.....	.....	93
17	.....	.....	.....	17	.....	70	.....	.....	87	
19	.....	.....	.....	19	70					
20	.....	67								
22	85									
24	.....	.....	.....	24	.....	70				
26	.....	.....	.....	26	87					
27	.....	77								
29	75	.....	.....	29	.....	.....	67			
31	.....	.....	.....	31	.....	77	.....	.....	88	

TABLE I-D

Humboldt River at Ryepatch Reservoir Release, 1942 and 1943

Concentration of dissolved solids as measured by specific electrical conductance ($K \times 10^5$ at 25°C).

1942 Day	Nov.	Dec.	1943 Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	.....	.....	1	.....	105	107						
2	.....	106	2	107								
3	.....	.....	3	.....	.....	.....	.....	100	.....	.....	88	
5	.....	.....	5	.....	.....	.....	107					
6	105	.....	6	.....	.....	.....	.....	.....	.....	90		
7	.....	.....	7	.....	.....	.....	.....	.....	97			
10	.....	.....	10	.....	.....	.....	.....	95	.....	.....	88	
13	.....	.....	13	.....	.....	.....	.....	.....	.....	89		
15	.....	.....	15	.....	106	107	.....	.....	94	.....	.....	98
17	.....	.....	17	.....	.....	.....	.....	.....	.....	.....	88	
19	.....	.....	19	.....	.....	.....	98	97				
22	.....	.....	22	.....	105							
24	.....	.....	24	.....	.....	.....	.....	96	.....	.....	97	
28	.....	.....	28	.....	.....	108						
29	.....	.....	29	.....	.....	.....	.....	.....	93			
31	.....	.....	31	.....	.....	.....	.....	101	.....	.....	94	

TABLE I-E and F

Humboldt River at Pitt Diversion and Last Diversion, 1942

Concentration of dissolved solids as measured by specific electrical conductance ($K \times 10^5$ at 25°C).

Pitt Diversion				Last Diversion		
1942 Day	June	July	Oct.	1942 Day	June	July
6	.....	.....	136*			
7	.....	112	.....	7	.....	120
8	122	.....	.....	8	128	
14	.....	113				
20	120	.....	.....	20	150	142

*No flow.

TABLE II-A

Analyses of Humboldt River Water

SAMPLES TAKEN AT PALISADE, 1942 AND 1943

Month 1942	No. of samples	T.D.S. p.p.m.	$K \times 10^5$	Boron p.p.m.	Equivalents Per Million: Ca	Mg	Na	HCO_3	SO_4	Cl
Jan.	4	335.6	45.5	0.11	1.72	1.02	1.90	3.47	0.73	0.62
Feb.	4	382.6	49.3	0.13	1.87	1.17	2.21	3.63	0.92	0.63
Mar.	5	370.4	43.9	0.11	1.85	1.01	1.94	3.44	1.01	0.50
April	4	340.1	42.8	0.07	1.77	0.49	1.63	3.35	0.74	0.59
May	4	337.9	42.2	0.08	2.00	0.92	1.58	3.56	0.59	0.45
June	6	334.4	40.8	0.09	2.15	0.88	1.45	3.75	0.43	0.32
July	4	309.7	37.6	0.11	1.98	0.79	1.19	3.60	0.33	0.25
Aug.	5	429.0	55.4	0.27	2.55	1.21	2.18	4.40	0.65	0.87
Sept.	4	408.4	56.5	0.17	1.67	1.25	2.35	3.86	1.00	0.74
Oct.	4	395.2	54.5	0.20	2.49	1.23	1.88	4.52	1.00	0.77
Nov.	5	446.5	57.8	0.19	2.81	1.29	2.29	4.23	1.00	0.88
Dec.	4	431.5	54.2	0.16	2.62	1.21	1.99	4.33	0.94	0.55
1943										
Jan.	4	328.4	55.2	0.22	2.69	1.21	2.06	4.44	1.02	0.82
Feb.	4	306.7	41.0	0.32	1.70	0.72	1.40	2.90	0.81	0.49
Mar.	5	271.6	39.1	0.26	1.64	0.87	1.56	2.99	0.78	0.34
April	4	272.1	37.4	0.14	1.57	0.78	1.29	2.85	0.56	0.30
May	5	298.7	38.8	0.15	1.89	0.93	1.28	3.30	0.42	0.25
June	4	341.5	42.7	0.10	2.09	1.07	1.48	3.90	0.47	0.27
July	4	315.3	41.0	0.15	2.16	0.89	1.31	3.67	0.40	0.28
Aug.	5	413.5	54.8	0.17	2.44	1.36	1.96	4.50	0.79	0.80
Sept.	4	477.3	63.7	0.30	2.57	1.57	2.52	4.45	1.16	1.00
Oct.	4	439.7	58.9	0.31	2.54	1.48	2.18	4.30	1.09	0.82
Nov.	5	424.7	57.7	0.13	2.80	1.36	2.17	4.25	0.94	0.65
Dec.	4	424.8	57.2	0.21	2.82	1.27	1.09	4.25	0.92	0.60

TABLE II-B

Analyses of Humboldt River Water

SAMPLES TAKEN AT COMUS, 1942 AND 1943

Month 1942	No. of samples	T.D.S. p.p.m.	K x 10^5	Boron p.p.m.	Equivalents Per Million Ca	Mg	Na	HCO_3	SO_4	Cl
June	5	485.5	62.8	0.33	1.97	1.17	3.45	4.67	1.01	1.05
July	4	462.3	56.7	0.25	2.28	1.10	2.53	4.60	0.72	0.90
Aug.	4	571.2	76.5	0.26	2.67	1.41	3.84	5.02	1.43	1.65
Sept.	5	627.9	85.4	0.45	1.58	1.52	5.73	4.99	1.97	2.15
Oct.	4	732.4	92.9	0.51	1.85	1.33	6.64	5.99	1.96	2.23
Nov.	4	556.3	.....	0.43	2.56	1.37	4.37	4.31	1.52	1.47
1943										
Mar.	1	483.5	58.5	.....	2.25	1.58	2.70	4.49	1.24	0.93
April	4	456.7	61.3	0.19	2.02	1.00	3.11	4.24	1.13	0.95
May	4	434.6	57.7	0.20	2.33	1.14	2.45	4.37	0.82	0.75
June	5	437.0	57.1	0.43	1.65	1.21	2.36	4.59	0.79	0.75
July	4	422.6	55.5	0.16	2.39	1.07	2.22	4.35	0.79	0.75
Aug.	4	503.1	69.0	0.25	2.71	1.33	3.14	4.95	1.19	1.02
Sept.	4	633.8	95.9	0.44	2.21	1.40	5.38	5.70	1.75	1.65
Oct.	4	1034.2	143.2	0.92	1.74	1.29	11.24	7.15	3.00	4.25

TABLE II-C

Analyses of Humboldt River Water

SAMPLES TAKEN AT CALLAHAN, 1942 AND 1943

Month 1942	No. of samples	T.D.S. p.p.m.	K x 10^5	Boron p.p.m.	Equivalents Per Million Ca	Mg	Na	HCO_3	SO_4	Cl
June	4	631.7	81.7	0.41	2.27	1.42	4.82	5.59	1.51	1.61
July	4	544.2	70.0	0.39	2.27	1.14	3.60	5.35	0.95	1.25
1943										
April	3	592.7	79.8	0.32	2.36	1.28	4.35	5.10	1.69	1.45
May	5	513.7	71.5	0.29	2.40	1.30	2.55	5.17	1.18	1.16
June	3	541.1	70.1	0.21	2.91	1.35	3.23	5.02	1.21	1.15
July	2	469.1	63.0	0.39	2.45	1.40	2.73	4.90	0.91	0.87
Aug.	4	617.9	81.7	0.35	2.99	1.57	5.22	5.30	1.60	1.60
Sept.	1	639.1	93.4	0.65	2.31	1.80	5.07	5.00	2.22	2.05

TABLE II-D

Analyses of Humboldt River Water

SAMPLES TAKEN AT RYEPATCH RESERVOIR (RELEASE), 1942 AND 1943

Month 1942	No. of samples	T.D.S. p.p.m.	K x 10^5	Boron p.p.m.	Equivalents Per Million Ca	Mg	Na	HCO_3	SO_4	Cl
Nov.	1	787.6	105.3	0.66	2.49	1.59	6.81	5.80	2.00	3.19
Dec.	1	805.0	106.0	0.69	2.20	1.58	6.80	5.95	1.99	3.60
1943										
Jan.	1	778.4	106.6	0.65	2.13	1.60	6.83	5.89	2.02	3.35
Feb.	3	784.8	105.2	0.54	2.10	1.61	6.89	5.75	2.14	3.12
Mar.	3	797.2	107.4	0.52	2.14	1.60	7.13	5.74	2.10	3.38
April	2	750.5	107.0	0.59	2.18	1.46	6.78	5.37	2.06	3.45
May	5	621.7	96.7	0.39	2.23	1.33	5.62	5.04	0.97	2.90
June	3	657.4	94.5	0.21	1.92	1.44	4.99	5.40	1.71	2.60
July	2	619.7	88.7	0.50	2.46	1.52	4.60	5.47	1.56	2.05
Aug.	5	629.5	87.7	0.15	2.60	1.60	4.66	5.50	1.57	1.95
Sept.	1	632.7	97.6	0.47	2.47	1.58	4.94	5.55	1.53	2.00

TABLE II-E

Analyses of Humboldt River Water

SAMPLES TAKEN AT PITT DIVERSION DAM, 1942

Month 1942	No. of samples	T.D.S. p.p.m.	K x 10^5	Boron p.p.m.	Equivalents Per Million Ca	Mg	Na	HCO_3	SO_4	Cl
June	2	826.2	119.5	0.49	2.68	1.44	7.43	5.29	2.59	4.37
July	2	766.2	111.4	0.58	2.70	1.56	6.72	4.95	2.50	3.60
Nov.	1*	859.7	135.7	.....	3.17	2.07	7.80	5.00	1.91	5.50

*No flow.

TABLE II-F

Analyses of Humboldt River Water

SAMPLES TAKEN AT LAST DIVERSION, 1942

Month 1942	No. of samples	T.D.S. p.p.m.	K x 10^5	Boron p.p.m.	Equivalents Per Million Ca	Mg	Na	HCO_3	SO_4	Cl
June	2	917.1	134.5	0.73	2.73	1.47	8.84	5.35	2.83	5.50
July	2	879.2	125.3	0.92	2.75	1.59	8.22	5.60	2.67	4.69

TABLE III-A

Discharge and Salt Burden of the Humboldt River at Palisade Gaging Station from January 4, 1942, to December 4, 1943

1942	Discharge acre feet	Constituents in Tons							
		K x 10^5	Ca	Mg	Na	HCO_3	SO_4	Cl	Total
January	14,864	45.5	695.4	251.5	883.4	4,278.9	708.3	444.9	7,262.4
February	19,595	49.3	996.7	568.9	1,354.6	5,901.1	1,176.8	596.2	10,594.3
March	64,177	43.9	3,229.4	1,075.3	3,894.4	18,311.3	4,231.3	1,549.2	32,290.9
April	165,806	42.8	7,982.7	1,346.2	8,453.9	46,092.2	8,009.8	4,724.2	76,609.0
May	110,556	42.2	6,014.8	1,687.1	5,464.4	32,654.3	4,257.9	2,401.4	52,479.9
June	132,292	40.8	7,736.6	1,932.4	6,000.3	41,141.7	3,713.5	2,043.9	62,568.4
July	38,038	37.6	2,048.5	498.6	1,415.8	11,360.0	819.4	459.4	16,601.4
August	3,517	55.4	243.8	70.6	239.7	1,283.7	149.1	147.7	2,134.6
September	1,684	56.5	76.5	34.9	123.8	539.3	109.9	60.1	944.5
October	2,520	54.5	170.8	51.5	148.3	944.8	164.6	93.7	1,573.7
November	5,504	57.8	420.4	117.7	394.0	1,931.0	359.0	233.7	3,455.8
December	12,928	54.2	921.2	259.5	804.6	4,642.9	793.2	343.2	7,764.6
Total	571,481	.....	30,536.8	7,894.2	29,177.2	169,081.2	24,492.8	13,097.3	274,279.5

1943	Discharge acre feet	Constituents in Tons							
		K x 10^5	Ca	Mg	Na	HCO_3	SO_4	Cl	Total
January	36,056	55.2	2,638.3	723.8	2,323.5	13,279.0	2,401.0	1,427.5	22,793.1
February	69,108	41.0	3,195.7	825.6	3,026.6	16,626.1	3,654.3	1,634.5	28,962.7
March	108,018	39.1	4,818.3	1,557.1	5,270.8	26,794.6	5,499.9	1,773.1	45,713.8
April	137,290	37.4	5,862.7	1,776.7	5,539.7	32,450.2	5,018.8	1,988.5	52,636.6
May	79,755	38.8	4,099.7	1,229.9	3,193.2	21,832.9	2,186.7	962.7	33,505.1
June	83,997	42.7	4,774.8	1,490.7	3,888.4	27,175.3	2,577.0	1,094.9	41,001.1
July	21,820	41.0	1,281.7	332.2	894.1	6,642.2	569.7	294.9	10,004.8
August	2,176	54.8	144.4	49.1	133.4	812.5	112.2	84.1	1,335.7
September	146	63.7	10.3	3.8	11.6	53.8	11.1	7.1	97.7
October	1,036	58.9	71.6	25.4	69.7	365.2	73.8	41.0	646.7
November	3,245	57.7	247.0	73.2	220.2	1,143.3	199.0	101.7	1,764.2
December	4,362	57.2	334.4	91.8	148.7	1,537.0	261.9	126.3	2,351.4
Total	547,009	.....	27,478.9	8,169.3	24,719.8	148,712.1	22,565.4	9,536.3	240,812.9

TABLE III-B

Discharge and Salt Burden of the Humboldt River at Comus Gaging Station from June 5, 1942, to October 4, 1943

1942	Discharge acre feet	Constituents in Tons							
		K x 10^5	Ca	Mg	Na	HCO_3	SO_4	Cl	Total
June	78,717	62.8	4,217.8	1,527.6	8,494.4	30,487.8	5,189.8	3,989.7	53,907.1
July	51,306	56.7	3,181.9	936.4	4,060.5	19,579.1	2,411.6	2,229.5	32,399.0
August	7,807	76.5	567.1	182.7	938.0	3,250.9	729.0	622.0	6,289.7
September	1,034	85.4	44.5	26.1	185.2	429.1	132.9	107.6	925.4
October	956*	92.9	48.1	21.1	198.5	475.0	122.3	102.9	967.9
November	4,702*	.....	327.2	106.8	642.2	1,681.1	466.2	333.4	3,556.9
Total	144,522	.....	8,386.6	2,800.7	14,518.8	55,903.0	9,051.8	7,385.1	98,046.0

1943	Discharge acre feet	Constituents in Tons							
		K x 10^5	Ca	Mg	Na	HCO_3	SO_4	Cl	Total
March	43,348	58.5	2,652.7	1,136.0	3,660.8	16,146.4	3,508.7	1,945.4	29,050.0
April	80,127	61.3	4,402.3	1,329.4	7,794.6	28,189.6	5,910.5	3,674.4	51,300.8
May	73,246	57.7	4,642.0	1,385.6	5,613.0	26,556.0	3,921.0	2,652.0	44,769.6
June	55,695	57.1	2,499.4	1,118.0	4,112.0	21,207.2	2,872.1	2,016.2	33,824.9
July	31,083	55.5	2,020.5	551.6	2,158.3	11,214.2	1,602.8	1,125.2	18,672.6
August	6,181	69.0	455.8	136.4	607.4	2,538.3	480.4	304.5	4,522.8
September	956	95.9	57.5	22.2	160.8	452.0	109.2	76.1	877.8
October	309*	143.2	14.6	6.6	108.6	183.2	60.5	63.4	436.9
Total	290,945	.....	16,744.8	5,685.8	24,215.5	106,486.9	18,465.2	11,857.2	183,455.4

*Estimated.

TABLE III-C

Discharge and Salt Burden of the Humboldt River at Callahan Gaging Station from June 4, 1942, to September 1, 1943

1942	Discharge acre feet	Constituents in Tons							
		K x 10^5	Ca	Mg	Na	HCO_3	SO_4	Cl	Total
June	78.280	81.7	4,833.3	1,844.0	11,806.4	36,728.7	7,716.2	6,084.2	69,012.8
July	57,200	70.0	3,532.0	1,082.0	6,441.0	25,387.0	3,547.2	3,452.0	43,441.2
Total	135,480	.....	8,365.3	2,926.0	18,247.4	62,115.7	11,263.4	9,536.2	112,454.0

1943	Discharge acre feet	Constituents in Tons							
		K x 10^5	Ca	Mg	Na	HCO_3	SO_4	Cl	Total
April	121,902	79.8	7,824.8	2,588.8	16,587.0	51,575.0	13,448.0	8,533.2	100,556.8
May	119,492	71.5	7,829.7	2,587.0	9,566.9	51,443.1	9,239.1	6,717.2	87,383.0
June	56,332	70.1	4,617.0	1,306.5	5,893.4	24,292.4	4,607.4	3,238.6	43,955.3
July	37,046	63.0	2,468.6	860.4	3,163.3	15,058.5	2,200.5	1,555.9	25,307.2
August	10,284	81.7	836.0	267.7	1,678.4	4,519.7	1,073.6	794.0	9,169.4
September	3,506	93.4	219.9	104.5	551.7	1,454.8	507.2	346.4	3,184.5
Total	351,012	.....	23,796.0	7,714.9	37,440.7	148,343.5	31,075.8	21,185.3	269,556.2

TABLE III-D

Discharge and Salt Burden of the Humboldt River at Ryepatch Reservoir (Release) from November 1, 1942, to September 1, 1943

1942	Discharge acre feet	Constituents in Tons							
		K x 10^5	Ca	Mg	Na	HCO_3	SO_4	Cl	Total
November	370	105.3	24.9	9.7	78.3	176.9	48.0	56.8	394.6
December	496	106.0	29.4	12.9	104.8	176.2	63.9	85.6	472.8
Total	866	.....	54.3	22.6	183.1	353.1	111.9	142.4	867.4

1943	Discharge acre feet	Constituents in Tons							
		K x 10^5	Ca	Mg	Na	HCO_3	SO_4	Cl	Total
January	496	106.6	28.9	13.1	105.9	240.7	64.9	79.6	533.1
February	26,971	105.1	1,540.5	720.3	5,812.6	12,865.5	3,767.7	4,062.6	28,769.2
March	81,200	107.4	4,726.4	2,155.5	19,213.7	38,665.9	11,131.3	13,250.4	89,143.2
April	119,102	107.0	7,109.4	2,904.1	25,421.0	53,413.5	16,123.3	19,969.9	124,941.2
May	126,620	96.7	7,680.1	2,793.0	22,258.5	52,941.1	8,017.6	17,727.9	111,418.2
June	41,510	94.5	2,167.6	991.2	6,478.7	18,594.6	4,633.4	5,210.3	38,075.8
July	38,284	88.7	2,561.3	965.1	5,507.9	17,370.8	3,898.2	3,788.6	34,091.9
August	18,428	87.7	1,303.1	489.1	2,685.9	8,407.6	1,888.5	1,759.8	16,534.0
September	6,452	97.6	433.2	169.0	996.4	2,969.0	644.0	622.6	5,834.2
Total	459,863	.....	27,550.5	11,200.4	88,480.6	205,468.7	50,168.9	66,471.7	449,340.8

TABLE IV-A

Summary of Discharge of Water and the Tonnage of Each of Six Salt Constituents Passing Four Stations on the Humboldt River Between January 1, 1942, and December 31, 1942

Station	Discharge acre feet	Constituents in Tons							Tons per acre foot
		Ca	Mg	Na	HCO_3	SO_4	Cl	Total	
Palisade	571,481	30,536.8	7,894.2	29,177.2	169,081.2	24,492.8	13,097.3	274,279.5	.47
Comus[1]	144,522	8,386.6	2,800.7	14,518.8	55,903.0	9,051.1	7,385.1	98,046.0	.67
Callahan[2]	135,480	8,365.3	2,926.0	18,247.4	62,115.7	11,263.4	9,536.2	112,454.0	.83
Ryepatch[3] (Release)	866	54.3	22.6	183.1	353.1	111.9	142.4	867.4	1.00

[1]June 1 to December 1.
[2]June 1 to July 31.
[3]In November and December.

TABLE IV-B

Summary of Discharge of Water and the Tonnage of Each of Six Salt Constituents Passing Four Stations on the Humboldt River Between January 1, 1943, and December 31, 1943

Station	Discharge acre feet	Constituents in Tons							Tons per acre foot
		Ca	Mg	Na	HCO_3	SO_4	Cl	Total	
Palisade	547,009	27,478.9	8,169.3	24,719.8	148,712.1	22,565.4	9,536.3	241,181.8	.44
Comus[1]	290,945	16,744.8	5,685.8	24,215.5	106,486.9	18,465.2	11,857.2	183,455.4	.63
Callahan[2]	351,012	23,796.0	7,714.9	37,440.7	148,343.5	31,075.8	21,185.3	269,556.2	.76
Ryepatch[3] (Release)	459,863	27,550.5	11,200.4	88,480.6	205,468.7	50,168.9	66,471.7	449,340.8	.97

[1]April 1 to November 1.
[2]April 1 to September 30.
[3]February 1 to September 1.

TABLE V-A

Percent Sodium and Chloride at Four Stations of the Humboldt River
January 5, 1942, to December 27, 1942

1942	Palisade Percent Na	Palisade Percent Cl	Comus Percent Na	Comus Percent Cl	Callahan Percent Na	Callahan Percent Cl	Ryepatch (Release) Percent Na	Ryepatch (Release) Percent Cl
January	40.8	12.8						
February	42.0	12.1						
March	40.3	10.1						
April	41.9	12.6						
May	35.1	9.7						
June	32.3	7.1	52.3	15.6	56.7	14.0		
July	30.2	5.9	42.7	14.4	51.4	16.5		
August	36.7	14.7	48.4	20.1				
September	44.5	13.2	62.9	23.6				
October	33.6	12.2	67.6	22.3				
November	35.8	14.5	52.6	17.7	.....	.....	62.5	29.0
December	34.3	9.4	.....	.....	.....	.....	64.4	31.2

TABLE V-B

Percent Sodium and Chloride at Four Stations of the Humboldt River
January 2, 1943, to December 28, 1943

1943	Palisade Percent Na	Palisade Percent Cl	Comus Percent Na	Comus Percent Cl	Callahan Percent Na	Callahan Percent Cl	Ryepatch (Release) Percent Na	Ryepatch (Release) Percent Cl
January	34.5	13.1	.....	.....	.....	.....	64.6	29.8
February	36.6	11.6	.....	.....	.....	.....	65.2	27.3
March	36.3	8.2	41.4	13.9	.....	.....	65.6	32.1
April	35.4	8.0	50.7	15.0	55.1	17.6	65.0	31.7
May	31.2	6.3	41.4	12.6	40.8	15.4	61.2	32.5
June	31.9	5.8	45.0	12.7	43.1	15.5	59.8	26.8
July	30.0	6.4	39.1	12.7	41.5	13.0	53.5	22.5
August	32.8	13.1	43.8	14.2	53.3	18.8	52.6	21.8
September	37.8	15.1	59.9	18.1	55.0	22.1	54.9	22.0
October	36.7	13.2	78.8	29.5				
November	34.3	11.1						
December	21.0	10.4						

CHAPTER X

Irrigation Districts and Companies

IRRIGATION DISTRICTS

Walker River, Pershing County, Washoe County, Truckee-Carson, Muddy River, Newlands Project.

IRRIGATION COMPANIES

Preston Irrigation Company, Lund Irrigation Company, Bunkerville Irrigation Company, Mesquite Irrigation Company, Alamo Irrigation Company, Panaca Irrigation Company, Muddy River Irrigation Company.

The following information was obtained through questionnaires and letters sent to the various organizations:

WALKER RIVER IRRIGATION DISTRICT

Officers—George Parker, President; M. Dellamonica, Vice President; Fred W. Settelmeyer, Treasurer; C. O. Gelmstedt, Secretary; Wilbur Seyden, Richard B. Day, Directors; W. M. Kearney, Attorney.

Office at Yerington, Nevada.

Organized April 14, 1919.

Walker River Irrigation District comprises all the irrigable lands of the east, west, and main Walker Rivers in the State of Nevada, with the exception of the Walker River Indian Reservation. These rivers have their source in the eastern slopes of the Sierra Nevada Mountains, drawing from a watershed of some 3,000 square miles. The total area of the district is 260,000 acres, of which 160,000 acres are irrigable. At the present time 126,019 acres are held under private ownership, of which 79,158 acres have water rights. The irrigated area is approximately 53,000 acres.

The outstanding bonded indebtedness of this district is now $328,000, a reduction of $52,000 since July 1, 1942. These bonds carry an interest rate of 4% per annum and are all held by the Reconstruction Finance Corporation. They are scheduled to be redeemed over the period between now and the year 1966.

During the past two years the activities of this district have consisted chiefly of operation and maintenance. However, notable improvements in the distribution and drainage systems are now under consideration.

The Board of Directors of this district is to be highly commended for the economical and efficient manner in which it is operated.

A complete description of the operation and status of this district may be found in the 1934–1936 Biennial Report of the State Engineer.

LOCAL IMPROVEMENT DISTRICT NO. 4 OF WALKER RIVER IRRIGATION DISTRICT

Officers—George Parker, President; M. Dellamonica, Vice President; Fred W. Settelmeyer, Treasurer; C. O. Gelmstedt, Secretary; Wilbur Seyden, Richard B. Day, Directors; W. M. Kearney, Attorney.

Office at Yerington, Nevada.

Organized September 5, 1925.

The Saroni Canal is operated under this improvement district and serves 24 farms having an acreage of 3,822 acres. The canal, having a capacity of 105 c. f. s., takes water from the West Walker River.

This improvement district now has an outstanding bonded indebtedness of $18,000, a reduction of $1,000 since July 1, 1942. These bonds carry an interest rate of 4% per annum, are all held by the Reconstruction Finance Corporation, and are scheduled to be redeemed over the period between now and the year 1966.

WASHOE COUNTY WATER CONSERVATION DISTRICT

Officers—L. M. Christensen, President; Silvo Questa, Vice President; Geo. L. Ferris, Secretary; E. A. Capurro, Treasurer; Edward M. Peckham, J. L. Hash and Ernest J. Kleppe, Directors; Charles M. Merrill, Attorney; John D. Franklin, Engineer-Manager; Edna Williams, Bookkeeper.

Office at 29 East First Street, Reno, Nevada.

Organized June 1929.

The district embraces about 33,000 acres of land of which 28,829 are designated in the Apportionment of Benefits.

The source of water supply is the Truckee River and distribution is accomplished through a system of thirty-three canals, varying in capacity from five to one hundred cubic feet per second and from one to thirty-seven miles in length, and irrigate an area situate around Reno and Sparks, said area being known as the Truckee Meadows.

During the Year 1942 Boca dam was completed, on the Little Truckee River. This structure is located about twenty-seven miles west of Reno and was built by the Bureau of Reclamation under a repayment contract with the Washoe County Water Conservation District, dated December 18, 1936. The repayment contract mentioned above provides that the total cost of the project shall be returned to the United States in annual payments made over a period of forty years without interest charges. Boca reservoir has a total capacity of 41,536 acre-feet and covers an area of 986 acres when filled.

Distribution of water from Boca reservoir, Lake Tahoe, and the Truckee River is effected through the Truckee River Agreement, the signers thereto being the United States of America, The Truckee-Carson Irrigation District, the Washoe County Water Conservation District, The Sierra Pacific Power Company, and other water users within the boundaries of the conservation district.

Interest has lately been revived in accomplishing more complete flood control and drainage of areas lying within the boundaries of this district. It is known that channel improvement in the river proper plus additional drainage canals would reclaim considerable acreage for intensive farming that heretofore has merely been pasture or wild hay lands. Officials of the district are anxious to see a program of this sort worked out and are willing to cooperate to the fullest extent with other interested parties. It is now thought that this would be an excellent postwar program for the entire community, and this district is in a position to devote its time and energies to effect such a project.

LUND IRRIGATION COMPANY

Officers—Lorin O'Donnoll, President and Treasurer; Leland Hendrix, Secretary; Ernest Gubler, Vice President.

Office at Lund, Nevada.

Organized 1907.

PRESTON IRRIGATION COMPANY

Officers—Andrew L. Petersen, President; Chris Hermansen, Secretary and Treasurer; Carlyle Peacock, Vice President.

Office at Preston, Nevada.

Organized March 24, 1911.

BUNKERVILLE IRRIGATION COMPANY

Officers—W. M. Leavitt, President; Merl Wittwer, Vice President; Warren Hardy, Secretary; Marinor Cox, Director.

MUDDY RIVER IRRIGATION COMPANY

Officers—Edwin Marshall, Chairman; C. A. Lewis, Vice Chairman; Joseph Perkins, Wallace Jones, and Lester Mills, Directors; Thomas Anderson, Secretary-Treasurer.

Edwin Marshall of the Muddy Valley Irrigation Company attended a conference in Denver, Colorado, for the purpose of furthering interests of flood control, water storage, more economic use of irrigation water, and drainage in Southern Nevada.

Through assistance of the State Engineer's office some headway has been made toward effecting a flood control-water storage project at the White Narrows through cooperation of the U. S. Indian Service and the U. S. Army Engineers.

Some effort has been spent, but as yet little progress has been made, in the matter of perfecting an organization, ways and means of securing, and repayment of finances for the construction of such as may be necessary in the promotion of the agriculture of the Moapa area. Items that have been kept in the forefront for foregoing consideration are: (1) The White Narrows Project; (2) Improvement of Muddy Valley irrigation system; (3) Drainage of lands in the Moapa area; and (4) the establishment of a domestic water supply for the Moapa area.

TRUCKEE-CARSON IRRIGATION COMPANY

Officers—Geo. R. Miller, President; R. J. Swope, Vice President; H. W. Emery, Secretary and Treasurer; W. H. Alcorn, F. C. Erb, W. A. Harmon, John C. Mall, J. R. McCulloch, Directors; W. H. Wallace, Manager.

Activities during the past year consisted chiefly of maintenance work with minor extensions of the drainage system. Storage rights in Donner Lake were purchased in joint tenancy with the Sierra Pacific Power Company. Eight miles of 33,000 volt transmission line were built to supply electric service to the Naval Air Field near Fallon.

THE MESQUITE IRRIGATION COMPANY

Officers—Fenton Frehner, President; Rolston Beber, Vice President; John A. Tobler, Secretary and Treasurer; Orange D. Barnum, Director.

Office at Mesquite, Nevada.

Organized June 8, 1925.

ALAMO IRRIGATION COMPANY

Officers—John Wright, President; B. A. Ercanbrack, Vice President; Dan Stewart, Secretary and Treasurer; Joseph Cox and Harvey Frehner, Directors; Lorraine Lee, Ditch Master.

Office at Alamo, Nevada.

Organized in 1922.

The source of water is Ash Springs. Approximately 700 acres of land are irrigated, comprising lands of irrigation company and other cooperators. Water rotated and distributed under direction of Ditch Master. Approximately 10 miles of ditch cleaned and maintained. Annual cost about $1,000. The company has no indebtedness.

CHAPTER XI

Colorado River Commission

REPORT FOR THE PERIOD JULY 1, 1942, to JUNE 30, 1944, INCLUSIVE

PERSONNEL

E. P. CARVILLE, Governor of Nevada.....Chairman
ALFRED MERRITT SMITH, State Engineer.....Secretary
A. J. CATON, Reno, Nevada.....Commissioner
ED W. CLARK, Las Vegas, Nevada.....Commissioner
CHARLES A. THOMPSON, Pioche, Nevada.....Commissioner

The report of the Secretary for the last period ended with a record of the commission's formal objection to the Bureau of Reclamation's proposed charge of sixty cents per acre-foot for delivery of Lake Mead stored waters to the State of Nevada.

WATER CONTRACT WITH UNITED STATES

On June 1, 1942, the Colorado River Commission met with all members present and Alan Bible, Deputy Attorney-General, at Boulder City, Nevada, with United States Bureau of Reclamation officials, E. A. Moritz, Director of Boulder Dam Power; R. G. McDonald, Assistant Director of Power; Richard J. Coffey, Chief Counsel; and L. H. Compton, Engineer. The meeting was to consider, among other purposes, the proposed Lake Mead water contract with the Government, and it resulted in agreement on minor points, but with respect to the charge per acre-foot, it was decided to have Secretary Alfred Merritt Smith present the situation to the Secretary of the Interior, Harold L. Ickes, which was done by letter dated June 13, 1942.

The following is the pertinent excerpt from the letter:

> It is the opinion of the Colorado River Commission and the Attorney-General of Nevada that no charge should be made for power that might have been generated by water diverted from Lake Mead storage on the Colorado River. The State of Nevada has legal right to appropriate water from the Colorado River. It is admitted that if a diversion for Nevada use should be made above Mead reservoir, no storage or power charge, such as is proposed by the Bureau of Reclamation, would be appropriated. We are actually to take the water above the dam.
>
> Under provisions of the Colorado River Compact and the Boulder Canyon Project Act, use of water for domestic purposes has first priority, irrigation second, and use for generation of power last. This diversion into Nevada is for domestic and metallurgical uses, and at this time entirely for use of the United States Government. Any charge for the power this water might have generated should, if it is at all proper to render such a charge, be allocated to all users of the power and not to users of the water. In the contemplation of the Act, the generation of power at Boulder Dam is a secondary consideration, for the dam was constructed primarily for flood control and irrigation; to save,

conserve and reclaim lands, and for domestic use. The installation of hydroelectric power was to defray the costs of construction and operation during a period fixed at fifty years. Periodic adjustment of the rate was provided for and was necessary because of changing costs and fluctuating water supply, in order to amortize within a fifty-year period or a reasonable time thereafter. It would be as unfair to charge Nevada for the power that might be generated by this diversion as it would be assess a similar charge against an upstream State for diversion of water within the 7,500,000 acre-feet limitation of the Colorado River Compact.

A nominal charge for storage alone may perhaps be justified under the Boulder Canyon Project Act, but this is debatable. If the water to be diverted is considered as a part of the 300,000 acre-feet allotted to Nevada annually under the provisions of the proposed tri-State compact, there appears to be no fairness in a storage charge that does not treat all users of stored water alike. It is not equitable to charge Nevada for storage while not charging all other users a similar or equal rate. Among the various users of stored water, Metropolitan Water District alone pays storage, other users being placed, by the terms of the Boulder Canyon Project Act, on the basis that they had vested rights before the dam was constructed. Yet it will be admitted that the dam has made more water available than the quantity covered by their old rights, and this excess water is being or will be used, and the water so appropriated is not charged storage.

In conclusion, we state that Nevada's only interest in water is for use to develop its natural resources. This can be done only if the water is made available to people in Southern Nevada at the lowest possible price. Futhermore, water under this contract is for use of the Federal Government in national defense.

On October 8, 1942, Honorable Harold L. Ickes replied to the above letter as follows:

Your letter of June 13 regarding the proposed contract between the United States and the State of Nevada for the delivery of water from Lake Mead has been carefully considered.

By the terms of article VIII of the Colorado River Compact, vested rights remained unimpaired. The low water flows of the Colorado River, at the date of the compact, were already in full use under vested rights to divert water from the Colorado River downstream from Nevada. For the State of Nevada to secure a continuous flow of water, it needs to contract for water under the provisions of section 5 of the Boulder Canyon Project Act.

It is true that if a diversion for use in Nevada should be made upstream from Lake Mead, no charge by the United States for diversion service would be appropriate. However, as you note in your letter, it is proposed to this case that

the State of Nevada actually divert water from Lake Mead above the dam. A diversion from the river upstream from Lake Mead would involve the problems arising from variations in stream flow, from the muddy character of the natural flow of the river and from the difficulties of transporting the diverted water. Taking the water, instead, from Lake Mead avoids the problems of variations in stream flow, permits the taking of desilted water and greatly reduces the pumping lifts that would otherwise be required. Those are substantial differences. They are due to the beneficial consequences of the construction and operation of Boulder dam.

With regard to the matter of priorities of use, I refer you to section 6 of the Boulder Canyon Project Act which is controlling.

The Boulder Canyon Project Act does not require that hydroelectric power revenues alone defray the costs of construction and operation during a period fixed at 50 years. The first paragraph of section 5 of the Boulder Canyon Project Act clearly authorizes contracts for the storage of water in the reservoir and for the delivery thereof as well as contracts for electrical energy, and both types of contracts may be made upon charges that will produce adequate revenues.

It is my view that there should be a charge for water stored in Lake Mead. The amount of the charge reasonably may vary depending somewhat upon the proposed use. It seems to me to be reasonable that the charge should be less in cases of uses in connection with which return flow might be expected. It would not be practicable, of course, to attempt to determine precisely what the return flow would be. However, the distinction between uses within and outside of the drainage area justifies differences in storage charges.

Various approches might be made to the question of what charge should be imposed for the benefits of reducing pump lift and desilting the water, which benefits would be realized by the State of Nevada under the proposed contract for taking water from Lake Mead. The value of the reduction in pump lift, if measured by the cost of pumping from the natural river level in the vicinity of Boulder Dam would be tremendous. The cost of desilting water is great. However, I think it would be unreasonable to measure charges to the State of Nevada for reducing pump lift and for desilting water by reference to the costs avoided by reason of the construction and operation of Boulder Dam. Charges so measured would be so great that the proposed contract for taking water from Lake Mead would be impracticable.

Under the Boulder Canyon Project Adjustment Act and the contracts made pursuant thereto, the allottees of Boulder energy agree to pay rates computed to be sufficient, together with the other net revenues from the project, to accomplish the amortization purpose and other purposes set forth in section 1 of the Act. It seems to me that a reasonable charge for reducing pump lift and for desilting water in the case

of the proposed contract is the estimated amount of power revenues which would be lost by reason of the water taken from Lake Mead not being used for the generation of energy. Such a measure results in a charge very much smaller than would result by reference to the avoided costs of desilting and pumping and yet is a charge to which the allottees of energy cannot reasonably object.

To say that there will not be a charge because of the loss of power revenues, but that there will be a charge for desilting water and for reducing pump lift, measured by the loss in power revenue, may upon first impression seem to be the making of a distinction which is without a real difference. However, the lack of real difference is only in the charge that Nevada would pay for the water taken from Lake Mead. The distinction does involve a real difference in principle, and the principle is important and is one to which I believe you will give your approval.

The 60¢ charge heretofore suggested for article 9 of the proposed contract was determined by the Bureau of Reclamation, on the basis of its estimates, as the cost of two components, one of 35¢ at the Boulder Power Plant for diversion service by reason of the diversion of waters from above the dam and another of 25¢ for the storage of water. In accordance with the views I have expressed above, I believe that the component of 35¢ is proper for inclusion as a reasonable measure of the charge for desilting the water and reducing the pump lift. Studies regarding return flow have not been made, and a final determination of an appropriate charge for storage of water for the proposed contract cannot be made now. In the circumstances, without setting a precedent for the price of storage water in other cases, but in recognition of the views expressed above in this letter, I have concluded that in the proposed contract the component for storage should be 15¢. Accordingly, I would be willing to enter into the proposed contract with the charge in article 9 to be fixed at 50¢ per acre-foot, subject to reduction by the Secretary of the Interior if studies show to his satisfaction that the charge is too high.

If revised accordingly, the first sentence of article 9 would read "a charge of fifty cents ($0.50) per acre-foot shall be made for the diversion by or delivery of water to the State hereunder during the Boulder Dam cost-repayment period, subject to reduction by the Secretary in the amount of the charge if studies show to his satisfaction that the charge is too high." If this arrangement is satisfactory to the State of Nevada, please communicate with District Counsel Richard J. Coffey of the Bureau of Reclamation in Los Angeles. He is authorized to submit for execution the proposed contract incorporating the revised sentence quoted above.

Following a meeting of the Commission on December 11, 1942,

Secretary Smith on December 12, 1942, addressed the following letter to Secretary Ickes:

> It is noted that the former charge for loss of power through the use of stored water delivered above the dam to Nevada in the amount of 35¢ per acre-foot has been completely eliminated. In place of this charge, but using it as an arbitrary measure, a charge of 35¢ per acre-foot is imposed upon the State for desilting the water and reduction of pump lift obtained through the use of Mead Lake. Your comments are interesting upon the possibility that this portion of the total charge might be considered as a "distinction without a difference." We might answer that the elimination of the proposed former charge for something else not contemplated formerly is apparently an evasion of certain legal aspects of the situation without changing the financial set up. The State has not requested either a desilting service or reduction in pump lift. We acknowledge that these advantages are of value to all who use the stored water and are a result of the construction of Boulder dam and Mead lake. We are in doubt, however, if this new charge against Nevada is appropriate, and we wish to give it further examination before entering into a contract.
>
> Referring to the second component of the charge, 25¢ per acre-foot for storage, we note your proposed reduction from 25¢ per acre-foot to 15¢ per acre-foot. We appreciate this partial concession to our protest against any storage charge, but we are not inclined to recede from the position set out in my letter of June 13, 1942, which position is that Nevada should not be subjected to a charge for storage.
>
> It is our belief that much of the 300,000 acre-feet of water per year allotted to Nevada will eventually be used in the reclamation and cultivation of arid lands in the vicinity of Boulder City and Las Vegas for the benefit of both State and Nation. The citizens coming under such projects should be served with this water at the lowest possible cost. Low cost will be necessary to make such developments possible. The State of Nevada will not, and has no desire to, profit either from water or power developed at Boulder Dam, but will transfer all benefits to the people at net cost.
>
> It is our desire to hold this matter open for further consideration under the revised wording you have proposed for the first sentence of article 9 of the draft of proposed contract for delivery of water to the State of Nevada, which sentence reads: * * * "subject to reduction by the Secretary in the amount of the charge if studies show to his satisfaction that the charge is too high."

This letter was referred to Commissioner John C. Page from whose reply, dated December 22, 1942, we quote:

> Frankly your letter is disturbing to me. The position of the Colorado River Commission of Nevada seems to be that

water should be delivered to the State from Lake Mead without any charge for the highly beneficial services of storage, desilting and reduction of pump lift rendered by the construction and operation of Boulder dam.

Further reply will be made to your letter at an early date.

On January 25, 1943, Commissioner Page wrote again as follows:

It remains our conclusion that, for the reasons given in Secretary Ickes' letter of October 8, 1942, 50 cents per acre-foot is a reasonable charge for water to be diverted from Lake Mead by the State of Nevada, particularly since the amount of the charge would be subject to reduction by the Secretary of the Interior if studies show to his satisfaction that the charge is too high. I think the Colorado River Commission of Nevada will believe me when I say that the Bureau of Reclamation and the Department were not making a trifling gesture in proposing that provision for inclusion in article 9.

If upon further consideration the arrangement proposed in Secretary Ickes' letter of October 8, 1942, is satisfactory to the Colorado River Commission of Nevada, please advise District Counsel R. J. Coffey in Los Angeles.

On February 2, 1943, the Commission having decided that further negotiations for lower-priced water would be of no avail and an immediate contract with Defense Plant Corporation to supply Basic Magnesium was necessary, passed a resolution that the proposed water contract with the U. S. Bureau of Reclamation be executed, which was accordingly done under date of April 21, 1943. This contract with the bureau provided for the annual withdrawal by Nevada of up to 100,000 acre-feet of water from Lake Mead at 50 cents per acre-foot.

Meantime the State of Arizona had petitioned Secretary Ickes for a contract authorizing annual withdrawal of up to 2,800,000 acre-feet, which is that State's entire allotment under the proposed tri-State Colorado River Water Compact. This step by Arizona led Nevada to at once petition the Secretary of the Interior for a supplemental contract for withdrawal of all the water to which Nevada would have been entitled under the said tri-State compact, which was an additional 200,000 acre-feet, making a total of 300,000 acre-feet annually. This request was consented to by the Secretary and the supplemental contract was executed under date of January 3, 1944.

These contracts permanently safeguard Nevada's interest and share in waters of the Colorado River in the quantity provided for by the tri-State compact which had been authorized by Congress, but upon which Arizona and California failed to agree as to details and interpretation after negotiations extending over several years.

The Federal water contracts with Arizona and Nevada have resulted from that disagreement. The hope of a tri-State agreement by means of the Federally authorized compact, which would have been better than these contracts, has disappeared.

Following is the text of Nevada's first water contract. The supplemental water contract is identical excepting as to increase in quantity of water to a total of 300,000 acre-feet:

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

Boulder Canyon Project
Arizona-California-Nevada

CONTRACT FOR DELIVERY OF WATER

1. This Contract, made this 30th day of March, nineteen hundred forty-two, pursuant to the Act of Congress approved June 17, 1902 (32 Stat. 388), and acts amendatory thereof or supplementary thereto, all of which acts are commonly known and referred to as the Reclamation Law, and particularly pursuant to the Act of Congress approved December 21, 1928 (45 Stat. 1057), designated the Boulder Canyon Project Act, and acts amendatory thereof or supplementary thereto, between THE UNITED STATES OF AMERICA (hereinafter referred to as "United States"), acting for this purpose by Harold L. Ickes, Secretary of the Interior (hereinafter referred to as the "Secretary"), and the STATE OF NEVADA, a body politic and corporate, and its Colorado River Commission (said Commission acting in the name of the State, but as principal in its own behalf as well as in behalf of the State; the term State as used in this contract being deemed to be both the State of Nevada and its Colorado River Commission), acting in pursuance of an act of the Legislature of the State of Nevada, entitled "An Act creating a commission to be known as the Colorado river commission of Nevada, defining its powers and duties, and making an appropriation for the expenses thereof, and repealing all acts and parts of acts in conflict with this act," approved March 20, 1935 (Chapter 71, Stats. of Nevada, 1935);

WITNESSETH THAT:

EXPLANATORY RECITALS

2. Whereas, for the purpose of controlling floods, improving navigation, regulating the flow of the Colorado River, providing for storage and for the delivery of stored waters for the reclamation of public lands and other beneficial uses exclusively within the United States, the Secretary, acting under and in pursuance of the provisions of the Colorado River Compact and the Boulder Canyon Project Act, and acts amendatory thereof or supplementary thereto, has constructed and is now operating and maintaining in the main stream of the Colorado River at Black Canyon that certain structure known as and designated Boulder Dam and incidental works, creating thereby a reservoir designated Lake Mead; and

3. Whereas, the State is desirous of entering into a contract for the delivery to it of water from Lake Mead:

4. Now, Therefore, in consideration of the mutual covenants herein contained, the parties hereto agree as follows, to wit:

DELIVERY OF WATER BY THE UNITED STATES

5. (a) Subject to the availability thereof for use in Nevada under the provisions of the Colorado River Compact and the Boulder Canyon Project Act, the United States shall, from storage in Lake Mead, deliver to the State each year at a point or points to be selected by the State and approved by the Secretary, so much water as may be necessary to supply the State a total quantity not to exceed One Hundred Thousand (100,000) acre-feet each calendar year. The right of the State to contract for the delivery to it from storage in Lake Mead of additional water is not limited by this contract. Said water may be used only within the State of Nevada, exclusively for irrigation, household, stock, municipal, mining, milling, industrial, and other like purposes, but shall not be used for the generation of electric power.

(b) Water agreed to be delivered to the State hereunder shall be delivered continuously as far as reasonable diligence will permit, but the United States shall not be obligated to deliver water to the State when for any reason, as conclusively but not arbitrarily determined by the Secretary, such delivery would interfere with the use of Boulder Dam or Lake Mead for river regulation, improvement of navigation, flood control, and/or satisfaction of perfected

rights, in or to the waters of the Colorado River, or its tributaries, in pursuance of Article VIII of the Colorado River Compact.

(c) The United States reserves the right, for the purpose of investigation, inspection, maintenance, repairs and replacement or installation of equipment or machinery at Boulder Dam, to discontinue temporarily or reduce the amount of water to be delivered hereunder, but so far as feasible the United States will give the State reasonable notice in advance of such temporary discontinuance or reduction. The United States, its officers, agents and employees shall not be liable for damages when, for any reason whatsoever, suspensions or reductions in delivery of water occur.

(d) This contract is for permanent service, and is made subject to the express condition that the State, upon request of the Secretary, shall submit in writing prior to January 1st of any year, an estimate of the amount of water to be required under this contract for the succeeding calendar year.

RECEIPT OF WATER BY THE STATE

6. The State shall receive the water to be diverted by or delivered to it by the United States under the terms hereof at the point or points of delivery to be hereafter designated as stated in the next preceding article hereof, and shall perform all acts required by law or custom in order to maintain control over such water and to secure and maintain its lawful use and proper diversion from Lake Mead. The diversion and conveyance of such water to places of use shall be without expense to the United States.

MEASUREMENT OF WATER

7. The water to be delivered to the State hereunder shall be measured at the point or points of diversion from Lake Mead, or at such point or points in any works used by the State to convey water from Lake Mead to its place or places of use as shall be satisfactory to the Secretary, and by such measuring and controlling devices or such automatic gauges or otherwise as shall be satisfactory to the Secretary. Said measuring and controlling devices, or automatic gauges, shall be furnished, installed, and maintained in manner satisfactory to the Secretary, by and at the expense of the State, but they shall be and remain at all times under the complete control of the United States. The State's authorized representative shall be allowed access at all times to said measuring and controlling devices or automatic gauges.

RECORD OF WATER DIVERTED

8. The State shall make full and complete written monthly reports as directed by the Secretary on forms to be supplied by the United States of all water delivered to or diverted by the State from Lake Mead. Such reports shall be made by the fifth day of the month immediately succeeding the month in which the water is diverted.

CHARGE FOR DELIVERY OF WATER

9. A charge of fifty cents ($0.50) per acre-foot shall be made for the diversion by or delivery of water to the State hereunder during the Boulder Dam cost-repayment period, subject to reduction by the Secretary in the amount of the charge if studies show to his satisfaction that the charge is too high. Thereafter, charges shall be on such basis as may hereafter be prescribed by the Congress. Charges shall be made against the State only for the number of acre-feet of water actually delivered to or diverted by it from Lake Mead.

BILLING AND PAYMENTS

10. The State shall pay monthly for all water delivered to it hereunder, or diverted by it from Lake Mead, in accordance with the charge in Article nine (9) hereof established. The United States will submit bills to the State by the tenth day of each month immediately following the month during which the water is delivered or diverted and payments shall be due on the first day of the month immediately succeeding. If such charges are not paid when due, an interest charge of one per centum (1%) of the amount unpaid shall be added thereto as liquidated damages and, thereafter, as further liquidated damages, an additional interest charge of one per centum (1%) of the principal sum unpaid shall be added on the first day of each succeeding calendar month until the amount due, including such interest, is paid in full.

REFUSAL OF WATER IN CASE OF DEFAULT

11. The United States reserves the right to refuse to deliver water to the

State, or to permit water to be diverted by the State from Lake Mead, in the event of default for a period of more than twelve (12) months in any payment due or to become due to the United States under this contract.

INSPECTION BY THE UNITED STATES

12. The Secretary or his representative shall at all times have the right of ingress to and egress from all works of the State for the purpose of inspection, repairs, and maintenance of works of the United States, and for all other proper purposes. In each contract made by the State for the redelivery of any part of the water agreed to be delivered to the State hereunder, it shall be provided, for the use and benefit of the United States, that the authorized representatives of the United States shall at all times have access to measuring and controlling devices, or automatic gauges, over the lands and rights of way of the contractee. The Secretary or his representatives shall also have free access at all reasonable times to the books and records of the State relating to the diversion and distribution of water delivered to or diverted by the State from Lake Mead with the right at any time during office hours to make copies of or from the same.

RULES AND REGULATIONS

13. There is reserved to the Secretary the right to prescribe and enforce rules and regulations governing the delivery and diversion of water hereunder. Such rules and regulations may be modified, revised, and/or extended from time to time after notice to the State and opportunity for it to be heard, as may be deemed proper, necessary, or desirable by the Secretary to carry out the true intent and meaning of the law and of this contract, or amendments hereof, or to protect the interests of the United States. The State hereby agrees that in the operation and maintenance of its diversion works and conduits, all such rules and regulations will be fully adhered to.

AGREEMENT SUBJECT TO COLORADO RIVER COMPACT

14. This contract is made upon the express condition and with the express understanding that all rights hereunder shall be subject to and controlled by the Colorado River Compact, being the compact or agreement signed at Sante Fe, New Mexico, November 24, 1922, pursuant to an Act of Congress approved August 19, 1921, entitled "An Act to permit a compact or agreement between the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming, respecting the disposition and apportionment of the waters of the Colorado River, and for other purposes," which compact was approved in section 13 (a) of the Boulder Canyon Project Act.

PRIORITY OF CLAIMS OF THE UNITED STATES

15. Claims of the United States arising out of this contract shall have priority over all others, secured or unsecured.

CONTRACT CONTINGENT UPON APPROPRIATIONS

16. This contract is subject to appropriations being made by Congress from time to time of money sufficient to provide for the doing and performance of all things on the part of the United States to be done and performed under the terms hereof, and to there being sufficient money available in the Colorado River Dam fund for such purposes. No liability shall accrue against the United States, its officers, agents or employees, by reason of sufficient money not being so appropriated, or on account of there not being sufficient money in the Colorado River Dam fund for such purposes.

EFFECT OF WAIVER OF BREACH OF CONTRACT

17. All rights of action for breach of any of the provisions of this contract are reserved to the United States as provided in Section 3737 of the Revised Statutes of the United States. The waiver of a breach of any of the provisions of this contract shall not be deemed to be a waiver of any provision hereof, or of any other subsequent breach of any provision hereof.

REMEDIES UNDER CONTRACT NOT EXCLUSIVE

18. Nothing contained in this contract shall be construed as in any manner abridging, limiting, or depriving the United States or the State of any means of enforcing any remedy either at law or in equity for the breach of any of the provisions hereof which it would otherwise have.

TRANSFER OF INTEREST IN CONTRACT

19. No voluntary transfer of this contract, or of the rights of the State hereunder, shall be made without the written approval of the Secretary; and any successor or assign of the rights of the State, whether by voluntary transfer, judicial sale, trustee's sale, or otherwise, shall be subject to all the conditions of the Boulder Canyon Project Act, and also subject to all the provisions and conditions of this contract to the same extent as though such successor or assign were the original contractor hereunder; provided, that the execution of a mortgage or trust deed, or judicial or trustee's sale made thereunder, shall not be deemed a voluntary transfer within the meaning of this Article.

NOTICES

20. (a) Any notice, demand or request required or authorized by this contract to be given or made to or upon the United States shall be delivered, or mailed postage prepaid, to the Director of Power, United States Bureau of Reclamation, Boulder City, Nevada, except where, by the terms hereof, the same is to be given or made to or upon the Secretary, in which event it shall be delivered, or mailed postage prepaid, to the Secretary, at Washington, D. C.

(b) Any notice, demand or request required or authorized by this contract to be given or made to or upon the State shall be delivered, or mailed postage prepaid, to the Secretary of the Colorado River Commission of Nevada, Carson City, Nevada.

(c) The designation of any person specified in this article or in any such request for notice, or the address of any such person, may be changed at any time by notice given in the same manner as provided in this article for other notices.

OFFICIALS NOT TO BENEFIT

21. No Member of or Delegate to Congress or Resident Commissioner shall be admitted to any share or part of this contract or to any benefit that may arise herefrom, but this restriction shall not be construed to extend to this contract if made with a corporation or company for its general benefit.

UNCONTROLLABLE FORCES

22. Neither party shall be considered to be in default in respect to any obligation hereunder, if prevented from fulfilling such obligation by reason of uncontrollable forces, the term "uncontrollable forces" being deemed, for the purposes of this contract, to mean any cause beyond the control of the party affected, including but not limited to inadequacy of water, failure of facilities, flood, earthquake, storm, lightning, fire, epidemic, war, riot, civil disturbance, labor disturbance, sabotage, and restraint by court or public authority which by exercise of due diligence and foresight, such party could not reasonably have been expected to avoid. Either party rendered unable to fulfill any obligation by reason of uncontrollable forces shall exercise due diligence to remove such inability with all reasonable dispatch.

IN WITNESS WHEREOF, the parties hereto have caused this contract to be executed the day and year first above written.

THE UNITED STATES OF AMERICA,
By ABE FORTAS,
Acting Secretary of the Interior.

STATE OF NEVADA, acting by and through its Colorado River Commission,
By E. P. CARVILLE,
Chairman.

Attest: ALFRED MERRITT SMITH, *Secretary.*

COLORADO RIVER COMMISSION OF NEVADA,
By E. P. CARVILLE,
Chairman.

Attest: ALFRED MERRITT SMITH, *Secretary.*

Ratified and approved this 21st day of April, 1943.

[SEAL]

E. P. CARVILLE, *Governor of the State of Nevada.*
Attest: MALCOLM MCEACHIN, *Secretary of State.*
Approved as to form: ALAN BIBLE, *Attorney-General of Nevada.*

WATER CONTRACT WITH DEFENSE PLANT CORPORATION

All of the water required for the operation of Basic Magnesium, Incorporated, the great plant near Las Vegas is supplied from Lake Mead by contract between Nevada and Defense Plant Corporation.

The water is delivered by a pumping plant and pipelines to twin concrete reservoirs above the industrial housing town of Henderson and the magnesium plant, constructed by Basic Magnesium, Incorporated. These reservoirs have a combined capacity of 34,000,000 gallons and were designed by J. M. Montgomery Company and built by Engineers Ltd., of Los Angeles. The 40-inch diameter pipeline was completed in April of 1942. For immediate temporary use, pumps had been placed on a barge in Lake Mead. Meantime a steel cantilever structure was built out over the lake. At the end of the cantilever are six intake vertical turbine pumps with 18-inch columns 196 feet long extending down into the lake which provide for variation in water level. Each pump is operated by a 400-horsepower motor, and the combined average capacity is 31,000,000 gallons a day. The water is lifted 150 feet to a booster pumping station, where it is delivered into a 1,000,000 gallon reservoir feeding the six horizontal centrifugal pumps, each with a 1,250-horsepower motor which lifts the water an additional 625 feet through the pipeline to the reservoirs above BMI plant. A water-treatment plant is located beside the reservoirs. The water-supply system was built at a cost of approximately $6,000,000 and is one of the most interesting hydraulic construction works in the United States. It has been visited by many prominent engineers from all parts of the country.

Delivery of water began April 1942, reaching 542.7 acre-feet in November 1942. Present delivery averages 1,132 acre-feet per month, for which Defense Plant Corporation pays 55 cents per acre-foot. Fifty cents of this charge per acre-foot goes to the Bureau of Reclamation and five cents to the State of Nevada for costs of administration. The contract with Defense Plant Corporation was the subject of negotiation for some months before the Government and the State reached an agreement on all the terms. It provides for the delivery of up to 35,000 acre-feet per year for a period of 45 years. The State required the filing of applications for water use from the Colorado River as one of the contract conditions, which was complied with, and these applications together with the requisite survey maps are made a part of the contract in article 8 thereof. The contract is here reproduced in full.

STATE OF NEVADA
COLORADO RIVER COMMISSION OF NEVADA

CONTRACT FOR DELIVERY OF WATER WITH DEFENSE PLANT CORPORATION

CONTRACT FOR DELIVERY OF WATER

1. THIS CONTRACT, made this 30th day of March 1942, between the STATE OF NEVADA, a body politic and corporate, and its Colorado River Commission (said Commission acting in the name of the State, but as principal in its own behalf as well as in behalf of the State; the term "State" as used in this contract being deemed to be both the State of Nevada and its Colorado River Commission or its successors), acting in pursuance of an act of the Legislature of the State of Nevada, entitled "An Act creating a commission to be known as the Colorado River Commission of Nevada, defining its powers and duties, and making an appropriation for the expenses thereof, and repealing all acts

and parts of acts in conflict with this act," approved March 20, 1935, (Chapter 71, Stats. of Nevada, 1935), and acts amendatory thereof or supplementary thereto, and DEFENSE PLANT CORPORATION (hereinafter referred to as "Defense Plant"), a corporation created by Reconstruction Finance Corporation pursuant to section 5d of the Reconstruction Finance Corporation Act, as amended:

WITNESSETH THAT:

EXPLANATORY RECITALS

2. WHEREAS, Defense Plant has made applications to the State Engineer of the State of Nevada for permits to appropriate the public waters of the State of Nevada, the sources of the proposed appropriations being the Colorado River, copies of which applications are attached hereto and marked Exhibits 1-a, 1-b, and 1-c, Exhibit 1-c having been made by Manganese Ore Company, managing and operating Defense Plant Project "Plancor 402" for Defense Plant, and

3. WHEREAS, under said applications the water is to be diverted from its source at a point in Boulder Dam Reservoir, (designated and hereinafter referred to as Lake Mead), created by the construction of Boulder Dam in the main stream of the Colorado River at Black Canyon, and

4. WHEREAS, under date of March 30, 1942, the State entered into a contract with the United States of America (hereinafter referred to as the "United States"), acting for the purpose by the Secretary of the Interior, (hereinafter referred to as the "Secretary"), for the delivery of water to the State from storage in Lake Mead at a point or points to be selected by the State and approved by the Secretary, a copy of which contract is hereto attached, marked Exhibit 2, and

5. WHEREAS, at a location in Nevada between Las Vegas and Boulder City, there is being constructed in the name of and on behalf of Defense Plant a plant for the production of magnesium metal, magnesium alloys, and by-products and related products, and a residential town and other facilities for the accommodation of workers in the construction and operation of said plant, and it is the intention and desire of Defense Plant that both said plant and town and other facilities shall be served with water delivered from Lake Mead, and

6. WHEREAS, Defense Plant may cause to be constructed in the same general area another plant or other plants and associated and necessary facilities for the production or processing of materials necessary to the National Defense Program;

7. NOW THEREFORE, in consideration of the mutual covenants herein contained, the parties hereto agree as follows, to wit:

CONTRACT SUBJECT TO EXHIBITS AND REGULATIONS

8. This contract is subject to all the terms and provisions of Exhibits 1-a, 1-b, 1-c, and 2 hereof, except where said terms and provisions are inconsistent with the terms and conditions of this contract, which Exhibits are hereby made a part hereof as fully and completely as though set out herein at length. This contract is subject to such other rules and regulations as hereafter may be promulgated by the Secretary pursuant to law.

DELIVERY OF WATER

9. (a) Subject to the availability thereof to the State as provided in Articles five (5), sixteen (16), and twenty-two (22), of Exhibit 2, and subject to the provisions of Articles ten (10) and nineteen (19) hereof, and to all the terms and conditions of Exhibits 1-a, 1-b, 1-c, and 2 which are applicable to this contract in accordance with Article eight (8) hereof, the State shall, from storage in Lake Mead, cause to be delivered to Defense Plant each year at a point or points to be selected by the State and Defense Plant and approved by the Secretary, so much water as may be necessary to supply Defense Plant, or plants or other undertakings operating under contract with Defense Plant, a total quantity not to exceed thirty-five thousand (35,000) acre-feet each calendar year. Said water may be used only within the State of Nevada, exclusively for irrigation, household, stock, municipal, mining, milling, industrial, and other like purposes, but shall not be used for generation of electric power.

Nothing herein shall be deemed to prohibit or in anywise restrict Defense Plant, its successors and lawful assigns, from selling or disposing of any part or portion of said thirty-five thousand (35,000) acre-feet of water available in

each calendar year, but such right is hereby specifically recognized and granted, subject, however, to the applicable laws of the State of Nevada now or hereafter in effect and to the restrictions herein provided.

(b) Water to be delivered to Defense Plant hereunder shall be delivered continuously or in accordance with the requirements of Defense Plant as far as reasonable diligence will permit, but the State shall not be obligated to deliver water to Defense Plant when for any reason as conclusively determined by the Secretary, such delivery would interfere with the use of Boulder Dam or Lake Mead for river regulation, improvement of navigation, flood control, and/or the satisfaction of perfected rights in or to the waters of the Colorado River, or its tributaries, in pursuance of Article VIII of the Colorado River Compact.

(c) This contract is made subject to the express condition that Defense Plant, upon request of the State, shall submit in writing, prior to December 20th of any year, an estimate of the amount of water to be required under this contract for the next succeeding calendar year, but such estimate or estimates shall not be deemed a limitation on the right of Defense Plant to use water up to but not exceeding the maximum amount of water which this contract authorizes.

RECEIPT OF WATER BY DEFENSE PLANT

10. (a) Defense Plant shall receive the water to be delivered to it or diverted by it under the terms hereof at its point or points of diversion in Lake Mead, selected and approved as provided in the following article hereof, and shall provide for the diversion and conveyance of such water to its place or places of use without expense to the State, and shall perform all acts required by law or custom in order to maintain the State's control over such water and to secure and maintain its lawful use and proper diversion from Lake Mead. All works necessary or used for the diversion and conveyance of such water to its place or places of use shall be installed, operated and maintained by and at the expense of Defense Plant.

All equipment and devices installed, operated, and maintained by Defense Plant for the purpose of diverting and delivering said water shall be considered the personal property of Defense Plant and may at the option of Defense Plant be removed at any time.

(b) Defense Plant shall not look to the State for compensation or damages of any kind which in any manner may arise out of the operation and maintenance of Boulder Dam and incidental works, and Lake Mead, or from the operation and maintenance of any of the diversion, pumping or transmission facilities which may be used to transmit water from Lake Mead to its place or places of use, or from failure of the United States, for any cause whatsoever, to deliver water to the State.

MEASUREMENT OF WATER

11. The water to be delivered hereunder shall be measured at the point or points of diversion from Lake Mead, or at such point or points in any works used by Defense Plant to convey water from Lake Mead to its place or places of use as shall be satisfactory to the Secretary, and by such measuring and controlling devices or such automatic gauges as shall be satisfactory to the Secretary. Said measuring and controlling devices or automatic gauges shall be furnished, installed, and maintained, in manner satisfactory to the Secretary, by and at the expense of Defense Plant, but they shall be and remain at all times under the complete control of the United States Department of the Interior.

RECORD OF WATER DIVERTED

12. Defense Plant shall make full and complete written monthly reports as directed by the State on forms to be approved by the State, of all water delivered to or diverted by Defense Plant from Lake Mead. Such reports shall be made by the third day of the month immediately succeeding the month in which the water is delivered to or diverted by Defense Plant.

CHARGE FOR DELIVERY OF WATER

13. A charge of fifty-five cents ($0.55) per acre-foot shall be paid by Defense Plant to the State for the diversion by, or delivery of water to, Defense Plant hereunder. If, at any time, the charge to the State shall be reduced by the

Secretary as provided in Article nine (9) to Exhibit 2 hereof, the charge provided in this Article 13 to be paid by Defense Plant shall automatically be reduced the same amount. Charges shall be made against Defense Plant only for the number of acre-feet of water actually delivered to, or diverted by it from Lake Mead.

BILLING AND PAYMENTS

14. (a) Defense Plant shall pay monthly for all water delivered to it hereunder, or diverted by it from Lake Mead, in accordance with the charge herein in Article thirteen (13) established. The State will submit bills for amounts due the State under this contract by the sixth day of each month immediately following the month during which the water was delivered and/or diverted, and payments shall be due on the twentieth day of the month during which the bills are submitted. If any such charges are not paid when due, an interest charge of one per centum (1%) of the amount unpaid shall be added thereto as liquidated damages and thereafter, as further liquidated damages an additional interest charge of one per centum (1%) of the principal sum unpaid shall be added on the twentieth day of each succeeding calendar month until the amount due, including such interest charge or charges is paid in full.

(b) It is mutually agreed by the parties hereto that, in the event the water for which charges are made hereunder is delivered to more than one plant or undertaking or to a contractor or contractors with Defense Plant, or to an agent or agents of Defense Plant, it shall be considered for the purpose of this contract as having been delivered to Defense Plant. Upon request of Defense Plant the State will apportion the charges herein provided to be paid, among such plants, undertakings, contractors, or agents in such amounts, as Defense Plant may from time to time direct, and will credit Defense Plant, as though paid directly by it to the State with all payments when and as received from such billings; provided, however, that the State shall assume no obligation for the collection of charges thus apportioned, and that nothing herein contained shall be construed to relieve Defense Plant from its obligation to make the State whole for the charges in Article thirteen (13) hereof provided to be paid and the interest charge or charges in this Article fourteen (14) provided to be paid.

DURATION OF CONTRACT

15. This contract shall remain in effect to and including May 31, 1987, unless sooner terminated as elsewhere herein provided.

INSPECTION BY THE UNITED STATES AND THE STATE

16. The Secretary or his representatives shall at all times have the right of ingress to and egress from all works of Defense Plant constructed and used for the diversion and conveyance of water from Lake Mead for the purpose of inspection, repairs, and maintenance of works of the United States, and for all other proper purposes contemplated by this agreement. The Secretary or his representatives, and a representative of the State, duly authorized thereto by its Governor, shall at all times have access to measuring and controlling devices, or automatic gauges, over the lands and rights of way of Defense Plant, and shall also have free access at all reasonable times to the books and records of Defense Plant relating to the diversion and distribution of water delivered to or diverted by Defense Plant from Lake Mead, with the right at any time during office hours to make copies of or from the same.

REFUSAL TO DELIVER WATER IN CASE OF DEFAULT

17. The State reserves the right to refuse to deliver water to Defense Plant or to permit water to be diverted by it from Lake Mead in the event Defense Plant shall be in arrears for three (3) months in the payment of any charge due to be paid to the State under this contract.

CONTRACT MAY BE TERMINATED IN CASE OF DEFAULT IN PAYMENT

18. If Defense Plant shall be in arrears for more than three (3) months in the payment of any charge, including interest, due to be paid to the State hereunder, then the State reserves the right to terminate this contract upon notice by publication after at least four (4) weekly insertions in any legal newspaper published within the county of Clark, State of Nevada, unless full payment of charges, including interest and the expenses of said publication be made within said period of publication. Nothing contained in this contract

shall relieve Defense Plant from the obligation to make the State whole for the period of this contract for all loss or damage occasioned by the failure of Defense Plant to pay for the water delivered to or diverted by it, as provided in this contract.

CONTRACT CONTINGENT UPON APPROPRIATION OF WATER

19. This contract is made upon the express condition that Defense Plant will maintain with the State Engineer of the State of Nevada applications for the necessary permits to appropriate waters of the Colorado River for the beneficial uses herein contemplated, and will comply with all lawful requirements, rules, and regulations of said State Engineer in connection therewith. Upon failure of Defense Plant to comply with any of the provisions of this Article, this contract is subject to termination at the option of the State, provided, however, that the State gives Defense Plant sixty (60) days' written notice of any such default or failure to comply. Notwithstanding the provisions of Article nine (9) hereof, the State reserves the right to limit the amount of water which may be diverted by or delivered to Defense Plant in any calendar year to the quantity which can be beneficially used under its then existing applications for appropriation of water and permits for the use of water.

BOND IN EVENT OF TRANSFER

20. In the case of sale or transfer of this contract to a non-governmental agency, at the time of such transfer and as a condition thereof the purchaser or transferee shall provide a bond in form and amount satisfactory to the State for the purpose of safeguarding the State in the event of default by the purchaser or transferee.

TRANSFER OF INTEREST IN CONTRACT

21. No voluntary transfer of this contract, or of the rights of Defense Plant hereunder except to the United States or any department or independent establishment thereof, shall be made without the written approval of the Colorado River Commission of Nevada; which written approval shall not be unreasonably withheld and any successor or assign of the rights of Defense Plant, whether by voluntary transfer, judicial sale, trustee's sale, or otherwise, shall be subject to all the conditions of the Boulder Canyon Project Act, and also subject to all the provisions and conditions of this contract to the same extent as though such successor or assign were the original contractor hereunder.

AGREEMENT SUBJECT TO COLORADO RIVER COMPACT

22. This contract is made upon the express condition and with the express understanding that all rights hereunder shall be subject to and controlled by the Colorado River Compact, being the compact or agreement signed at Sante Fe, New Mexico, November 24, 1922, pursuant to an Act of Congress approved August 19, 1921, entitled "An Act to permit a compact or agreement between the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming, respecting the disposition and apportionment of the waters of the Colorado River, and for other purposes," which compact was approved in Section 13 (a) of the Boulder Canyon Project Act.

STATE'S RIGHTS

23. Nothing contained in this contract shall be construed as in any manner abridging, limiting, or depriving the State of any means of enforcing any remedy, either at law or in equity, for the breach of the provisions hereof which it would otherwise have. The waiver of a breach of any of the provisions of this contract shall not be deemed to be a waiver of any provision hereof, or of any other subsequent breach of any provision hereof, and the waiver of a breach of any of the provisions of this contract shall not be deemed to constitute an interpretation of said provision or of any other provision hereof which shall be binding upon the State.

NOTICES

24. (a) Any notice, demand, or request, required or authorized by this contract to be given or made to or upon Defense Plant, shall be delivered, or mailed postage prepaid, to Defense Plant Corporation, Lafayette Building, Washington, D. C., and a duplicate thereof shall be delivered or mailed postage prepaid to Basic Magnesium, Incorporated, P. O. Box 1150, Las Vegas, Nevada,

except where, by the terms hereof, the same is to be given or made upon a contractor with or agent of Defense Plant, in which event it shall be delivered, or mailed postage prepaid, to such contractor or agent in accordance with instructions given by Defense Plant to the State.

(b) Any notice, demand, or request, required or authorized by this contract to be given or made upon the State shall be delivered, or mailed postage prepaid to the Secretary of the Colorado River Commission of Nevada, Carson City, Nevada, and a duplicate thereof shall be delivered, or mailed, postage prepaid, to the Resident Engineer of said Commission, Las Vegas, Nevada.

(c) The designation of any person or corporation specified in this article or in any such request for notice, or the address of any such person or corporation, may be changed at any time by notice given in the same manner as provided in this article for other notices.

UNCONTROLLABLE FORCES

25. Neither party shall be considered to be in default in respect to any obligation hereunder, if prevented from fulfilling such obligation by reason of uncontrollable forces, the term "uncontrollable forces" being deemed, for the purposes of this contract, to mean any cause beyond the control of the party affected, including but not limited to inadequacy of water, failure of facilities, flood, earthquake, storm, lightning, fire, epidemic, war, riot, civil disturbance, labor disturbance, sabotage, and restraint by court or public authority which by exercise of due diligence and foresight, such party could not reasonably have been expected to avoid. Either party rendered unable to fulfill any obligation by reason of uncontrollable forces shall exercise due diligence to remove such inability with all reasonable dispatch.

In Witness Whereof, the parties hereto have caused this contract to be executed the day and year first above written.

STATE OF NEVADA, acting by and through its Colorado River Commission.

By E. P. Carville,
Chairman.

Attest: Alfred Merritt Smith, *Secretary.*

COLORADO RIVER COMMISSION OF NEVADA,

By E. P. Carville,
Chairman.

Attest: Alfred Merritt Smith, *Secretary.*

DEFENSE PLANT CORPORATION,

By Frank F. Ronan.

Attest: Geo. Nielson.

I, the undersigned, the Honorable E. P. Carville, Governor of the State of Nevada, do hereby ratify and approve the foregoing contract for Delivery of Water, under the power vested in me by Chapter 71, of the 1935 Statutes of Nevada, pages 147–152.

Dated this 31st day of December, 1943.

E. P. Carville,
Governor of the State of Nevada.

Attest: Malcolm McEachin, *Secretary of State.*
By Muriel Littlefield, *Deputy.*

DEFENSE PLANT CORPORATION POWER CONTRACT

On December 5, 1941, Honorable John C. Page, U. S. Commissioner of Reclamation, requested the Commission to send representatives to Washington, D. C., to arrange for delivery of Nevada's unused energy from Boulder dam to Defense Plant Corporation for use by Basic Magnesium, Incorporated, in the electric reduction of metallic magnesium as soon as possible. Governor Carville designated Gray Mashburn, Attorney-General, A. M. Smith, State Engineer and Secretary of the Colorado River Commission, and C. F. DeArmond, Commission Member, to act as a committee, which met with Kennard Cheadle, attorney, and Harvey McPhail, electrical engineer for the Bureau of Reclamation, and they agreed to the delivery of 147,000,000 kilowatt-hours for two years over the period ending May 31, 1945, plus an additional amount of 82,000,000 kilowatt-hours during the year ending May 31, 1945, at a maximum demand of 39,000 horsepower, at the firm energy rate fixed by the Bureau of Reclamation plus a charge of five-hundredths mill ($0.00005) per kilowatt-hour to be paid to Nevada for the Colorado River Commission Fund.

The Government people at first held that Nevada should supply the power free of charge as a national defense measure, but the committee from Nevada stated that the State was under expenses for administration of Boulder power and is also responsible for continuous service to its contractors, and should receive compensations, at least in part, for such expenses and responsibility and to provide a fund for contingencies. A charge of five hundredths of one mill per kilowatt-hour was deemed fair by both parties after some discussion. The State will receive over the two-year period the sum of $18,550, for a total of 371,000,000 kilowatt-hours to be delivered to Defense Plant Corporation.

A contract was drawn up and executed between the State and Defense Plant Corporation embracing the foregoing conditions.

During the summer of 1944 the U. S. War Production Board ordered BMI to shut down four units of its ten-unit plant, but BMI still consumes its full allotment of power contracted from Nevada and has curtailed takings from other sources. The total reduction has been less than had been expected because additional uses of power had developed.

It was estimated that the great magnesium plant would use approximately 1,500,000,000 kilowatt-hours per year at a maximum demand of 196,000 killowatts, which is all to be supplied by the United States through an agreement with the several Boulder Canyon Project power allottees. The agreement cleared the way for BMI to purchase a large amount of power contracted for but yet unused by Metropolitan Water District of California, and also to purchase power from Nevada without having to give the three-year advance notices both for withdrawal and relinquishment required by the Government regulations.

SOUTHERN NEVADA POWER COMPANY

This company, which serves Las Vegas and vicinity in Clark County has been obliged to greatly increase its service and equipment during the biennium due to the phenominal growth of the city of Las Vegas. The company is under contract obligation to the State for an annual withdrawal of 83,000,000 kilowatt-hours.

Southern Nevada Power Company's contract withdrawals of electric energy from Boulder Dam Plant since it became available are as follows:

	Kilowatt-hours
June 1, 1937	4,000,000
December 7, 1939	8,000,000
December 19, 1940	8,000,000
March 15, 1942	10,000,000
February 3, 1943	21,080,000
August 3, 1943	8,920,000
August 20, 1943	23,000,000
February 20, 1944	23,000,000
Total, December 20, 1943	106,000,000
Relinquishment No. 1, effective July 31, 1944	23,000,000
	83,000,000

The company is in sound financial condition as shown by reports rendered to the Nevada Public Service Commission. Although it has been subjected to heavy capital expenditures due to the phenomenal wartime growth of Las Vegas, which no one could foresee, it substantially reduced its rates of sale to the public during the year 1943. The reduction in rates was made in compliance with an agreement between Boulder Dam Project power allottees and the Secretary of the Interior, as a condition of Secretary Ickes' approval to the Boulder Canyon Project Adjustment Act, and provided that the reduction in basic rates secured by that Act would be definitely passed on to the actual consumers of the power and not go into the pockets of the power contractors. Nevada's full compliance with that condition (which was a "gentlemen's agreement" and not a part of any contract between the power allottees and the Government) brought the following letter of approval from the U. S. Department of the Interior:

WASHINGTON, D. C., January 11, 1944.

MR. ALFRED MERRITT SMITH, *Secretary, Colorado River Commission of Nevada, Carson City, Nevada.*

MY DEAR MR. SMITH: Thank you for your letter of December 14, furnishing information as to the recent reduction in rates of Southern Nevada Power Company. We appreciate very much the good work that you and the Public Service Commission of Nevada have done in bringing about these reductions. We feel that the reductions you have obtained make a very commendable showing. I trust you will inform the Public Service Commission of our appreciation of the action it has taken.

Sincerely yours,

ALEX SPEER,

Acting Director, Division of Power,
U. S. Department of Interior.

For the month of June 1944, taken as an average, Southern Nevada Power Company was billed as follows by Nevada, which represents all of the Company's proportion of Government charges to the State, plus the State charge of .3 of one mill per kilowatt-hour. The consumption was 5,816,820 kilowatt-hours.

Falling water at 1.254	$7,294.29
Amortization of machinery	2,186.41
Replacement annuities	657.77
Operation and maintenance	2,241.82
State of Nevada, .3 mill per kw-hs	1,745.05
	$14,125.34
1937–1941 Government credit for overcharge	354.49
Total	$13,770.85

This equals a basic cost of 2.367 mills per kilowatt-hour, which varies from month to month.

LINCOLN COUNTY POWER DISTRICT NO. 1

Lincoln County Power District No. 1 is obligated to the State by contract for the annual withdrawal of 27,000,000 kilowatt-hours per year. On July 19, 1944, the Colorado River Commission approved the district's request for a relinquishment of 5,000,000 kilowatt-hours per year, which under the restrictive withdrawal and relinquishment provision of the general regulations imposed on Nevada will become effective on July 29, 1945. At that time Lincoln County Power District No. 1 will have its withdrawal obligation reduced to 22,000,000 kilowatt-hours per year.

The following statements for April 1944, show average monthly power use and the financial condition of the district:

LINCOLN COUNTY POWER DISTRICT NO. 1

Financial Statement as of April 30, 1944

ASSETS

Current Assets—			
Cash in bank:			
Revenue fund	$23,719.19		
Bond interest fund	7,016.66		
Bond fund	121,071.34		
		$151,807.19	
Accounts receivable—Trade		16,565.51	
Accounts receivable—Work orders		31,540.70	
Interest receivable		232.80	
Deposit—Nevada Industrial Commission		50.00	
			$200,196.20
Investments (U. S. Government Bonds)—			
On deposit—Colorado River Commission of Nevada			27,328.81
Other Assets—			
Notes receivable		$1,440.00	
Power costs refundable		24,313.68	
			25,753.68
Inventories and Deferred Charges—			
Materials and supplies		$12,530.92	
Gasoline and oils		113.24	
Prepaid insurance		2,086.78	
			14,730.94
Fixed Assets—			
Transmission lines and facilities	$871,365.28		
Telephone lines	1,912.81		
Fences	1,696.26		
Trucks and tractors	13,095.07		
Furniture and fixtures	2,246.53		
Tools and equipment	4,799.29		
Carrier-current communication system	14,993.94		
Buildings and improvements	19,466.34		
		$929,575.52	
Less: Allowances for depreciation—			
Construction fund assets	$182,500.00		
Revenue fund assets	12,614.88		
		195,114.88	
			734,460.64
Total assets			$1,002,470.27

LIABILITIES

Current Liabilities—		
Accounts payable—Trade	$5,320.40	
Accrued pay roll	1,033.76	
Withholding tax payable	337.15	
Accrued interest on bonds	6,816.66	
Matured interest coupons outstanding	200.00	
Accrued interest on deposits	359.60	
Current requirement on bonds	27,500.00	
		$41,567.57
Other Liabilities—		
Customer deposits	$10,320.00	
Prepaid rentals	2,208.33	
		12,528.33
Funded Debt	$409,000.00	
Less: Amount shown as "Current"	27,500.00	
		381,500.00
Total liabilities		$435,595.90

NET WORTH

PWA grant appropriation	$325,347.97	
Earned surplus	123,641.38	
Bond fund reserve	93,571.34	
Power costs refundable—Unrealized	24,313.68	
		566,874.37
Total liabilities and net worth		$1,002,470.27

LINCOLN COUNTY POWER DISTRICT NO. 1

Operating Statement April 1944

Power sales—Kilowatt-hours	2,076,698		8,421,501	
	April	Per K.W.H. cents	1944 to date	Per K.W.H. cents
Revenue—				
Power sales	$13,820.05	.6655	$57,309.53	.6805
Less: Direct cost of power sold	4,753.80	.2289	19,139.93	.2273
Gross revenue from power sales	$9,066.25	.4366	$38,169.60	.4532
Line rentals	300.14	.....	1,243.81	
Dwelling rentals	85.00	.....	340.00	
Interest on investments	58.20	.....	232.80	
Total revenue	$9,509.59	.4579	$39,986.21	.4748
Expense and Costs—				
Operating:				
Maintenance salaries— Undistributed	$220.00	.....	$1,338.09	
Main substation attendance	150.00	.....	600.00	
Lines maintenance, repairs and replacements	54.85	.....	218.51	
General operating supplies	15.57	.....	184.60	
Operating tools and equipment	4.50	.....	61.92	
Truck operation and maintenance	91.41	.....	781.13	
Auto mileage allowances	7.62	.....	135.90	
System engineering expense	.....	.....	84.74	
Compensation insurance	11.99	.....	103.07	
Travel expense	18.25	.....	67.05	
Total operating	$574.19	.0276	$3,575.01	.0424
Administrative and General:				
Directors' fees	$30.00	.....	$120.00	
Office and administrative salaries	225.00	.....	910.00	
Professional services	.....	.....	421.75	
Telephone and telegraph	44.85	.....	209.40	
Office supplies	17.78	.....	58.50	
Sundry administrative	10.50	.....	90.50	
Auto mileage allowances	45.58	.....	210.74	
General insurance	141.69	.....	503.63	
Travel expense	.....	.....	14.05	
Total administrative and general	$515.40	.0249	$2,538.57	.0306
Total expense and costs (as above)	$1,089.59	.0525	$6,113.58	.0762
Interest—On bonds and deposits	1,397.72	.0673	5,591.93	.0664
Depreciation—Revenue fund assets	237.23	.0114	950.01	.0113
Depreciation—Bond retirement	2,500.00	.1204	10,000.00	.1187
Total deductions	$5,224.54	.2516	$22,655.52	.2690
Net gain	$4,285.05	.2063	$17,330.69	.2058
Less: Bond reserve requirement	772.67	.0371	3,090.67	.0367
Net credit to surplus	$3,512.38	.1692	$14,240.02	.1691

LINCOLN COUNTY POWER DISTRICT NO. 1

Statement of Power Consumption and Losses April 1944

	April K.W.H.	Percent of total	1944 to date K.W.H.	Percent of total
Power Consumed—				
Bristol Silver Mines Company	54,178	2.59	249,051	2.94
Caliente Public Utilities	100,366	4.80	427,683	5.04
Caselton Heights—Housing Project	9,210	.44	42,176	.50
Combined Metals Reduction Co.	1,576,387	75.46	6,293,916	74.18
Comet Mines, Inc.	1,236	.06	3,987	.05
Ely Valley Mines Company	85,386	4.09	372,962	4.40
Farmers Mutual Power Assoc.	749	.03	3,010	.04
Panaca Power and Light	12,546	.60	54,141	.64
Pioche Power & Light Company	72,743	3.48	309,255	3.63
Prince Consolidated Mining Co.	157,909	7.56	643,409	7.58
Salt Lake Pioche Mining Co.	5,988	.29	22,911	.27
Sales	2,076,698	99.40	8,421,501	99.27
District dwellings (sales to employees)	6,784	.32	36,837	.43
Station service	5,676	.28	25,704	.30
Total consumption	2,089,158	100.00	8,484,042	100.00
Power Losses—				
In Distribution:				
Prince substation meter	2,076,000	94.65	8,400,000	94.50
Prince substation distribution	2,076,698	94.68	8,421,501	94.74
Distribution gain	698	.03	21,501	.24
In Transmission:				
Prince substation meter	2,076,000	94.65	8,400,000	94.50
Dwellings and service station	12,460	.57	62,541	.70
Total metered power	2,088,460	95.22	8,462,541	95.20
Net delivery to Pioche line	2,193,384	100.00	8,889,134	100.00
Transmission loss	104,924	4.78	426,593	4.80
Overall system loss	104,226	4.75	405,092	4.56
Boulder Dam Meter	4,258,000	100.00	16,108,000	100.00
Less: Overton Power District No. 5	180,183	4.23	762,117	4.74
Southern Nevada Power Co.	1,884,433	44.26	6,456,749	40.08
Net delivery to Pioche line	2,193,384	51.51	8,889,134	55.18

The State submits a classified bill to each power contractor monthly which is identical with that rendered to the State by the Government for all power use, proportioned to what each contractor uses, but to which is added $0.003 per kilowatt-hour payable to the State. As an example, for the month of June 1944, Lincoln County Power District No. 1 consumed 1,967,951 kilowatt-hours of electrical energy for which it was billed as follows:

Government "falling water" charge, 1.254 mills per Kw-h	$2,467.81
Amortization of machinery	812.91
Replacement annuities	247.70
Operation and maintenance	872.82
State of Nevada 3/10 mill per kw-hrs. charge	590.39
	$4,991.63
Credit for overcharge by Government in 1937–1941 period	354.49
Total cost	$4,637.14

This equals a charge of 2.229 mills per kilowatt-hour.

OVERTON POWER DISTRICT NO. 5

Overton Power District No. 5 is served by a transmission line which connects with the main transmission line from Boulder Dam to Pioche. The district pays Lincoln Power District No. 1 for the use of this portion of its line, a sum which is about equal to the basic falling water charge of 1.254 mills per kilowatt-hour.

During the first year of operation (May 1939 to June 1940) this district used 705,894 kilowatt-hours. During the past year (June 1943 to May 1944) the use had increased to 2,216,103 kilowatt-hours. The use of this power by the people of the Moapa and Virgin River Valleys has added much to their welfare, and is rapidly increasing.

A movement is under way to have the Virgin Valley line of this district extended to Littlefield, Arizona, into what is known as the "Arizona Strip" adjacent to Nevada. As power from Nevada's allotment from Boulder Dam may not be legally sold outside of the State, it is the desire of the Nevada Colorado River Commission to assist this small isolated area in obtaining the advantages of low-cost Boulder Dam power so far as legally possible.

Service can be made by means of a short connecting line from the town of Mesquite in Nevada. The matter is under consideration by the Arizona Power Authority and may be accomplished through withdrawal of power by Arizona from the as yet entirely untouched Arizona allotment and transmission over Nevada lines into Arizona.

GENERATING PROBLEMS

The general regulations for the operation of Boulder Dam power plant were prepared by agreement between the various allottees and the Secretary of the Interior and in accordance with the Boulder Canyon Project Adjustment Act. They do not provide for any generating or transforming machinery to be allotted to Nevada. This is because the allottees are required to enter into contracts with the Government for the payment of their machinery over a period of years. Nevada, being without any large present or prospective power demands, and whose use at that time was far less than half of the capacity of one of the 82,500 KW generators, could not contract to pay two or three million dollars for machinery the State might not use for many years, if ever, in the form of one generator and transformers.

A way out of this dilemma was found by writing into Nevada's contract with the Government a provision acquiesced in by the City, which permits Arizona and Nevada to draw upon unused capacity of the City's generators in what is known as "Section G-3," composed of Generators A-1 and A-2, up to a combined demand of 44,000 kilowatts. As Arizona does not use any energy from Boulder Dam, and gave assurance that they do not contemplate such use for some years, if ever, the contract gives Nevada generating capacity up to 44,000 kilowatts. For this use the State pays its proportionate charge for amortization and replacements, operation and maintenance. The economy in having to pay only for generating capacity used, instead of paying for a complete generator is at once apparent and effects a saving of about $50,000 per year over what the State would be obliged to pay if it installed its own generator merely to meet the present power demand.

The City of Los Angeles also derives much benefit from the arrangement, for it is relieved from charges on much of the unused capacity of its group of six generators.

A contract is to be worked out with the City wherein stand-by for Nevada use is provided, both within the excess capacity of the City's

steam plants at Los Angeles. The details of the contract for generating capacity and stand-by have not been agreed upon, mainly for the reason that the City wants to apportion the State's fixed charge on a minimum-capacity rating of the generators fixed at 65,000 KW each. As the generators were designed for 82,500 KW and have continuously run at from 90,000 to 100,000 KW since being installed, the rating of 65,000 KW proposed as a base of Nevada payments seems unfair and would cost the State about $10,000 per year more than if the rating of 82,500 KW were used. Disagreement on this point may result in a necessity for arbitration over the contract, as is provided for by the general regulations in case of failure to agree.

NEVADA IN ELECTRIC POWER BUSINESS

One of the greatest possessions of the State of Nevada is its fixed allotment of 18 percent of the firm power generated at Boulder Dam. This can never be taken away from Nevada. How much power is this? Roughly, it is about 750,000,000 kilowatt-hours per year. It is 18 per cent of 4,240,000,000 kilowatt-hours per year, which total is reduced 8,760,000 kilowatt-hours per year due to increasing upstream water use and reservoir silting. This power is Nevada's for all time. If we do not use it, other allottees may do so, but any time we want it we may take it back, provided only that we give the advance time notice required by the general regulations and reimburse the users for property made idle to them by our withdrawal, if any property is rendered idle.

The only way in which Nevada can lose any part of this power right will be by nonuse of our total allotment for 20 years. In that case Arizona only can withdraw from our allotment and permanently retain a block equal to 4 percent of the total of Boulder Dam firm power which would be about 165,000,000 kilowatt-hours per year. Such a loss could only be to Arizona, which State has not yet used any part of its original 18 percent allotment, so such a loss to Nevada is a very remote possibility. As the proposition is reversible, nonuse by Arizona will make this 165,000,000 kilowatt-hours additional power available to Nevada after 20 years, if our own uses should increase so much as to make it necessary or desirable.

It is the grave responsibility of the State to make this power available to the public at the lowest reasonable rates. It is the lowest-priced power available to industry anywhere in the United States, and the climate of southern Nevada permits all-year operation at the highest efficiency. Labor-transportation conditions are favorable. These facts should be advertised to the industrial world to a greater extent. The State sold 259,826,589 kilowatt-hours of power last year for a total of $463,158.10, and paid out to the Government for this power and to defray operating expenses a total of $420,686.01. We are already the largest power company in Nevada, but the possibilities of further use and development are very great. We will not be limited in State development by our allotment of Boulder Dam power, large though it is, for new power projects are contemplated on the Colorado River at Bridge Canyon and Marble Canyon in the near future, whose energy will also be available to Nevada.

It is necessary for the State, through its Colorado River Commission, to maintain an organization to study and administer this vast resource. This is financed by a charge of three-tenths of one mill per kilowatt-hour of power sold. Thus a fund is established for contingencies, legal expense, maintenance of the Las Vegas office, travel, and advertising. The commission has been frugal due to war conditions and many things need to be done. It is hoped that State funds will be adequate at the end of the war to permit a broader advertising program and various improvements required by the growth of the business.

COMPARATIVE POWER RATES

Nevada Boulder Dam power is sold at cost. As the cost factors vary with the exception of two fixed components (falling water charge and State charge) we cannot set down an exact figure. The contractor's power factor influences his cost. If his fluctuating load gives him a 50 percent load factor, he will need twice as much machinery to generate his definite number of kilowatt-hours as he would if he had a 100 percent load factor, so his amortization and replacement annuities will vary accordingly. Operation and maintenance costs vary and are adjusted annually and credits or charges are made to contractors accordingly. Private power corporations make their fixed rates high enough to cover such fluctuations and also pay them a profit.

While the State does not establish fixed rates by contract, all of its accounts are open for inspection, and by comparison any prospective customer may arrive at a close approximation of what his power will cost at the Boulder Dam switchboard. Recent costs are shown in the foregoing reports of operations of the several organizations now buying power from Nevada.

COLORADO RIVER COMMISSION OF NEVADA

Statements of Receipts and Disbursements for the Operating Years 1942–1943 and 1943–1944

OPERATING YEAR 1942–1943

Power Account—			
Cash as of June 1, 1942		$7,474.56	
1942–1943 receipts		160,327.42	
Total			$167,801.98
Less payments—			
To U. S. for 1942–1943 costs		$157,252.43	157,252.43
Balance in power account, June 1, 1943			$10,549.55
Commission Fund Account—			
Cash as of June 1, 1942		$14,208.54	
1942–1943 receipts		26,409.30	
Total			$40,617.84
Commission Expense, Carson City Office—			
Commissioners' compensation	$130.00		
Travel expense	1,354.65		
Express and postage	43.45		
Telephone and telegraph	208.77		
Supplies and equipment	2.25		
Publications and printing	19.90		
Miscellaneous	50.00		
Final payment, legislative appropriation	20,000.00		
Total Carson City Office		$21,809.02	
Commission Expense, Las Vegas Office—			
Compensations	$5,870.00		
Travel expense	69.86		
Express and postage	18.00		
Telephone and telegraph	154.37		
Supplies	18.29		
Rent	520.00		
Miscellaneous	250.00		
Total Las Vegas Office		6,900.52	
Total expense			28,709.54
Balance as of June 1, 1943			$11,908.30

OPERATING YEAR 1943–1944

Power Account—			
Cash as of June 1, 1943		$10,549.55	
1943–1944 receipts—			
Power		409,244.59	
Water		12,735.81	
Total			$432,529.95
Less payments—			
To U. S. for 1943–1944 power costs		$407,944.59	
To U. S. for 1943–1944 water		12,735.81	
To U. S. for adjustments of power costs prior to 1941		7,474.56	
To U. S. for adjustments 1943–1944		3,074.99	
Total			431,229.95
			*$1,300.00
Commission Fund Account—			
Cash as of June 1, 1943		$11,908.30	
1942–1943 receipts		42,477.70	
Total			$54,386.00
Commission Expenses, Carson City Office—			
Compensations	$200.00		
Travel expense	1,012.79		
Express and postage	20.00		
Telephone and telegraph	141.69		
Supplies and equipment	1,648.13		
Publications and printing	34.55		
Miscellaneous	769.78		
Total Carson City Office		$3,826.94	
Commission Expenses, Las Vegas Office—			
Compensations	$5,442.30		
Travel expense	248.52		
Express and postage	7.65		
Telephone and telegraph	163.54		
Supplies	31.05		
Rent	440.00		
Miscellaneous	26.90		
Total Las Vegas Office		6,359.96	
Total expense			10,186.90
Balance as of June 1, 1944			$44,199.10

*Advance payment by Southern Nevada Power Company for metering equipment installed at Boulder Power Plant by the Bureau of Reclamation. This amount is held in reserve pending receipt of a bill from the bureau.

BONDS REQUIRED OF CONTRACTORS

Chapter 71, Nevada Statutes 1935, "Act Creating Colorado River Commission of Nevada" provides in section 7, "that every applicant for power to be used within the State of Nevada shall, before said application is approved, provide an indemnifying bond by a corporation qualified under the laws of this State, or other collateral, approved by the State Board of Examiners, payable to the State of Nevada in such sum and in such manner as the Commission may require, conditioned for the full and faithful performance of such lease, sublease, contract, or other agreement."

If the amount of bond required for faithful performance and security to the State under Boulder energy contracts had been fixed by the Act which created the Colorado River Commission by definitely basing it upon the volume of energy contracted for, such a provision would have relieved the commission of its present responsibility to determine and fix the amount of bond for each energy contractor. However, the greater responsibility given the commission by the law in fixing the bond has advantages, and this authority in the hands of a competent board free from political implications definitely permits a more fair and businesslike procedure. It is well known that banking and mercantile establishments determine the amount of security required of an applicant for loan or credit by his past record, his present responsibility, and the stability of his business. This method has been followed by the commission in fixing the amount of bond required of contractors for energy. In general, it has been satisfactory. As the bonds may be negotiable war bonds or other valid negotiable interest-bearing securities, they place little or no burden on any reliable contractor.

CHARLES F. DeARMOND

Late in 1943 the commission lost by death the Honorable Charles F. DeArmond, long a member, and who also served as the commission's resident engineer at Las Vegas, Nevada. In respect for his long, useful, and honorable service to the State, the commission ordered the following resolution to be spread upon its minutes.

MEMORIAL RESOLUTION
HONORABLE CHARLES F. DEARMOND
MEMBER, COLORADO RIVER COMMISSION OF NEVADA

On December 2, 1943, Charles F. DeArmond died at Las Vegas, Nevada. With his passing the Colorado River Commission lost one of its most valuable members, and the State one of its most useful officers. All his associates and the members of this commission are inexpressibly saddened by his untimely death.

For nine years Charles DeArmond had been a member of the Colorado River Commission of Nevada, to which he had first been appointed by Governor Richard Kirman in 1935 and successively reappointed to that important post by Governor E. P. Carville. For most of that time he had also served as the resident engineer for the commission at Las Vegas. He had also been appointed successively by Governor Carville to be a member of the Colorado River Basin States Committees of Fourteen and Sixteen, which largely govern and control the water and power resources of the vast Colorado River Basin system.

He was ever an active and effective agent in working out and securing the enactment of national legislation relative to the Colorado River which culminated in the Boulder Canyon Project Adjustment Act, under which Nevada secured the benefits to which the State is entitled from the great Boulder Dam project. While occupied with this work, he attended many conferences held in various western cities and Washington, D. C., where his studies and opinions cleared the way for much beneficial action for all of the States concerned. "Charlie" DeArmond never had to raise his voice to be heard by every official present at such conferences. Each man present knew that his words had been carefully considered and were based on thorough investigations and study. His tendency was to go further than was necessary in being fair to all of his associates and to the interests of the other western States involved.

Charles was sixty-four years old at the time of his death. He received his early education in Ohio. Coming West, he was graduated from the University of California in 1906 with the degree of Bachelor of Science in Mining Engineering. After a couple of years in Alaska and some four years with the Rand mines of South Africa in the practice of mining engineering, he returned to the western States and there engaged in private consulting work and personal enterprises until 1916, when he located in Elko, Nevada. At once he became active in civic affairs and was elected county surveyor and became a member of the Elko City Council. In 1935 he was appointed by Governor Kirman to the Colorado River Commission and in 1937 was urged by the Commission to accept the newly-created post of resident engineer at Las Vegas. Immediately after assuming his very important duties in Las Vegas, he won the respect and love of all his fellow townsmen and his many associates in the field of engineering. At the time of his death he was serving upon the Las Vegas Board of Education and was Chairman of the Salvage Committee of the Council of Defense. He was also a member of the Las Vegas Chamber of Commerce and Chairman of the State Economic Council for Clark County.

All through his official life Charles was constantly called to serve upon committees dealing with special and intricate problems relating to the Colorado River System, where his considered judgment made his work of greatest value both to Nevada and the Western States. His keen mind and great activity, with his thoughtful spirit of cooperation and his unfailing consideration for his associates, endeared him to them and made his cheerful presence and his service valuable. He was able to analyze the financial presentations with unusual clarity, for in addition to his engineering skill, he was also a certified public accountant. The deep appreciation of his work and the grief of his associates at his death is shown by various resolutions of respect received by this commission.

RESOLUTION

WHEREAS, We feel that the preceding statement endeavors to express our estimate of the great worth of Charles F. DeArmond and our great sorrow in his passing, although we realize that words are futile to convey our deep emotion and sense of loss,

Now, therefore, be it resolved, That this statement and resolution

be spread upon the minutes and be made a part of the permanent records of the commission, and that copies thereof be transmitted to the bereaved family, to the Committee of Fourteen, Senator Pat McCarran, Senator James G. Scrugham, and Congressman Maurice J. Sullivan of Nevada, and to the National Reclamation Association.

COLORADO RIVER COMMISSION OF NEVADA
E. P. CARVILLE, *Chairman.*
ALFRED MERRITT SMITH, *Secretary.*

On February 1, 1944, E. W. Rockwell, Assistant Chief Electrical Engineer for the Metropolitan Water District of Southern California was employed by the commission until April 30, 1944, to make a technical study and report of the business and probable future development and needs, with especial consideration for the problems of stand-by power, necessary generating capacity, and how the often-debated matter of property rendered idle to other contractors by Nevada's withdrawals of power should be treated.

Mr. Rockwell's reports are very complete, the result of careful work and study against a background of wide experience in the electrical field and are of much value to the Commission.

On May 16, 1944, Mr. A. J. Shaver, formerly manager of the Pacific Utilities Company at Winnemucca, Nevada, was employed by the commission to be resident engineer at Las Vegas.

CHAPTER XII

State Board of Registered Professional Engineers

By Stanley G. Palmer, Secretary

The Engineers' Registration Law as passed in 1919 with regard to licensing professional engineers states as follows: "The practice of professional engineering within the meaning and intent of this Act includes any professional service such as consultation, investigation, evaluation, planning, and design, or responsible supervision of construction or operation in connection with any public or private utilities, structures, buildings, machines, equipment, processes, works or projects wherein the public welfare or the safeguarding of life, health, or property is concerned or involved, when such professional services require the application of engineering principles and data; that the provisions of this Act shall not apply to nonresident mining engineers employed for the purpose of making mine examinations.

The registration board appointed by the Governor consists at the present time of the following members:

A. M. Smith, Chairman, State Engineer, Carson City, appointed first in July, 1939.

S. G. Palmer, Secretary, Dean of College of Engineering, University of Nevada, Reno, appointed first in July, 1941.

A. J. Shaver, Resident Engineer, Colorado River Commission, Las Vegas, appointed first in July, 1939.

W. H. Settelmeyer, Elko County Surveyor, Elko, appointed first in July, 1939.

H. D. Mills, Assistant State Highway Engineer, Carson City, appointed first in July, 1941.

During the period covered by this report 48 new applications for registration were approved by the board. As of June 30, 1944, there were two hundred and twenty-seven members in good standing and of these, eighteen are known to be in the armed forces. In the spring of 1942 the board passed a resolution that all registered engineers in good standing at that time would have their yearly fees remitted for the duration in the event that they were inducted, enlisted, or commissioned in the armed services. This was not intended to apply to professional Army and Navy men who were already in service at the time of applying for registration. Neither did it apply to those engineers who hold civilian positions in the armed forces.

Largely due to the fine support received from the Nevada Section of the American Institute of Mining and Metallurgical Engineers, a considerable number of applications for registration have been received within the past few months. The secretary of the section mailed to all of the members a copy of the Engineer's Registration Law, together with a letter stating the action of the section in supporting the registration law.

A news letter was sent out to every registered engineer on June 17, and this letter gave a summary of the work of the board for the past year. The letter was also used as a notice that renewal fees would be due July 1. The letter was well received and the secretary has

been busy answering the many fine letters received from the members in response to it.

The finances of the board are in excellent condition. No organization can operate without sufficient funds, and the board has been keeping down expenses in order to build up an adequate reserve fund. The following is a summary of the income and expenditures for the two-year period ending June 30, 1944:

RECEIPTS

Receipts from registrations, renewals and bond interest	$1,479.25
Bank balance as of June 30, 1942	672.28
Total on hand and received for the two-year period	$2,151.53
Expenditures total inc. bond purchases	$1,733.35
Bank balances as of June 30, 1944	$418.18
Total assets as of June 30, 1944—Bank balance	$418.18
Three series G war bonds $500 each	1,500.00
	$1,918.18

EXPENDITURES

Telephone and telegraph	$19.17
Expense for meetings, including travel expense	76.23
Mimeographing and stenographic help	73.00
Postage	62.00
Printing, including forms, etc.	88.20
Other office supplies	19.65
Refunds and exchange charges	25.10
National Council, membership dues, two years	50.00
Salary of secretary, two years	320.00
For purchase of war bonds	1,000.00
Total expenditures	$1,733.35

The Nevada board is a member of the National Council of State Boards of Engineering Registration and was last year commended in the publication of the council for being one of the boards with the smallest registration which had supported the council by the prompt payment of the yearly membership dues.

Although the payment will appear in the financial statement for the next biennium, the board has authorized the secretary to send a contribution in the sum of fifteen dollars toward the support of the activities of the Engineering Council for Professional Development, an organization whose main purpose is to promote and maintain high standards in the engineering profession.

The board has recently adopted a plan for classifying registered engineers at the time of registration into the specific fields of engineering in which they are proficient and in which they expect to practice. The certificates will state the fields in which they are licensed to practice. This will include the professional fields of civil, mining, metallurgical, electrical, mechanical, highway, land surveying, and architectural engineering.

Reciprocal relations are maintained with other States having similar registration laws to those in Nevada. It is the desire of the Registration Board that the standards of the engineering profession in Nevada be placed and maintained on a high professional level. It is indicated

by letters received from the membership that most of our engineers are interested in seeing that this is done.

The secretary is now preparing a list of all of the Registered Professional Engineers in Nevada as of June 30, 1944, with their latest business connections and addresses. The list will be printed in booklet form and distributed to all of the members and to firms throughout the country. It will constitute a fine reference list for the use of our engineers.

CHAPTER XIII

Status of Applications Filed During the Period from July 1, 1942, to June 30, 1944

Following is a condensed statement giving the salient data in connection with applications filed during the period from July 1, 1942, to June 30, 1944, in the order of:

1. Application serial number.
2. Date of filing.
3. Name of applicant.
4. Source of water supply.
5. Purpose of appropriation.
6. Action on application.
7. Status of permits as of June 30, 1944.

10845.... 7- 9-42....Bert Avera, Klen Jensen and Frank Allen; Cave Spring; Stockwatering.* No action.

10846.... 7-17-42....Iris O. Burk; Sink Hole Spring; Irrigation and domestic; Approved August 7, 1943, for 0.15 c.f.s. G. S.

10847.... 7-20-42....Matilda R. Russell; Underground source in the Las Vegas Artesian Basin; Irrigation and domestic; Approved January 6, 1943, for 0.20 c.f.s. G. S.

10848.... 7-24-42....Peggie Jean Kaltenborn and Jerome David Mack; Underground source; Quasi-municipal; Approved April 26, 1943, for 0.50 c.f.s. G. S.

10849.... 7-29-42....Angelo DeBernardi; New Spring; Irrigation and domestic; No action.

10850.... 7-30-42....Basic Magnesium, Incorporated; (Assigned on October 20, 1942, by Basic Magnesium, Inc., to Defense Plant Corporation. Deed filed January 28, 1943); Underground source; Mining, milling and domestic; Approved February 1, 1943, for 2.0 c.f.s. G. S.

10851.... 7-31-42....R. J. Kelly; Underground source; Irrigation; Approved February 26, 1943, for 0.50 c.f.s. G. S.

10852.... 8-17-42....John Yelland; Chokecherry Spring; Irrigation;* No action.

10853.... 8-17-42....John Yelland; Chokecherry Spring; to change point of diversion and place of use of water formerly appropriated under Application No. 3793, Certificate No. 2377; Irrigation;* No action.

10854.... 8-17-42....Public Service Commission of Nevada (by Lee S. Scott, Secretary); Drilled Well; Domestic; Approved July 13, 1943, for one c.f.s. Certificate No. 2774 issued March 3, 1944, for 0.018 c.f.s. for domestic use.

10855.... 8-18-42....Henry McCleary; McCleary Well; Irrigation and domestic; Withdrawn by applicant April 26, 1943.

10856.... 8-21-42....B. & B. Quick Company; Trail Creek; to change manner of use and place of use of water heretofore appropriated under Certificate No. 561; Mining and domestic; Approved February 11, 1944, for 0.40 c.f.s. G. S.

10857.... 8-25-42....Twin Buttes Mining Syndicate; Wild Horse Spring; Mining and milling; Canceled June 2, 1943, because of failure to refile corrected application within statutory time.

10858.... 9-29-42....Southern Nevada Industries Ltd.; Underground Source; Industrial and domestic; Approved April 9, 1943, for one c.f.s. G. S.

10859.... 9- 4-42....Bartholomae Oil Corporation (Assigned November 19, 1944, by Bartholomae Oil Corp. to Bartholomae Corp. by means of Amendment to Articles of Inc.)* Approved April 9, 1943, for 0.0114 c.f.s. Certificate No. 2745 issued December 4, 1943, for 0.011 c.f.s.

10860.... 9- 5-42....Gabryel Pahor and W. W. Martin; Underground Source in the Las Vegas Artesian Basin; Domestic and quasi-municipal; Approved May 4, 1943, for 0.25 c.f.s. G. S.

10861.... 9- 5-42....Manganese Ore Company; Colorado River; to change point of diversion, Permit No. 10800; Mining, milling and domestic; Approved April 10, 1943, for 5.0 c.f.s. G. S.

10862.... 9-14-42....John H. Conaway; Balm of Gilead Spring; Stockwatering; Approved January 13, 1943, for 0.003 c.f.s.; Certificate No. 2680 issued June 29, 1943, for 0.003125 c.f.s.

10863.... 9-14-42....V. E. Greenwald; Larry's Seep; Stockwatering; Approved November 27, 1943, for 0.005 c.f.s. G. S.

10864.... 9-14-42....V. E. Greenwald; Monte Cristo Spring; Stockwatering; No action.

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*Protested application. G. S. Good standing.

10865.... 9-17-42....Donald Benton; Unnamed Seep in Ellsworth Wash; Mining and milling; Approved April 9, 1943, for one c.f.s. G. S.

10866.... 9-19-42....United Cattle & Packing Company, a Corporation; Deep Creek Canyon; Stockwatering and domestic;* No action.

10867.... 9-23-42....Las Vegas Land and Water Company; Underground Source (Las Vegas Valley Artesian Basin or Subterranean Channel); Municipal supply and domestic; Approved March 29, 1943, for 3.0 c.f.s. G. S.

10868.... 9-23-42....Las Vegas Land and Water Company; Underground, Las Vegas Valley Artesian Basin or Subterranean Channel; Municipal supply and domestic; Approved March 29, 1943, for 3.0 c.f.s. G. S.

10869.... 9-23-42....Las Vegas Land and Water Company; Underground, Las Vegas Valley Artesian Basin or Subteraneau Channel; Municipal supply and domestic; Approved March 29, 1943, for 3.0 c.f.s. G. S.

10870.... 9-23-42....Las Vegas Land and Water Company; Underground, Las Vegas Valley Artesian Basin or Subterranean Channel; Municipal supply and domestic; Approved March 29, 1943, for 3.0 c.f.s. G. S.

10871.... 9-25-42....Clarence Lauritzen, Leslie Lauritzen and Edwin Lauritzen; (Assigned 00173 June 14, 1923, by Ike Erickson to Hans Lauritzen, Edwin Lauritzen and Leslie Lauritzen. Deed filed April 20, 1943. Assigned 00173 by Hans Lauritzen, by J. R. McIntire, Treasurer, Lander County (Tax Sale) September 14, 1939, to Ed. and Clarence Lauritzen. Deed filed April 20, 1943. Assigned February 14, 1927, by H. J. Lauritzen, Leslie Lauritzen and Edwin Lauritzen to Licking Land & Livestock Company, a portion of their rights. Deed filed April 20, 1943. (This deed covers a right of way); Humboldt River; to change point of diversion. Proof No. 00173, Ike Erickson; Irrigation and domestic; Approved September 21, 1943, for 86.73 acre-feet. G. S.

10872.... 9-26-42....Salvador Urrutia; Black Springs; Irrigation and domestic; No action.

10873.... 9-28-42....Albert Romeo; High and Waste Waters of Steptoe Creek and Waste Water of Georgetown Ranch; Irrigation;* No action.

10874.... 9-30-42....Joe Eldridge; Foster Slough; Irrigation; Canceled June 2, 1943, because of failure to refile corrected application within statutory time.

10875....10- 5-42....Whitney Tax Payers Association; Underground Source in the Las Vegas Valley Artesian Basin; Domestic and quasi-municipal; Canceled January 12, 1943, because of failure to refile corrected application within statutory time.

10876....10- 6-42....Benjamin Brodsky; Underground flow; Agricultural and domestic; canceled June 2, 1943, because of failure to refile corrected application within statutory time.

10877....10- 8-42....A. A. and J. M. Daniels, known as Daniels Brothers; North Spring; Stockwatering;* No action.

10878....10- 8-42....A. A. and J. M. Daniels, known as Daniels Brothers; Coyotte Hole; Stockwatering;* No action.

10879....10- 8-42....A. A. and J. M. Daniels, known as Daniels Brothers; McFee Spring; Stockwatering;* No action.

10880....10- 8-42....A. A. and J. M. Daniels, known as Daniels Brothers; Unnamed Seeps; Stockwatering;* No action.

10881....10- 8-42....Western Metals Company; Underground source (8 inch well to be drilled); Construction for metal reduction plant; Canceled June 2, 1943, because of failure to refile corrected application within statutory time.

10882....10-13-42....Harry J. Haliday; Cottonwood Creek; Irrigation;* No action.

10883....10-13-42....Harry J. Haliday; Cottonwood Creek; Irrigation and domestic;* No action.

10884....10-13-42....R. C. Martin; Bob Martin Spring; Mining, milling and domestic;* No action.

10885....10-19-42....Vegas Village Inc.; Underground Source in Las Vegas Artesian Basin; Domestic and quasi-municipal; Approved April 9, 1943, for one c.f.s. G. S.

10886....10-21-42....Benjamin H. Smith; Cane Springs; Domestic, mining and milling; Approved October 20, 1943, for 3.0 c.f.s. G. S.

10887....10-26-42....David C. Bullock and Warren H. Bullock; Tunnel No. 1 Spring; Stockwatering; Canceled June 15, 1943, because of failure to file supporting map.

10888....10-26-42....David C. and Warren H. Bullock; Tunnel No. 3 Spring; Stockwatering; Canceled June 15, 1943, because of failure to file supporting map.

10889....10-26-42....Agnes Horn (widow of A. C. Horn); Tunnel No. 2 Spring, otherwise known as Nesbitt Spring; Stockwatering; Canceled July 20, 1943, because of failure to file supporting map.

10890....10-29-42....Leonard E. Billman; Underground Source; Quasi-municipal and domestic; Approved March 30, 1943, for 0.50 c.f.s. G. S.

10891....10-29-42....Leonard E. Billman; Underground Source; Quasi-municipal and domestic; Approved March 30, 1943, for 0.50 c.f.s. Withdrawn by applicant October 9, 1943.

10892....11- 2-42....G. W. Rogers; Nigger Creek; Irrigation and domestic;* No action.

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*Protested application. G. S. Good standing.

10893....11-12-42....E. R. Van Horn; Underground Source; Irrigation and domestic; No action.

10894....11-17-42....Henry Wick; Underground Source in Las Vegas Valley Artesian Basin; Domestic and Irrigation; Approved February 25, 1943, for one c.f.s. G. S.

10895....12- 3-42....Iris O. Burk; Point of Rocks Springs; Irrigation; Canceled January 26, 1943, because check in payment of filing fees was returned by bank marked "Account Closed."

10896....12- 3-42....John H. Conaway, one-half, P. W. Duffin, Mamie R. Duffin, Thomas J. Duffin, Press W. Duffin, Jr., one-half; Jumbo Spring, old Proof No. 01520; Stockwatering; Canceled September 28, 1943, because of failure to refile corrected application within statutory time.

10897....12- 3-42....John H. Conaway, one-half, P. W. Duffin, Mamie R. Duffin, Thomas J. Duffin, Press W. Duffin, Jr., one-half; Bishop Spring; Stockwatering; Approved June 22, 1943, for 0.016 c.f.s. Certificate No. 2770 issued February 25, 1944, for 0.016 c.f.s.

10898....12-12-42....Town of Hawthorne; Underground Water; Municipal and domestic uses for Town of Hawthorne; Approved June 14, 1943, for 1.5 c.f.s. Certificate No. 2719 issued August 20, 1943, for 1.5 c.f.s.

10899....12-15-42....John H. Conaway; Applewhite Wash; Stockwatering; Approved April 9, 1943; for 0.0094 c.f.s. Certificate No. 2689 issued June 29, 1943, for 0.0094 c.f.s.

10900....12-16-42....F. W. Eccles; Warm Spring; Stockwatering and domestic; Approved April 12, 1943, for 0.0163 c.f.s. G. S.

10901....12-16-42....Basic Magnesium, Incorporated, acting for and on behalf of Defense Plant Corporation; Underground water; Mining, milling and domestic; Approved July 20, 1943, for 0.78 c.f.s. G. S.

10902....12-17-42....E. A. Henriod; Wenzel Spring; Stockwatering and domestic;* No action.

10903....12-17-42....R. B. Stewart; Summit Spring; Stockwatering; Approved January 17, 1944, for 0.044 c.f.s. G. S.

10904....12-24-42....Bartholomae Oil Corporation, a corporation; (Assigned November 19, 1943, by Bartholomae Oil Corporation to Bartholomae Corp. by means of Amendment to Articles of Incorp.) A Well to be known as Antelope Well No. 2; Stockwatering and domestic; Approved August 7, 1943, for 0.011 c.f.s. Certificate No. 2746 issued December 4, 1943, for 0.011 c.f.s.

10905....12-24-42....Bartholomae Oil Corporation, a corporation; (Assigned November 19, 1943, by Bartholomae Oil Corporation to Bartholomae Corp. by means of Amendment to Articles of Incorp.) A Well, to be known as Antelope Well No. 3; Stockwatering and domestic. No action.

10906....12-24-42....Bartholomae Oil Corporation, a corporation; (Assigned November 19, 1943 by Bartholomae Oil Corporation to Bartholomae Corp. by means of Amendment to Articles of Incorp.) A Well to be known as Fish Creek Well No. 2; Stockwatering and domestic; Approved June 8, 1943, for 0.011 c.f.s. Certificate No. 2747 issued December 4, 1943, for 0.011 c.f.s.

10907....12-24-42....Bartholomae Oil Corporation, a corporation; (Assigned November 19, 1943 by Bartholomae Oil Corporation to Bartholomae Corp. by means of Amendment to Articles of Incorp.) A Well to be known as Fish Creek Well No. 3; Stockwatering and domestic; Approved June 8, 1943, for 0.011 c.f.s. G. S.

10908....12-24-42....Bartholomae Oil Corporation, a corporation; (Assigned November 19, 1943 by Bartholomae Oil Corporation to Bartholomae Corp. by means of Amendment to Articles of Incorp.) A Well to be known as Fish Creek Well No. 4; Stockwatering and domestic; Approved June 8, 1943, for 0.011 c.f.s. Certificate No. 2761 issued January 25, 1944, for 0.011 c.f.s.

10909....12-30-42....L. J. Fee, Annie D. Billups and Everett Gallap; Snow Creek; Storage for irrigation; Approved January 10, 1944, for 500 acre-feet per annum. G. S.

10910.... 1- 2-43....Jeff Hunt and F. M. Frandsen; Gold Creek Spring; Irrigation and domestic; Approved August 23, 1943, for 15,200 acre-feet per annum. G. S.

10911.... 1- 4-43....S. H. Manor; Rock Hill Spring, sometimes called Rock Spring; Stockwatering; Canceled July 14, 1943, because map and amended application do not agree, statutory time for correction having expired.

10912.... 1- 4-43....S. H. Manor; Holland Spring, sometimes called Matt Holland Spring; Stockwatering; Canceled July 14, 1943, because map and amended application do not agree, statutory time for correction having expired.

10913.... 1- 9-43....George Eldridge; Kalamazoo Creek; Irrigation and domestic. No action.

10914.... 1- 9-43....George Eldridge; Muncy Creek; Irrigation and domestic;* No action.

10915.... 1-15-43....R. H. Matlack; Gap Spring; Stockwatering and domestic; Canceled September 29, 1943, because of failure to refile corrected application within statutory time.

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*Protested application. G. S. Good standing.

10916.... 1-15-43....R. H. Matlack; Rock Hill Spring; Stockwatering and domestic; Canceled September 29, 1943, because of failure to refile corrected application within statutory time.

10917.... 1-21-43....P. J. Goumond; Underground, Las Vegas Valley Artesian Water Supply; Irrigation and domestic; Approved June 19, 1944, for one c.f.s. G. S.

10918.... 2- 1-43....T. O. McKinnon; Tule Spring; Domestic and irrigation of gardens; Approved October 23, 1943, for 0.40 c.f.s. G. S.

10919.... 2- 3-43....Kenneth G. Speirs and Christine Speirs; Underground, Las Vegas Valley Artesian Basin; Irrigation and domestic; Appoved December 16, 1943, for 0.20 c.f.s. G. S.

10920.... 2- 3-43....George Eldridge; Mike Spring; Irrigation and domestic; Approved January 17, 1944, for 0.40 c.f.s. G. S.

10921.... 2- 3-43....George Eldridge; South Millick Spring; Irrigation and domestic; Approved January 17, 1944, for 1.0 c.f.s. G. S.

10922.... 2-15-43....John H. Conaway; Rock Spring; Stockwatering; Approved May 22, 1943, for 0.0063 c.f.s. Certificate No. 2712 issued August 20, 1943, for 0.00625 c.f.s.

10923.... 2-15-43....John H. Conaway; Mud Spring; Stockwatering; Approved May 22, 1943, for 0.002 c.f.s. Certificate No. 2713 issued August 20, 1943, for 0.00156 c.f.s.

10924.... 2-15-43....John H. Conaway; Conaway Spring; Stockwatering; Approved May 22, 1943, for 0.0025 c.f.s. Certificate No. 2714 issued August 20, 1943, for 0.0025 c.f.s.

10925.... 2-15-43....W. M. Pettit; Bunch Canyon Spring; Irrigation and domestic; Approved June 2, 1943, for 0.43 c.f.s. G. S.

10926.... 2-18-43....T. F. Brennen Land & Livestock Company, Inc.; Cottonwood Canyon; to change Point of diversion and place of use of water claimed under Proofs of Appropriation Serial Nos. 00353 and 00660, Humboldt River Decree; Irrigation; Approved December 22, 1943, for 0.634 c.f.s. or 154.44 acre-feet per season. G. S.

10927.... 2-19-43....City of Las Vegas, a Municipal Corporation; (Proposed New Las Vegas Sewage Disposal Plant); Irrigation; Canceled September 28, 1943, because of failure to refile corrected application within statutory time.

10928.... 2-20-43....Iris O. Burk; Point of Rocks Springs; Irrigation;* Approved January 20, 1944, for 0.30 c.f.s. G. S.

10929.... 2-24-43....William H. Flesher and Herbert D. Flesher; Ash Creek; Stockwatering and domestic; Canceled September 28, 1943, for failure to refile corrected application within statutory time.

10930.... 3-10-43....Jack F. Haake and Frankie Haake; Las Vegas Valley Artesian Basin; Irrigation and domestic; Approved December 16, 1943, for 0.40 c.f.s. G. S.

10931.... 3-17-43....P. J. Goumond; Underground, Las Vegas Valley Artesian Supply; Irrigation and domestic. Withdrawn February 29, 1944, by applicant.

10932.... 3-22-43....Don C. Crawford; Crawford Creek and Tributaries (arising on Mt. Glencoe); Irrigation and domestic; Canceled September 28, 1943, because of failure to refile corrected application within statutory time.

10933.... 3-22-43....Angelo C. Florio; Lone Wolf Spring; Stockwatering and domestic; Canceled September 28, 1943, because of failure to refile corrected application within statutory time.

10934.... 3-22-43....Angelo C. Florio; Underground source (Midway Well); Stockwatering and domestic; Canceled September 28, 1943, because of failure to refile corrected application within statutory time.

10935.... 3-22-43....Angelo C. Florio; Milligan Spring; Stockwatering and domestic; Canceled September 28, 1943, because of failure to refile corrected application within statutory time.

10936.... 3-22-43....Angelo C. Florio; Undeground Source (McArthur Well); Stockwatering and domestic; Canceled September 28, 1943, because of failure to refile corrected application within statutory time.

10937.... 3-22-43....Angelo C. Florio; Underground source (Grant View Well); Stockwatering and domestic; Canceled September 28, 1943, because of failure to refile corrected application within statutory time.

10938.... 3-29-43....Petan Land & Cattle Company; Flood water from melting snow and rain; Stockwatering; Approved August 13, 1943, for 10 acre-feet per annum. G. S.

10939.... 3-30-43....Alex Dururrena; (Assigned January 4, 1944 by Alex Dufferena to A. E. Hall, A. F. Giddings, L. H. Davey, Wilbur H. Haines, and O. Jack Boucher, filed May 19, 1944.) Thousand Creek; Irrigation; Approved October 20, 1943, for 4.469 c.f.s.

10940.... 4- 5-43....Elda A., John T. and William Orr Gilcrease; Underground Source, Las Vegas Valley Artesian Basin; Irrigation and domestic; Approved March 1, 1944, for 5.0 c.f.s. G. S.

10941.... 4- 5-43....Cyril Holaday; Cresent Valley Wash; Stockwatering;* No action.

10942.... 4- 6-43....Theodore Michelas; Underground Source through an artesian well in the Las Vegas Artesian Basin; Quasi-municipal; Approved November 22, 1943, for 2.0 c.f.s. G. S.

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*Protested application. G. S. Good standing.

10943.... 4– 8–43....United Strategic Metals Company; Dry Gulch; Milling and domestic; Approved September 29, 1943, for 0.5 c.f.s. G. S.
10944.... 4– 9–43....Sandstone Land and Cattle Company, Inc.; Cabin Springs No. 1; Stockwatering; Approved July 22, 1943, for 0.004 c.f.s. G. S.
10945.... 4– 9–43....Sandstone Land and Cattle Company, Inc.; Cabin Spring No. 2; Stockwatering; Approved July 22, 1943, for 0.004 c.f.s. G. S.
10946.... 4– 9–43....Sandstone Land and Cattle Company, Inc.; Diamond Spring; Stockwatering; Approved July 22, 1943, for 0.002 c.f.s. G. S.
10947.... 4– 9–43....Sandstone Land and Cattle Company, Inc.; Hampton Spring; Stockwatering; Approved November 3, 1943, for 0.006 c.f.s. G. S.
10948.... 4– 9–43....John Bunch, Leffel Netherton and Leo Thurman; Underground, Las Vegas Valley Artesian Basin; Quasi-municipal and domestic; Approved September 23, 1943, for 0.50 c.f.s. G. S.
10949.... 4– 9–43....John Bunch, Leffel Netherton and Leo Thurman; Underground, Las Vegas Valley Artesian Basin; Quasi-municipal and domestic; Approved September 24, 1943, for 0.50 c.f.s. G. S.
10950.... 4–24–43....Ray Thomas; Pahrump Valley Artesian District; Irrigation; Approved September 14, 1943, for 12.0 c.f.s. Superseded by Application No. 10999 to change place of use.
10951.... 4–28–43....Vera K., Merrill O., Lydell V. Clement and Lee Wait; Underground, Las Vegas Valley Artesian Basin; Irrigation and domestic;* Approved October 9, 1943, for 0.045 c.f.s. G. S.
10952.... 4–28–43....James A. Griffin and M. C. Oglesby; Las Vegas Valley Artesian Basin; Irrigation and domestic; Approved July 22, 1943, for 0.2 c.f.s. G. S.
10953.... 4–28–43....Jake Ensley, Boyie Ensley, Ina Marie Ensley and Donnie Ensley; Las Vegas Valley Artesian Basin; Quasi-municipal. No action.
10954.... 5–10–43....Joe Pieretti, Frank Guirlani and Pete Bianucci; Unnamed Spring; Domestic; Approved December 16, 1943, for 0.0223 c.f.s. G. S.
10955.... 5–10–43....United Cattle & Packing Company, a corporation; Deep Canyon; Irrigation and domestic;* No action.
10956.... 5–15–43....H. R. Fisher and W. L. Petersen; Pony Canyon and Tributaries; Mining, milling and domestic; Approved January 31, 1944, for 1.0 c.f.s. G. S.
10957.... 5–21–43....F. W. and Edna Brush; Cottonwood Creek; to change point of diversion of water claimed under Proof of Appropriation No. 0660, Little Humbodlt River Decree; Irrigation; Approved April 11, 1944, for 0.7340 c.f.s. G. S.
10958.... 5–27–43....Leonard W. Noblitt and Mary Noblitt; Las Vegas Valley Artesian Basin; Irrigation and domestic; Approved September 30, 1943, for 0.25 c.f.s. G. S.
10959.... 6– 3–43....The United States of America, Department of the Interior, National Park Service, by Robt. H. Rose, Acting Coordinating Superintendent, Boulder Dam National Recreational Area; to change point of diversion, method of conveyance, place, and manner of use of water claimed in Proof of Appropriation No. 01065 under decreed rights to Cave Spring, Baker and Lehman Creeks Adjudication; Cave Springs and a nameless spring hereafter designated as South Spring; Domestic and recreational. No action.
10960.... 6– 5–43....Estella C. Beam; Las Vegas Valley Artesian Basin; Quasi-municipal; Approved February 11, 1944, for 1.0 c.f.s. G. S.
10961.... 6– 5–43....A. G. Klinger; Las Vegas Valley Artesian Basin; Irrigation and domestic; Approved November 3, 1943, for 1.60 c.f.s. G. S.
10962.... 6–11–43....Douglas County; Underground Source; Airport and domestic; Approved April 7, 1944, for 0.25 c.f.s. G. S.
10963.... 6–17–43....John Uhalde; Put Back Spring No. 2; Stockwatering.* No action.
10964.... 6–26–43....Jafet Lindeberg; Telephone Canyon Spring; Milling and domestic supply; Approved December 16, 1943, for 0.5 c.f.s. G. S.
10965— 6–29–43....C. W. Sears; A drainage ditch; Mining (washing sand and gravel); Canceled February 2, 1944, because of failure to refile corrected application within statutory time.
10966.... 7– 3–43....Fowler Reeves Corporation, by E. D. Foster, President; Underground water in a well; Milling and domestic; Approved December 18, 1943, for 0.25 c.f.s. G. S.
10967.... 7– 3–43....James Hunter; Simpson No. 2 Spring; Stockwatering; Approved January 24, 1944, for 0.0063 c.f.s. G. S.
10968.... 7– 3–43....Los Angeles & Salt Lake Railroad Company; Underground Source; Railroad and domestic. No action.
10969.... 7– 9–43....Lawrence Henz and Marguerite Henz; Underground, Las Vegas Valley Artesian Basin; Irrigation and domestic. No action.
10970.... 7–17–43....James W. and Mae Cook; Underground, Las Vegas Valley Artesian Basin; Irrigation and domestic; Approved December 27, 1943, for 0.01 c.f.s. G. S.
10971.... 7–21–43....Leonard E. Billman; Underground, Las Vegas Valley Artesian Basin; Quasi-municipal and domestic; Approved November 13, 1943, for 0.50 c.f.s. G. S.
10972.... 7–28–43....Clay Hughes Tipton; Summit Creek; Irrigation and domestic. Approved June 5, 1944, for 0.40 c.f.s. G. S.

*Protested application. G. S. Good standing.

10973.... 8- 4-43....Dan Stewart and Cornell Stewart; Stewart Well; Stockwatering and domestic;* No action.
10974.... 8- 4-43....Paul Stewart, Cornell Stewart and Dan Stewart; Wild Horse Spring; Stockwatering and domestic; Approved November 5, 1943, for 0.0094 c.f.s. G. S.
10975.... 8- 7-43....S. H. Manor; Holland Spring; Stockwatering; Approved December 27, 1943, for 0.0035 c.f.s. G. S.
10976.... 8- 7-43....S. H. Manor; Rock Hill Spring; Stockwatering;* No action.
10977.... 8- 9-43....Benjamin Brodsky; Underground Flow; Agricultural and domestic; Approved January 17, 1944, for 1.0 c.f.s. G. S.
10978.... 8-11-43....Rosegold Placer, Inc., a Nevada Corporation; Underground Water; Placer mining and domestic; Withdrawn by applicant January 7, 1944.
10979.... 8-14-43....George S. Reed; Little Humboldt River; Generating electric power; Approved January 31, 1944, for 6.0 c.f.s. G. S.
10980.... 8-16-43....Bunkerville Water Company; Seep Springs; Quasi-municipal and domestic; Approved April 1, 1944, for 1.0 c.f.s. G. S.
10981.... 8-16-43....Bunkerville Water Company; Dud's Spring; Quasi-municipal and domestic; Approved April 1, 1944, for 1.0 c.f.s. G. S.
10982.... 8-16-43....Martin Magnuson; Steptoe Slough; Irrigation.* No action.
10983.... 8-16-43....Melvin Schwake; Carey Creek; to change point of diversion and place of use, vested right; Irrigation and stockwatering; Approved June 5, 1944, for 0.37 c.f.s. G. S.
10984.... 8-18-43....Hugh K. Snudden; Underground, Las Vegas Valley Artesian; Quasi-municipal and domestic; No action.
10985.... 8-18-43....Jack Moore and C. E. Bell; Underground, Las Vegas Valley Artesian Basin; Irrigation and domestic; Approved December 16, 1943, for 0.40 c.f.s. G. S.
10986.... 8-20-43....Lawrence G. McNeil; Underground, Las Vegas Valley Artesian Basin; Quasi-municipal and domestic; Approved December 6, 1943, for 0.4 c.f.s. G. S.
10987.... 8-20-43....Lawrence G. McNeil; Underground, Las Vegas Valley Artesian Basin; Irrigation and domestic; Approved December 6, 1943, for 2.4 c.f.s. G. S.
10988.... 8-20-43....Lawrence G. McNeil; Underground, Las Vegas Valley Artesian Basin; Quasi-municipal and domestic; Approved December 6, 1943, for 0.5 c.f.s. G. S.
10989.... 8-26-43....Joe Gruden, Snake Creek; Placer mining; Approved January 17, 1944, for 5.0 c.f.. G. S.
10990.... 8-26-43....Thomas W. Allen and Dave Campbell; Underground, Las Vegas Valley Artesian Basin; Irrigation and domestic; Approved December 16, 1943, for 0.10 c.f.s. G. S.
10991.... 8-26-43....P. J. Goumond; Underground, Las Vegas Valley Artesian Basin; Irrigation and domestic; Approved February 11, 1944, for 1.0 c.f.s. G. S.
10992.... 8-30-43....Mrs. P. H. Devlin; Underground Source; Irrigation; Approved June 7, 1944, for 0.90 c.f.s. G. S.
10993.... 9- 1-43....George Eldridge; North Millick Spring; Irrigation. No action.
10994.... 9- 2-43....Marion E. Yelland; Taft Creek and Tributaries; Irrigation. No action.
10995.... 9- 7-43....Hi-T-Tungsten Company; Summerfield Spring (sometimes known as Graham Springs); Milling and domestic. No action.
10996.... 9-11-43....Wm. M. Metzer; Underground, Las Vegas Artesian Basin; Irrigation and domestic; Approved December 23, 1943, for 0.05 c.f s. G. S.
10997.... 9-13-43....Defense Tungsten Mines, Inc.; Cold Springs; Mining and domestic;* No action.
10998.... 9-18-43....Ray Thomas; Pahrump Valley Artesian Basin; Irrigation; Approved December 22, 1943, for 12.0 c.f.s. G. S.
10999.... 9-18-43....Ray Thomas; Underground, Pahrump Valley Artesian Basin; to change the place of use, Permit No. 10950; Irrigation; Approved January 31, 1944, for 12 c.f.s. G. S.
11000.... 9-20-43....J. R. Murphy, D. B. Murphy, A. M. Phippen and R. L. Pollock; Monte Cristo Spring; Milling and domestic. No action.
11001.... 9-21-43....J. P. Cayton; Underground source; Irrigation and domestic; Approved April 27, 1944, for 1.2 c.f.s. G. S.
11002.... 9-21-43....J. H. Greenwood; (Assigned on April 5, 1944, by J. H. Greenwood to Water Company of Tonopah. Deed filed April 7, 1944); Underground water: domestic and military camp use; Approved April 21, 1944, for 1.2 c.f.s. G. S.
11003.... 9-21-43....J. H. Greenwood; (Assigned on April 5, 1944, by J. H. Greenwood to Water Company of Tonopah. Deed filed April 7, 1944); Underground water: domestic and military camp use; Approved April 21, 1944, for 1.2 c.f.s. G. S.
11004.... 9-23-43....Angelo C. Florio; Underground source (Grand View Well); Stockwatering and domestic No action.
11005.... 9-23-43....Angelo C. Florio; Lone Wolf Spring; Stockwatering and domestic; Canceled February 1, 1944, for failure to resubmit amended application and supporting map within statutory time.
11006.... 9-23-43....Angelo C. Florio; Underground souree (Midway Well); Stockwatering and domestic; Canceled February 1, 1944, for failure to resubmit amended application and supporting map within statutory time.

*Protested application. G. S. Good standing.

11007.... 9-23-43....Angelo C. Florio; Milligan Spring; Stockwatering and domestic; Canceled February 1, 1944, for failure to resubmit amended application and supporting map within statutory time.
11008.... 9-23-43....Angelo C. Florio; Underground source (General McArthur Well); Stockwatering and domestic. No action.
11009.... 9-24-43....Joseph L. Raffetto; Truckee River; to change point of diversion and place of use, vested right; Irrigation and domestic; Approved May 1, 1944, for 402 acre-feet per year. G. S.
11010.... 9-24-43....Joseph L. Raffetto; Truckee River; to change point of diversion and place of use, vested right; Irrigation and domestic; Approved May 1, 1944, for 129 acre-feet per year. G. S.
11011.... 9-24-43....Joeph L. Raffetto; Truckee River; to change point of diversion and place of use, vested right; Irrigation and domestic; Canceled February 11, 1944, because of failure to refile corrected application within the statutory time.
11012.... 9-24-43....Joseph L. Raffetto; Truckee River; to change point of diversion and place of use, vested right; Irrigation and domestic; Approved May 1, 1944, for 59 acre-feet per year. G. S.
11013.... 9-24-43....Joseph L. Raffetto; Truckee River; to change point of diversion and place of use, vested right; Irrigation and domestic; Canceled February 11, 1944, because of failure to refile corrected application within the statutory time.
11014.... 9-24-43....Joseph L. Raffetto; Truckee River; to change point of diversion and place of use, vested right; Irrigation and domestic; Approved May 1, 1944, for 7 acre-feet per year. G. S.
11015.... 9-24-43....Joseph L. Raffetto; Truckee River; to change point of diversion and place of use, vested right; Irrigation and domestic; Approved May 1, 1944, for 240 acre-feet per year. G. S.
11016.... 9-30-43....Alma Woods; Alma Woods Well No. 2 (underground); Stockwatering. No action.
11017....10- 1-43....Robert Landsborough; a Well; Irrigation and domestic. No action.
11018....10- 4-43....John D. Assuras; Steptoe Slough; Irrigation and stockwatering; Canceled February 2, 1944, because of failure to refile corrected application within the statutory time
11019....10- 7-43....M. G. L. Mining Corporation; a Well; Milling Tungsten Ores and domestic. No action.
11020....10- 9-43....George I. Williams; Troy Canyon Creek; Stockwatering and domestic.* No action.
11021....10-14-43....Don C. Crawford; Crawford Creek and Tributaries (arising on Mt. Glencoe); Irrigation and domestic. No action.
11022....10-29-43....George Eldridge; Morman Jack Well (underground water); Stockwatering. No action.
11023....10-29-43....R. H. Matlack and D. E. Culbertson; Rock Hill Spring; Stockwatering and domestic.* No action.
11024....10-29-43....Elda A. Gilcrease, John T. Gilcrease and William Orr Gilcrease; Underground source; Irrigation and domestic No action.
11025....10-29-43....Walter C. Muller; an Artesian Well; Irrigation and domestic; Approved April 5, 1944, for 2.8 c.f.s. G. S.
11026....11- 2-43....Victoria Lease Mine, International Smelting and Refining Company; Mine water from the underground workings of the Victoria Lease Mine; Mining, milling and domestic; Approved February 11, 1944, for 2.0 c.f.s. G. S.
11027....11- 4-43....Wm. E. Rinehart; Cherry Gulch Spring; Stockwatering.* No action.
11028....11- 8-43....Julius Redelius and J. Benjamin Parker; South Mitchell Springs; Mining, milling and domestic. No action.
11029....11-29-43....B. H. Robison; Bassett Creek; Irrigation.* No action.
11030....11-29-43....A. G. McBride; Rye Grass Well; to correct description of point of diversion, manner and place of use, Permit No. 9922, subject of Certificate No. 2297; Stockwatering. No action.
11031....12- 2-43....Wm. A. Bartholomae, Jr.; Bartholomae Well No. 1; Irrigation and domestic; Approved June 20, 1944, for 0.91 c.f.s. G. S.
11032....12- 2-43....Amalgamated Pioche Mines and Smelters Corporation; Underground water; Municipal supply, domestic and industrial; Approved May 25, 1944, for 1.0 c.f.s. G. S.
11033....12- 3-43....Juanita W. Bleak and Cassey L. Wheeler; Dead Man Spring; Stockwatering and domestic. No action.
11034....12- 3-43....Molybdenum Products Company; Underground water. Battle Creek Mining District; Mining, crushing, processing, and domestic. No action.
11035....12- 6-43....Joe Eldridge; .Partridge Spring; Stockwatering. No action.
11036....12- 6-43....Joe Eldridge; Castle Rock Spring; Stockwatering. No action.
10037....12-10-43....Fallini Brothers (E. W., Joe B., and R. A. Fallini); Twin Springs Wash; Stockwatering.* No action.
11038....12-13-43....Geo. A. Fink; Artesian Flow; Irrigation. No action.
11039....12-15-43....Hotels El Rancho, Inc., a Corporation; Underground, Las Vegas Valley Artesian Basin; General hotel supply and domestic. No action.
11040....12-20-43....R. J. Bradshaw; Robber Roost Spring; Stockwatering and domestic; Approved June 27, 1944, for 0.0036 c.f.s. G. S.
11041....12-27-43....Fred S. Talcott and Fern L. Talcott; Buena Vista Creek; Stockwatering. No action.
11042....12-29-43....Young Brothers, by Theodore K. Young; Hamlin Valley Wash; Irrigation and domestic. No action.

*Protested application. G. S. Good standing.

11043....12-30-43....E. A. Clark; Underground; Las Vegas Valley Artesian Basin; Milling and domestic. No action.
11044.... 1- 5-44....W. H. Flesher; Ash Creek; Stockwatering and domestic;* Withdrawn by applicant June 17, 1944.
11045— 1- 6-44....Roland H. Wiley; Underground source; Irrigation and domestic. No action.
11046.... 1-10-44....Max Hafen, John Jensen and Leo Hardy; Hen Springs; Stockwatering. No action.
11047.... 1-11-44....John Uhalde; Garden Valley Well; Stockwatering. No action.
11048.... 1-11-44....John Uhalde; Freiburg Well; Stockwatering. No action.
11049.... 1-12-44....Fallini Brothers (E. W., Joe B., and R. A. Fallini); Ed's Well; Stockwatering.* No action.
11050.... 1-14-44....Department of Highways; Underground source; General domestic. No action.
11051.... 1-19-44....Joe S. Ronnow; Underground, Las Vegas Valley Artesian Basin; Irrigation and domestic. No action.
11052.... 1-20-44....Fallini Brothers (E. W., Joe B., and R. A. Fallini), and Constant Vener; Fallini Well; Stockwatering. No action.
11053.... 1-24-44....Albert L. and Verena M. Hermanjat; Underground, Las Vegas Valley Artesian Basin; Irrigation and domestic. No action.
11054.... 1-24-44....Henry Wick; Underground, Las Vegas Valley Artesian Basin; Irrigation and domestic; Approved June 19, 1944 for 1.0 c.f.s. G. S.
11055.... 1-24-44....Dan, Cornell and Paul Stewart; Wuinn Canyon Dry Wash; Stockwatering. No action.
11056.... 1-24-44....Dan, Cornell and Paul Stewart; Barton Dry Creek and Tributaries; Stockwatering.* No action.
11057.... 1-24-44....Dan, Cornell, Wilson Stewart and Vernon Bunker; Well No. 1; Stockwatering and domestic.* No action.
11058.... 1-24-44....Dan, Cornell, Wilson Stewart and Vernon Bunker; Well No. 2; Stockwatering and domestic. No action.
11059.... 1-24-44....Dan, Cornell, Wilson, Paul Stewart and Vernon Bunker; Well No. 3; Stockwatering and domestic.* No action.
11060.... 1-29-44....Less Lytle; Underground (Lytle Well); Irrigation. No action.
11061.... 2- 1-44....Fallini Brothers (E. W., Joe B., and R. A. Fallini); Fred's Well; Stockwatering. No action.
11062.... 2- 1-44....Fallini Brothers (E. W., Joe B., and R. A. Fallini); and Constant Vener; Black Rock Spring; to change place of use Serial No. 01936, vested right; Stockwatering. No action.
11063.... 2- 3-44....Jean A. Prentiss; (Assigned on March 25, 1944, by Jean A. Prentiss, formerly Jean A. Simonich, and Charles Prentiss, her husband, to Alice Maier); Deed filed April 18, 1944; Tony Creek; Irrigation and domestic. No action.
11064.... 2-10-44....Bartholomae Corporation; Antelope Well No. 7; Irrigation and domestic; Approved June 13, 1944 for 1.17 c.f.s. G. S.
11065.... 2-10-44....Bartholomae Corporation; Antelope Well No. 8; Irrigation and domestic; Approved June 13, 1944 for 0.92 c.f.s. G. S.
11066.... 2-14-44....Albert Hooper; Underground source; Stockwatering; Approved June 27, 1944, for 0.0032 c.f.s. G. S.
11067.... 2-14-44....Erwin Burns and Ernest P. Higbee; Hancock Reservoir in Dry Channel and Tributaries; Stockwatering. No action.
11068.... 2-16-44....J. R. Kelly and V. E. Greenwald; Unnamed Spring; Stockwatering. No action.
11069.... 2-16-44....J. R. Kelly and V. E. Greenwald; Mud Spring; Stockwatering. No action.
11070.... 2-16-44....J. R. Kelly and V. E. Greenwald; Curry's Well; Stockwatering; Withdrawn by applicants February 28, 1944.
11071.... 2-16-44....J. R. Kelly and V. E. Greenwald; Gold Bar Spring; Stockwatering. No action.
11072.... 2-25-44....Fred Bartine; Bartine Well No. 2 and Bartine Well No. 3; Irrigation and domestic; Approved June 5, 1944, for 2.50 c.f.s. G. S.
11073.... 2-25-44....Bartholomae Corporation; Antelope Well No. 9; Stockwatering and domestic; Approved June 13, 1944, for 0.25 c.f.s. G. S.
11074.... 2-26-44....The Utah Construction Company, a Corporation; Johnson Spring and Creek; to change point of diversion, manner and place of use, portion of Application No. 2210, Certificate No. 440; Culinary and domestic (for water supply of Wendover Army Air Base, Wendover, Utah); Approved June 7, 1944, for 2.0 c.f.s for culinary and domestic uses. G.S.
11075.... 3- 2-44....Department of Highways; Illipah Spring; General Domestic.* No action.
11076.... 3- 4-44....Leland Hendrix; White River Slough; Irrigating, pasture and domestic. No action.
11077.... 3- 6-44....Robert B. Griffith; Underground Las Vegas Valley Artesian Basin; Irrigation and domestic.* No action.
11078.... 3- 6-44....Ernest H. Gubler; White River Slough; Irrigation and domestic. No action.
11079.... 3- 6-44....Getchell Mine, Inc.; Name unknown; Milling. No action.
11080.... 3- 6-44....Howard B. Hoover; Underground Las Vegas Artesian Basin; Irrigation and domestic. No action.
11081.... 3- 9-44....R. J Kelly and V. E. Greenwald; Underground flow called Well No. 1; Stockwatering. No action.
11082.... 3- 9-44....R. J. Kelly and V. E. Greenwald; Underground flow to be known as Well No. 2; Stockwatering. No action.

*Protested application. G. S. Good standing.

11083.... 3- 9-44....R. J. Kelly and V. E. Greenwald; Underground flow to be known as Well No. 3; Stockwatering. No action.
11084.... 3- 9-44....E. M. Booth; Underground source; Mining and domestic; Approved June 27, 1944 for 0.5 c.f.s. G. S.
11085.... 3-10-44....Harvey N. Beddo; Miller or Spring Creek; Irrigation. No action.
11086.... 3-15-44....Fred S. and Fern L. Talcott; Buena Vista or Unionville Creek; Irrigation. No action.
11087.... 3-15-44....Edward E. Burk; Natural Spring; Irrigation and stockwatering. No action.
11088.... 3-17-44....R. J. Kelly and V. E. Greenwald; Lower Indian Spring; Stockwatering. No action.
11089.... 3-17-44....R. J. Kelly and V. E. Greenwald; Ben Grant Spring; Stockwatering. No action.
11090.... 3-17-44....R. J. Kelly and V. E. Greenwald; Speci Spring; Stockwatering. No action.
11091.... 3-22-44....A. L. Stoner and J. H. Meyers; An Underground source in the Las Vegas Artesian Basin; Irrigation and domestic by J. H. Meyers. No action.
11092.... 3-24-44....Buddy A. F. Cayton; Underground Flow; Irrigation. No action.
11093.... 3-25-44....Arnold V. Schwartz; Little Cottonwood Creek; to change point of diversion. Proof No. 0654-D; Irrigation. No action.
11094.... 3-27-44....Gilbert Landis and Mary Strozzi; Buck Spring; Stockwatering. No action.
11095.... 3-31-44....Olly O. Stoffel and Edith Stoffel; Underground source in the Las Vegas Artesian Basin; Irrigation and domestic. No action.
11096.... 3-31-44....Harold D. Cornell; Underground source; Irrigation and domestic. No action.
11097.... 4- 6-44....Theodore Patton; Pillar Spring; Stockwatering. No action.
11098.... 4- 6-44....J. P. Seeburg; Gule George Spring; Stockwatering. No action.
11099.... 4- 6-44....Fallon Ice & Cold Storage Company; Mississippi; Irrigation and domestic. No action.
11100.... 4- 6-44....Thomas M. Metcalf and Anne M. Metcalf; Underground source in the Las Vegas Artesian Basin; Irrigation and domestic. No action.
11101.... 4-10-44....R. J. Kaltenborn; Underground in the Las Vegas Artesian Basin; Domestic and Irrigation. No action.
11102.... 4-10-44....Vassie Martin and Charles R. Martin; Underground in the Las Vegas Valley Artesian Basin; Domestic and Irrigation. No action.
11103.... 4-10-44....Lloyd H. Tritle and Rae Tritle; Underground in the Las Vegas Valley Artesian Basin; Domestic and Irrigation. No action.
11104.... 4-11-44....E. C. & H. L. Lye; Indian Creek; to change point of diversion. Proof No. 0665, as set forth in the Little Humboldt River Decree, filed May 9, 1935; Irrigation. No action.
11105.... 4-14-44....Frank Pastorino; Underground (Grub Well); Stockwatering and domestic.* No action.
11106.... 4-15-44....Nick P. Megas; Underground source in the Las Vegas Artesian Basin; Irrigation and domestic. No action.
11107.... 4-17-44....J. C. Fisher & Co., Inc. and Louis V. Lohman; Underground source in the Las Vegas Artesian Basin; Quasi-municipal. No action.
11108.... 4-18-44....Howard R. Clinger and E. Penn Smith; Mica Mountain Spring; Mining and domestic. No action.
11109.... 4-22-44....Directors of the State Orphans' Home of the State of Nevada; A drilled well; Irrigation and domestic. No action.
11110.... 4-24-44....Nevada Area Council, Boy Scouts of America; Righ Fork Lamoille Creek; Swimming pool. No action.
11111.... 4-24-44....City of Las Vegas, a Municipal Corporation; Las Vegas Valley Artesian Basin; Irrigation. No action
11112.... 4-25-44....Chris Dahlstrom; Unnamed Spring; Stockwatering. No action.
11113.... 5- 2-44....Benjamin F. Casey; Jack Ass Spring; Stockwatering and domestic. No action.
11114.... 5- 2-44....Defense Plant Corporation; Underground water; Plant operation, fire protection and domestic. No action.
11115.... 5- 5-44....Lois Kellogg; Underground Water; Irrigation, milling and domestic. No action.
11116.... 5- 7-44....Rare Metals Corporation, a Corporation; A Well; Mining and domestic. No action.
11117.... 5- 9-44....Loretta Rooker; Hell's Bells Spring; Irrigation and domestic. No action.
11118.... 5-10-44....Robert A. Thorley; Runoff Waters of Porphyry Wash; Stockwatering. No action.
11119.... 5-12-44....M. C. Sinnott; Underground Water; Domestic and municipal. No action.
11120.... 5-13-44....R. J. White and Slats Jacobs; A spring; Stockwatering and domestic. No action.
11121.... 5-20-44....M. M. Sweeney; Underground source in the Las Vegas Valley Artesian Basin; Irrigation and domestic. No action.
11122.... 5-20-44....Daniels Brothers (A. A. & J. M. Daniels); Cottonwood Creek; Stockwatering. No action.
11123.... 5-29-44....Val E. Sneed and Mabel Sneed; Underground source in the Las Vegas Artesian Basin; Irrigation and domestic. No action.

*Protested application. G. S. Good standing.

11124.... 6- 5-44....A. I. Stoner; Underground source in the Las Vegas Artesian Basin; Manufacturing. No action.

11125.... 6-14-44....Pacific Reclamation Water Co., Bishop Creek; to change manner of use and place of use of water heretofore appropriated under Proof No. 00608, Edward's Decree, pp. 80, 81, 104; Irrigation. No action.

11126.... 6-14-44....Pacific Reclamation Water Company; Johnson Creek and Springs; to change manner of use and place of use of water heretofore appropriated under Proof No. 00608B, Edwards Decree, p. 81; Irrigation. No action.

11127.... 6-14-44....Pacific Reclamation Water Company; Burnt Creek; to change manner of use and place of use of water heretofore appropriated under Proof No. 00608B, Edwards Decree, p. 81; Irrigation. No action.

11128.... 6-14-44....Pacific Reclamation Water Company; Trout Creek; to change manner of use and place of use of water heretofore appropriated under Proof No. 00608C, Edwards Decree, p. 81; Irrigation No action.

11129.... 6-14-44....Daniels Brothers (A. A. & J. M. Daniels); Mammoth Spring; to change manner of use and place of use of water heretofore appropriated under water granted Jacob Stiener (deceased), Application No. 7080, purchased by said Daniels Bros.; Stockwatering No action.

11130.... 6-17-44....Town of North Las Vegas (Unincorporated); Underground source; Municipal purposes. No action.

11131.... 6-17-44....Town of North Las Vegas (Unincorporated); Underground source; Municipal. No action.

11132.... 6-19-44....Harold D. Cornell; Underground water; (Pahrump Artesian Basin); to change manner of use and place of use of water heretofore appropriated under Permit No. 10593; Irrigation and domestic. No action.

11133.... 6-21-44....Simone Lompa; Carson City waste water from Carson City Sewage Plant; Irrigation and domestic. No action.

11134.... 6-26-44....George M. Perkins; Grapevine Spring; Stockwatering. No action.

11135.... 6-26-44....Robert F. Caudill; Underground; Silver Zone Well; Stockwatering. No action.

11136.... 6-27-44....Department of Highways; Callaway Spring; General domestic use. No action.

11137.... 6-30-44....Mattia Capelli; Willow Spring; Stockwatering. No action.

*Protested application. G. S. Good standing.

CHAPTER XIV

Status of Applications Filed Prior to July 1, 1942

Status of applications filed prior to July 1, 1942, upon which action has been taken during the present biennium.

Following is a condensed statement giving the salient data in connection with applications filed prior to July 1, 1940, upon which action has been taken during the years of the present biennium, in the order of:

1. Application serial number.
2. Date of filing.
3. Name of applicant.
4. Source of water supply.
5. Purpose of appropriation.
6. Action on application.
7. Status of permits as of June 30, 1944.

1473....10-21-09....The Kaiser Livestock Company; Transferred to Wilson Bros. November 5, 1910; (Assigned to Willard H. George February 9, 1929, by James B. and Geo. T. A. Wilson. Assigned April 1, 1944, by Willard H. George to Sandstone Land and Cattle Company. Deed filed April 10, 1944); La Madre Spring, Section 29, T. 20 S., R. 58 E., M. D. B. & M.; Irrigation and watering stock; Amended Certificate No. 12 issued February 9, 1943, for 0.025 c.f.s. for stockwatering.

3752....12-22-15....Jennie Duvivier and Albert T. Lay; Mary Sloan Creek; Irrigation and stockwatering; Canceled December 30, 1942, because of failure of applicants to comply with the provisions of the permit.

3824.... 3- 6-16....S. C. Anderson; (Assigned October 22, 1920, by S. C. Anderson to Mrs. Marie Anderson. Deed filed December 5, 1936. Assigned on December 24, 1938, by Marie Anderson to Raymond Borda, 37.75 acres in the N½SE¼ of Section 15, T. 15 N., R. 30 E. Deed filed March 25, 1939); Carson River; Irrigation and domestic; Canceled October 20, 1943, because of failure of applicant to comply with the provisions of the permit

3861.... 4- 4-16....Anatole (Albert) T. Lay; Jackson Creek; to change the point of diversion and place of use of water formerly appropriated under Application No. 3607; Irrigation and stockwatering; Canceled December 30, 1942, because of failure of applicant to comply with the provisions of the permit.

4179....10-10-16....Lay Brothers; Bliss Canon and Spring; Irrigation and stockwatering; Canceled December 30, 1942, because of failure of applicant to comply with the provisions of the permit.

4276.... 1-10-17....Onesime L. Lay; Dry Creek; Irrigation and stockwatering; Canceled December 30, 1942, because of failure of applicant to comply with the provisions of the permit.

4686....11- 8-17....Bertrand Irigoin; Panther Creek; Irrigation and stockwatering; Canceled March 31, 1943, because of failure of applicant to comply with the provisions of the permit.

4687....11- 8-17....Bertrand Irigoin; Branch of Panther Creek; Irrigation and stockwatering; Canceled March 31, 1943, for failure of applicant to comply with the provisions of the permit.

4771....12-10-17....Albert T. Lay and Jennie Duvivier; Quinn River; Irrigation and stockwatering; Canceled December 30, 1942, because of failure of applicants to comply with the provisions of the permit.

5271....10- 1-18....Matilda Giraud; Brewery Gulch and Gooseberry Creek, above their confluence; Irrigation and domestic; Canceled June 17, 1944, because of failure of applicant to comply with the provisions of the permit.

5272....10- 1-18....Joseph Giraud; Milk Ranch Creek; Irrigation and domestic; Canceled June 17, 1944, for failure to comply with the provisions of the permit.

5273....10- 4-18....Jean C. Giraud; Milk Ranch Creek and Tributaries; Irrigation, stockwatering and domestic; Canceled June 17, 1944, because of failure of applicant to comply with the provisions of the permit.

5274....10- 4-18....Jean C. Giraud; Snow and rain water flowing into Gooseberry Creek; Irrigation, stockwatering and domestic; Canceled June 17, 1944, because of failure of applicant to comply with the provisions of the permit.

5400.... 2-24-19....Albert G. Brown; (Assigned on February 18, 1924, by Albert G. Brown to Laura E. Wilcox. Deed filed February 25, 1924); Brown's Creek, flood and unappropriated waters; Irrigation and domestic; Canceled November 13, 1943, because of failure of applicant to comply with the provisions of the permit.

5536.... 6-12-19....The United States of America, by L. A. Dorrington, Special Agent in Charge, Reno Agency; Whites or Water Canon; Irrigation, domestic and stockwatering; Withdrawn by applicant June 17, 1944.

*5639.... 7-28-19....Minnie Magnuson, Carrie Riepe, A. A. Marshall and Mrs. Rena Van Zewden; Steptoe Slough; Irrigation; Withdrawn by applicant January 12, 1944.

6011.... 3- 8-20....James Cashman; The Colorado River; Irrigation and Stockwatering; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

6026.... 3-23-20....Harvey R. Cashman; The Colorado River; Irrigation; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

6079.... 4-30-20....Christian August Koyen and John W. Richard; (Assigned by C. A. Koyen February 15, 1921, to the Maynard Irrigation Company. Deed filed April 25, 1921. Assigned by John W. Richard, his interest only, September 25, 1933, to the Regional Agricultural Credit Corporation. Deed filed October 20, 1933. Assigned December 10, 1936, by the Regional Agricultural Credit Corporation of Salt Lake City, Utah, to John W. Richard. Deed filed December 28, 1936); Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

6115.... 5-13-20....Dr. D. A. Smith; Silver Chief Spring; Mining, milling and domestic; Canceled January 12, 1944, because of failure of the applicant to comply with the provisions of the permit.

6116.... 5-13-20....Dr. D. A. Smith; Smith's Springs; Mining, milling and domestic; Canceled January 12, 1944, because of failure of the applicant to comply with the provisions of the permit.

6359....12-21-20....J. J. Hylton; North Fork of Humboldt River; Irrigation; Canceled March 15, 1944, because of failure of applicant to comply with the provisions of the permit.

6704.... 6-22-22....L. H. Taylor and J. G. Taylor; Spring Creek; Power development; Denied October 21, 1943.

6712.... 7- 7-22....Betty O'Neal Mines; Getchell Springs; Irrigation and domestic; Canceled October 20, 1943, because of failure of applicant to comply with the provisions of the permit.

6824....11-14-22....H. Van den Heuvel; (Assigned November 21, 1931, by H. Van den Heuvel to Eliza M. Van den Heuvel, a widow. Deed filed August 12, 1936. Assigned on July 29, 1934, by Eliza M. Van den Heuvel, a widow, to Nell C. Short and Florence D. Short. Deed filed August 12, 1936); Willow Creek Spring; Irrigation; Canceled October 20, 1943, because of failure of applicant to comply with the provisions of the permit.

6918.... 6-20-23....C. J. Woodworth; Millard Creek and Tributaries; Irrigation and domestic; Canceled October 20, 1943, because of failure of applicant to comply with the provisions of the permit.

6958.... 8-14-23....Bank of Nevada Savings and Trust Company; Dry Valley Creek; Irrigation and domestic; Canceled March 15, 1944, because of failure of applicant to comply with the provisions of the permit.

7089.... 4-17-24....J. O. Blackburn; (Assigned to John M. Benedict May 16, 1929, by J. O. Blackburn and Florence E. Blackburn. Deed filed June 11, 1929); New York Canyon; Mining and domestic; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

7231....10-23-24....Eloise Bunker; Meadow Valley Wash or Creek; Irrigation and domestic; Canceled December 8, 1942, because of failure of applicant to comply with the provisions of the permit.

7237....10-29-24....Mammoth Land & Power Company; Baker Creek; Irrigation; Denied September 2, 1943.

7238....10-29-24....Mammoth Land & Power Company; Lehman Creek; Power;* Denied September 2, 1943.

7239....10-29-24....Mammoth Land & Power Company; Baker Creek; Power; Denied September 2, 1943.

7281.... 1-14-25....Mammoth Land & Power Company; Lehman Creek; Power;* Denied September 2, 1943.

7282.... 1-14-25....Mammoth Land & Power Company; Right-hand Fork Baker Creek; Power; Denied September 2, 1943.

7283.... 1-14-25....Mammoth Land & Power Company; Baker Creek; Power; Denied September 2, 1943.

7284.... 1-14-25....Mammoth Land & Power Company; Baker Creek; Power; Denied September 2, 1943.

7301.... 2- 6-25....Mammoth Land & Power Company; Third Left-hand Fork Baker Creek; Power; Denied September 2, 1943.

7317.... 2-25-25....William Gansberg; Unnamed Spring; Irrigation and domestic;* Withdrawn by applicant June 17, 1944.

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*Protested application. G. S. Good standing.

7353.... 5– 2–25....Betty O'Neal Mines; Underground waters developed by mining operations; Betty O'Neal Mines; Irrigation and domestic; Canceled October 20, 1943, because of failure of applicant to comply with the provisions of the permit.

7398.... 6–15–25....George T. Baker; Baker and Lehman Creeks; to change the place of use of water formerly appropriated. Proof of Appropriation No. 01066; Irrigation; Withdrawn by applicant June 17, 1944.

7609....12–29–25....Nevada Steamboat Springs Company; (Assigned by Nevada Steamboat Springs Company May 3, 1932, to Edna J. Carver. Deed filed January 18, 1934); Surface and underground water in NE¼SW¼ Section 28, T. 18 N., R. 20 E.; Power and domestic; Canceled October 20, 1943, because of failure of applicant to comply with the provisions of the permit.

7610....12–29–25....Nevada Steamboat Springs Company; (Assigned by Nevada Steamboat Springs Company May 3, 1932, to Edna J. Carver. Deed filed January 18, 1934); Surface and underground water in the SW¼SE¼ of Section 28, T. 18 N., R. 20 E.; Power and domestic; Canceled October 20, 1943, because of failure of applicant to comply with the provisions of the permit.

7611....12–29–25....Nevada Steamboat Springs Company; (Assigned by Nevada Steamboat Springs Company May 3, 1932, to Edna J. Carver. Deed filed January 18, 1934); Several small springs and underground water in the SE¼SW¼ of Section 28, T. 18 N., R. 20 E.; Power and domestic; Canceled October 20, 1943, because of failure of applicant to comply with the provisions of the permit.

7612....12–29–25....Nevada Steamboat Springs Company; (Assigned by Nevada Steamboat Springs Company May 3, 1932, to Edna J. Carver. Deed filed January 18, 1934); Several small springs and underground water in the NW¼SE¼ of Section 28, T. 18 N., R. 20 E.; Power and domestic; Canceled October 20, 1943, because of failure of applicant to comply with the provisions of the permit.

7632.... 2– 1–26....W. S. Proskey; Underground waters; Mining, milling and domestic; Canceled October 20, 1943, because of failure of applicant to comply with the provisions of the permit.

7708.... 4–14–26....J. C. Williams; Unnamed Spring; Mining and domestic; Canceled July 29, 1942, because of failure of applicant to comply with the provisions of the permit.

7808.... 7– 1–26....E. P. Carville; Snowball Reservoir Spring; Stockwatering; Canceled October 20, 1943, because of failure of applicant to comply with the provisions of the permit.

7809.... 7– 1–26....Pete Hachquet; Snowball Spring; Irrigation and Stockwatering; Canceled October 20, 1943, because of failure of applicant to comply with the provisions of the permit.

7810.... 7– 1–26....Pete Hachquet; Snowball Spring No. 1; Irrigation and stockwatering; Canceled October 20, 1943, because of failure of applicant to comply with the provisions of the permit.

7811.... 7– 1–26....Pete Hachquet; Snowball Spring No. 3; Irrigation and stockwatering; Canceled October 20, 1943, because of failure of applicant to comply with the provisions of the permit.

7908....10–15–26....Mrs. Lena Harkey Scott; (Assigned November 14, 1940, by Lena Harkey Scott, widow of William Union Scott, to Martin Lartirigoyen. Deed filed March 10, 1942); Section 5 Spring; Stockwatering; Withdrawn by applicant June 17, 1944.

7955....12–22–26....Pete Oyanarte; Oyanarte Spring; Stockwatering;* Denied September 2, 1943.

7985.... 1–21–27....M. H. Donald; Manhattan Gulch; Placer mining and dredging and domestic; Canceled October 20, 1943, because of failure of applicant to comply with the provisions of the permit.

8090.... 4– 7–27....J. B. Davis; (Assigned November 18, 1935, by J. B. Davis to Lillian Martin. Deed filed January 20, 1943); Rose Creek, or what is known on township maps as Osborn Canyon; Irrigation and domestic; Withdrawn by applicant January 28, 1943.

8130.... 5–13–27....E. O. Ringer, J. C. Fields and D. T. Stong; Baker Creek; Power; Denied September 2, 1943.

8131.... 5–13–27....E. O. Ringer, J. C. Fields and D. T. Stong; Lehman Creek; Power; Denied September 2, 1943.

8263.... 8– 5–27....E. W. Griffith; Rainbow Creek; Irrigation and domestic; Withdrawn by applicant July 6, 1943.

8441.... 2– 1–28....Gold Hill Mining Company; (Assigned April 9, 1929, by Gold Hill Mining Company to J. K. Kitto, Trustee, Gold Hill Syndicate, Philadelphia. Deed filed May 31, 1929. Assigned July 31, 1933, by Gold Hill Development Company to J. K. Kitto, Trustee, Gold Hill Syndicate. Deed filed July 21, 1936. Assigned December 26, 1933, by J. K. Kitto, Trustee, Gold Hill Syndicate, to Thomas F. Cole. Deed filed July 14, 1936. Assigned January 5, 1934, by Thomas F. Cole to Gold Hill Mines, Inc. Deed filed July 14, 1936); A spring on the R. T. Bailey Ranch; Mining, milling and domestic; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

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*Protested application. G. S. Good standing.

8612.... 6–29–28....Florence M. and J. M. Benedict; Cottonwood Creek, surface and underground water; Irrigation and domestic;* Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

8687.... 9– 6–28....J. P. Wright; Hiko Spring; Irrigation; Withdrawn by applicant July 6, 1943.

8852.... 3–28–29....Pete Chango and Gene Aldaz; Underground water; Irrigation and domestic; Canceled January 12, 1944, because of failure of applicants to comply with the provisions of the permit.

8979.... 7– 4–29....Richard A. Yelland; Nigger Creek Lower Spring; Stockwatering* Withdrawn by applicant August 23, 1942.

9086....10–11–29....R. B. Griffith; Mazey Spring; Irrigation and domestic; Withdrawn by applicant July 6, 1943.

9231.... 3–23–30....R. A. Yelland; Nigger Creek; to change place and manner of use of water, Proof of Appropriation No. 01080; Stockwatering;* Withdrawn by applicant August 23, 1942.

9246.... 4–23–30....E. T. Smith; Jack Springs; Irrigation and domestic; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

9304.... 7–21–30....E. C. Johnson; Rock Spring; Stockwatering;* Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

9305.... 7–21–30....E. C. Johnson; (Assigned April 8, 1933, by Eugene C. Johnson to Cadet Anxo. Deed filed July 8, 1936); Aspen Spring; Stockwatering;* Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

9355....10–18–30....Steve Belli, Jr.; (Assigned October 29, 1936, by Steve Belli and Alessandrina Belli to Simone Lompa and Rinaldo Cremetti. Deed filed December 4, 1937); Underground source (a well); Irrigation and domestic; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

9374....11–16–30....Powell Bros., Everett Gallop and Ernest J. Fee; Snow Creek; Irrigation; Withdrawn by applicant December 22, 1943.

9385....11–22–30....Fred Bartine; Bartine Spring; Irrigation and domestic;* Approved October 11, 1943, for 0.50 c.f.s. G. S.

9393....12–20–30....Angelo Florio; Springs in Secret Canyon; Stockwatering and domestic; Approved December 11, 1942, for 0.05 c.f.s. Certificate No. 2732 issued October 28, 1943, for 0.05 c.f.s. for stockwatering.

9463.... 5–25–31....O. D. Iveson; Nigger Creek; Irrigation and domestic;* Approved July 12, 1943, for 0.40 c.f.s.

9501.... 7–17–31....J. H. Carter Estate Company; (Assigned September 18, 1943, by J. H. Carter Estate Company to R. H. Pitchforth Company, assignee of and successor of Fred R. Levi. Deed filed September 20, 1943. Assigned October 19, 1943, by Fred Levi to R. H. Pitchforth Company. Deed filed November 2, 1943); Carter Well; Stockwatering and domestic;* Approved September 24, 1943, for 0.0625 c.f.s. or sufficient to water 10,000 sheep. Certificate No. 2733 issued November 5, 1943, for 0.0625 c.f.s.

9554....11– 3–31....Javier Goyeneche; Goyeneche Well; Stockwatering;* Approved September 24, 1943, for 0.0625 c.f.s. or sufficient to water 10,000 sheep. G. S.

9570....12–30–31....City of Fallon; Underground water; Municipal water supply, lawns, gardens and domestic; Withdrawn by applicant July 1, 1943.

9575.... 3–21–32....Preston Irrigation Company; Flood waters from Jakes Wash; Irrigation; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

9579.... 3–25–32....Harry L. Wilson; Cherry Springs; Stockwatering and domestic;* Withdrawn by applicant October 19, 1943.

9615.... 8– 2–32....J. M. Snow; (Assigned by J. M. Snow December 23, 1935, to Copper Exploration Mining Company. Deed filed March 30, 1936); Mill Creek, which is a tributary of the Owyhee River; Mining and domestic;* Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

9634....11– 5–32....R. B. Sorensen; Uncle Sam Spring; Mining; Canceled October 20, 1943, because of failure of applicant to comply with the provisions of the permit.

9643....11–28–32....F. E. Bush and F. H. Murphy; Onion Lake and Tributaries, including flood and drainage water; Stockwatering and domestic;* Denied June 8, 1944.

9675.... 7–17–33....Charles, Alfred, Frank, Blanche and Alice Vignos; Dream Spring; Mining, milling and domestic; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

9676.... 7–17–33....Charles, Alfred, Frank, Blanche and Alice Vignos; McKinley Springs; Mining, milling and domestic; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

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*Protested application. G. S. Good standing.

9677.... 7–17–33....Charles, Alfred, Frank, Blanche and Alice Vignos; Green Willow Spring; Mining, milling and domestic; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

9678.... 7–17–33....Charles, Alfred, Frank, Blanche and Alice Vignos; Placerita Spring; Mining, milling and domestic; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

9694.... 9– 9–33....E. C. Congdon; Unnamed Spring; Mining, milling and domestic;* Denied February 9, 1944.

9697.... 9–18–33....Harry S. Joseph; Spring Creek; Power;* Denied June 8, 1944.

9722.... 2–14–34....W. M. Pettit; (Assigned November 30, 1943, by W. M. Pettit to Hugh A. Bain. Deed filed December 17, 1943); Pettit Springs; Irrigation and domestic;* Approved February 11, 1944, for 0.80 c.f.s. G. S.

9742.... 4–23–34....Harold Wm. Merritt; Martin Creek, tributary of Owyhee River; Mining; Canceled October 20, 1943, because of failure of applicant to comply with the provisions of the permit.

9798.... 9– 6–34....S. R. Young; Underground source; Irrigation and domestic (with such incidental stockwatering as is usually used on a farm); Approved July 28, 1943, for 3.2 c.f.s. G. S.

9877.... 7– 6–35....Charles C. Derby; Humboldt River; to change the point of diversion and place of use of water formerly appropriated under Permits Nos. 9729, 9730, 9731, 9732, 9733, 9734, and 9735; Irrigation, stockwatering and domestic;* Canceled October 20, 1943, because of failure of applicant to comply with the provisions of the permit.

9882.... 7–12–35....Amalgamated Pioche Mines & Smelters Corporation; Underground water; General municipal (domestic and industrial); Canceled March 15, 1944, because of failure of applicant to comply with the provisions of the permit.

9916....12–13–35....James Ryan; (Assigned April 15, 1936, by James Ryan to Caliente Cyaniding Company. Deed filed July 27, 1936); Surplus waters of Riggs Wash; Mining and milling; Canceled April 10, 1943, because of failure of applicant to comply with the provisions of the permit.

9948.... 2–29–36....D. M. Findlay, by his agent, Ed. S. Giles; (Assigned November 6, 1937, by D. M. Findlay to W. A. Stilley. Deed filed November 17, 1937); Homestake Well; Mining and milling;* Withdrawn by applicant November 4, 1943.

9973.... 3–27–36....D. M. Wheeler; Sutro Springs; Stockwatering and domestic;* Canceled March 15, 1944, because of failure of applicant to comply with the provisions of the permit.

9987.... 5– 7–36....Nevada Tungsten Corporation; Pine Nut Creek and Springs; Mining, milling and domestic;* Denied May 8, 1944.

9994.... 7– 2–36....Lois Kellogg II; Fish Lake Springs and Creek and Tributaries; Irrigation and domestic; Canceled March 15, 1944, because of failure of applicant to comply with the provisions of the permit.

10004.... 7–17–36....H. C. Collins; Gorge Gulch; Milling and mining; Canceled November 9, 1943, because of failure of applicant to comply with the provisions of the permit.

10008.... 8– 6–36....Hugh Wells; Dave Creek; Irrigation; Canceled October 20, 1943, because of failure of applicant to comply with the provisions of the permit.

10009.... 8–10–36....Fred Foss, Jr.; Gold Creek and its Tributaries; Mining;* Denied December 6, 1943.

10014.... 8–15–36....Geo. L. McCracken; (Assigned May 22, 1940, by Geo. L. McCracken to Little Gem Mining Company. Deed filed May 24, 1940); Underground source; Mining, milling and domestic;* Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10023.... 9–25–36....M. B. Sapp; Twin Springs; Irrigation and domestic; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10028....10– 1–36....Tom Williams; Garfield Springs; Stockwatering and domestic; Canceled July 29, 1942, because of failure of applicant to comply with the provisions of the permit.

10042....10–16–36....Department of Highways, State of Nevada; Round Springs; Highway and domestic;* Withdrawn by applicant June 17, 1943.

10048....10–29–36....A. Odermatt; Unnamed Springs; Stockwatering and domestic;* Canceled March 15, 1944, because of failure of applicant to comply with the provisions of the permit.

10107.... 4–12–37....Lund Irrigation Company; Preston Big Springs, Cold and Nicholas Springs; Irrigation;* Approved June 27, 1944, for 7.5 c.f.s. G. S.

10108.... 4–12–37....Lund Irrigation Company; Lund Spring; Irrigation;* Approved June 27, 1944, for 6.0 c.f.s. G. S.

10114.... 5– 5–37....J. F. Duthie; 76 Creek; Milling and mining; Canceled July 7, 1943, because of failure of applicant to comply with the provisions of the permit.

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*Protested application. G. S. Good standing.

10125.... 6- 9-37....B. F. Baker and August Galvin; A creek and springs and tributaries in what is locally known as Brewery Canyon; Stockwatering and domestic;* Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10126.... 6- 9-37....B. F. Baker and August Galvin; Milk Ranch Springs and Creek and Tributaries; Stockwatering and domestic;* Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10128.... 6-11-37....Las Vegas Land and Water Company; Las Vegas Valley Artesian Basin or Subterranean Channel; Irrigation and domestic; Withdrawn by applicant October 28, 1943.

10155.... 8-20-37....Everest Hackett; Deerlodge Creek; Milling; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10157.... 8-20-37....Mountain City Copper Company; Warm Springs; Milling and domestic; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10213.... 3- 3-38....Rio Grande Copper Company; Golden Copper Spring; Mining, milling and domestic;* Approved July 3, 1942, for one c.f.s. G. S.

10222.... 4- 5-38....Morgan Whitaker and Raymond I. Smith; Underground Water; Placer mining and milling; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10223.... 4- 5-38....Morgan Whitaker and Raymond I. Smith; Underground Water; Placer mining and milling; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10224.... 4- 5-38....Morgan Whitaker and Raymond I. Smith; Underground Water; Placer mining and milling; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10225.... 4- 5-38....Morgan Whitaker and Raymond I. Smith; Underground Water; Placer mining and milling; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10226.... 4- 5-38....Morgan Whitaker and Raymond I. Smith; Underground Water; Placer mining and milling; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10227.... 4- 5-38....Morgan Whitaker and Raymond I. Smith; Underground Water; Placer mining and milling; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10228.... 4- 5-38....Morgan Whitaker and Raymond I. Smith; Underground Water; Placer mining and milling; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10229.... 4- 5-38....Morgan Whitaker and Raymond I. Smith; Underground Water; Placer mining and milling; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10230.... 4- 5-38....Morgan Whitaker and Raymond I. Smith; Underground Water; Placer mining and milling; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10231.... 4- 5-38....Morgan Whitaker and Raymond I. Smith; Underground Water; Placer mining and milling; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10232.... 4- 5-38....Morgan Whitaker and Raymond I. Smith; Underground Water; Placer mining and milling; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10233.... 4- 5-38....Morgan Whitaker and Raymond I. Smith; Underground Water; Placer mining and milling; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10234.... 4- 5-38....Morgan Whitaker and Raymond I. Smith; Underground Water; Placer mining and milling; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10235.... 4- 5-38....Morgan Whitaker and Raymond I. Smith; Underground Water; Placer mining and milling; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10236.... 4- 5-38....Morgan Whitaker and Raymond I. Smith; Underground Water; Placer mining and milling; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

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*Protested application. G. S. Good standing.

10248.... 6-15-38....Albert Zimmerman and Drew Wilson; Deadwood Springs No. 1; Mining, milling and domestic; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10249.... 6-15-38....Albert Zimmerman and Drew Wilson; Deadwood Springs No. 2; Mining and milling; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10253.... 6-25-38....Jose Castillo; Shell Creek; Irrigation and domestic;* Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10261.... 7-11-38....Trayco Placer Inc.; (Assigned November 8, 1943, by Ray J. Root, Sheriff of Washoe County by Judgment entered September 24, 1943, in case of Ray B. Clemmons and Louis Garaventa vs. Trayco Placer, Inc., Milton Hart and Max Raphael as Trustees et als. to Ray B. Clemmons and Louis Garaventa. Deed filed February 4, 1944. All assigned except SW¼NW¼ Section 28, T. 21 N., R. 23 E.); Sheehan 1 Springs and 2 Tributaries No. 1 and No. 2 Springs; Placer mining and domestic;* Canceled February 11, 1944, because of failure of applicant to comply with the provisions of the permit.

10267.... 7-14-38....Lois Kellogg II; Six Mile Manse Spring; Stockwatering and domestic; Canceled March 15, 1944, because of failure of applicant to comply with the provisions of the permit.

10295.... 9-12-38....Spring Valley Milling Company; Brewery Spring; Mining and milling; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10296.... 9-16-38....J. W. R. Hilliard; Underground water of Amargosa River; Mining, milling and domestic; Canceled March 15, 1944, because of failure of applicant to comply with the provisions of the permit.

10299.... 9-20-38....Rip Van Winkle Mining Company; Rip Van Winkle Spring; Milling, mining and domestic;* Approved February 21, 1944, for 0.50 c.f.s. G. S.

10300....10- 1-38....J. W. R. Hilliard; (Assigned September 27, 1940, by J. W R. Hilliard and Ann Hilliard, his wife, to Albert A. Hall. Deed filed October 11, 1940. Assigned November 9, 1940, by Albert A. Hall to Carrara Portland Cement Company. Deed filed November 26, 1940); Amargosa River (surface and subsurface); to change the point of diversion and place of use of water formerly appropriated under Permit No. 8811; Irrigation and domestic;* Canceled March 15, 1944, because of failure of applicant to comply with the provisions of the permit.

10303....10-14-38....Lois Kellogg II; Unnamed Spring (Kellogg Spring); Stockwatering and domestic; Canceled March 15, 1944, because of failure of applicant to comply with the provisions of the permit.

10310....12- 8-38....Nevada Gold Dome Mining Company; Gilman Spring; Mining, milling and domestic;* Canceled November 18, 1943, because of failure of applicant to comply with the provisions of the permit.

10311....12- 8-38....Nevada Gold Dome Mining Company; McCoy Springs; Mining, milling and domestic;* Canceled November 18, 1943, because of failure of applicant to comply with the provisions of the permit.

10318....12-16-38....Afterthought Mines Corporation; Unnamed Spring; Mining and domestic;* Canceled April 10, 1943, because of failure of applicant to comply with the provisions of the permit.

10319....12-16-38....Afterthought Mines Corporation; Unnamed Spring; Mining and domestic;* Canceled April 10, 1943, because of failure of applicant to comply with the provisions of the permit

10336.... 2-11-39....Juan Eyheralde; Pollard Creek; Irrigation; Approved November 22, 1943, for 0.80 c.f.s. G. S.

10337.... 2-11-39....Juan Eyheralde; Mud Springs; Irrigation and domestic; Approved November 22, 1943, for 0.50 c.f.s. G. S.

10341.... 2-16-39....M. E. Wilson, by Thos. Wilson, Agent; Underground water; Mining and domestic; Withdrawn by applicant January 18, 1944.

10355.... 4- 3-39....Preston Light and Power Company, Inc.; Preston Big Spring and Cold Spring Channel; Power;* Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10356.... 4-14-39....J. C. Horton; (Assigned June 8, 1939, by J. C. Horton and Lula E. Horton, his wife, to The Red Top Mining Company. Deed filed June 14, 1939); Willow Spring; Mining, milling and domestic; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10365.... 5- 5-39....James Scossa; Water Canyon Spring; Mining and domestic; Canceled October 20, 1943, because of failure of applicant to comply with the provisions of the permit.

10375.... 5-31-39....George Gergen; Underground source; Mining and milling; Denied August 13, 1943.

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*Protested application. G. S. Good standing.

10382.... 6-12-39-Lake Shore Gold Mining Company; Lake Mead (Colorado River); Mining, milling and domestic; Canceled August 1, 1942, because of failure of applicant to comply with the provisions of the permit.

10385.... 6-19-39....Edward R. Wagner; Underground waters of Callahan Placer No. 3; Placer mining and domestic; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10407.... 7-21-39....H. Alex Johnson; Eagle Creek; Mining and domestic; Canceled March 12, 1943, because of failure of applicant to comply with the provisions of the permit.

10410.... 7-26-39....Charles B. Archer; A well; Mining and milling; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10415.... 8-24-39....Nupaz Mining Company; Underground source; Mining, milling and domestic; Withdrawn by applicant December 10, 1942.

10428....10-10-39....J. F. Featherstone; (Assigned May 1, 1942, by J. F. Featherstone to Western Alloys Incorporated. Deed filed May 22, 1942); Water Creek, East side of Jersey Valley, Lander County; Mining and milling ores;* Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10438....11- 8-39....John Uhalde; Modes Holes Springs and Tributaries and sources of supply; to change the place of use of water formerly appropriated under Permit No. 4851, Certificate No. 941; Stockwatering;* Approved December 3, 1942, for 0.025 c.f.s. G. S.

10442....11-16-39....Joaquin Arbonies; Gregg's Canyon; Irrigation;* Denied October 21, 1943.

10446....11-28-39....Nevada United Gold Mining Company; Gilman Springs Addition; Mining, milling and domestic;* Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10447....11-28-39....Nevada United Gold Mining Company; Nevada United Springs; Mining, milling and domestic;* Canceled January 12, 1944, because of failure of the applicant to comply with the provisions of the permit.

10469.... 2-19-40....J. O. Greenan; Baldwin Spring; Mining and domestic;* Withdrawn by applicant November 6, 1943.

10476.... 3-13-40....Dr. Walter C. McAdoo; McAdoo Spring; Mining and domestic; Canceled March 3, 1944, because of failure of applicant to comply with the provisions of the permit.

10477.... 3-18-40....J. W. Richard; Flow water from Evergreen Channel and Tributaries; Stockwatering and domestic; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10481.... 3-21-40....Frank W. Hinkley; Upper Springs; Mining, domestic and milling; Canceled July 20, 1943, because of failure of applicant to comply with the provisions of the permit.

10482.... 3-21-40....Frank W. Hinkley; A cistern (originally filed as the Lower Springs, Application No. 10482—Underground); Mining, domestic and milling; Canceled July 20, 1943, because of failure of the applicant to comply with the provisions of the permit.

10484.... 3-27-40....R. G. Heckman and O. D. Gable; Rabbit Hole Spring; Mining and domestic;* Canceled March 15, 1944, because of failure of applicant to comply with the provisions of the permit.

10506.... 5-17-40....P. M. Anderson; Buckskin Springs; Mining and domestic; Canceled November 27, 1942, because of failure of applicant to comply with the provisions of the permit.

10516.... 6- 7-40....Frank W. Hinkley; Middle Springs; Milling, mining and domestic; Canceled July 20, 1943, because of failure of applicant to comply with the provisions of the permit.

10527.... 7- 6-40....Comstock Keystone Mining Company, a Nevada Corporation; Gold Creek; Mining, milling and domestic; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10531.... 7-12-40....John L. Harvey; A spring; Irrigation and domestic; Denied June 28, 1944.

10538.... 7-17-40....United States of America, Department of Agriculture, Forest Service; Unnamed Spring, tributary to Pine Creek; Domestic and recreational purposes at the Pine Creek Campground; Withdrawn by applicant June 12, 1944.

10549.... 8-15-40....Getchell Mine Inc.; Unnamed Spring; Mining, milling and domestic;* Approved June 27, 1944, for 1.0 c.f.s. G. S.

10550.... 8-15-40....Getchell Mine Inc., Ward Spring; Mining and milling;* Approved June 27, 1944, for 1.0 c.f.s. G. S.

10555.... 9- 5-40....George Hennen (Assigned October 31, 1941, by George Hennen to Elia Marian L. Dana and Sidney H. Vail in joint tenancy, with right of survivorship. Deed filed April 15, 1942); Hennen Spring; Stockwatering and domestic;* Approved December 7, 1943, for 0.0313 c.f.s. G. S.

*Protested application. G. S. Good standing.

10563....10- 1-40....William Lahti; (Assigned May 14, 1941, by William Lahti to V. E. Greenwald, 1/5 interest. Deed filed January 31, 1944); Crystal Spring; Domestic;* Approved August 12, 1943, for 0.01 c.f.s. Certificate No. 2750 issued December 16, 1943, for 0.0373 c.f.s. or 16.8 g.p.m. for domestic use.

10572....10-26-40....Harold D. Cornell; An artesian well; Irrigation and domestic; Approved May 25, 1944, for 4.0 c.f.s. G. S.

10590....11-14-40....J. A. Hail; Naquinta Valley Underground Source; Stockwatering and domestic;* Approved February 27, 1943, for 0.017 c.f.s. G. S.

10591....11-16-40....The Whitehill Lodge Corporation; Las Vegas Valley Artesian Basin; Quasi-municipal; Canceled October 20, 1943, because of failure of applicant to comply with the provisions of the permit.

10617.... 2- 5-41....Department of Highways; Chiatovich Creek; Domestic, irrigation of trees at Maintenance Station and use of traveling public;* Approved April 6, 1944, for 0.015 c.f.s. G. S.

10640.... 3-29-41....Walter W. Hartman; Underground source; Mining, milling and domestic; Withdrawn by applicant June 23, 1943.

10664.... 5-19-41....V. E. Greenwald; Bryan Spring; Stockwatering;* Approved August 7, 1943, for 0.003 c.f.s. G.S.

10668.... 5-24-41....V. E. Greenwald; Seep Spring; Stockwatering;* Approved August 7, 1943, for 0.003 c.f.s. G. S.

10678.... 6-10-41....Barium Products Ltd.; (Assigned September 11, 1942, by Barium Products Ltd. to Sierra Magnesite Company. Deed filed September 17, 1942); Underground source (a well); Mining and domestic; Approved September 21, 1942, for 2.0 c.f.s. G. S.

10686.... 6-30-41....J. J. Thrasher; Waters of Jennie Creek, (which have their source in an unnamed spring); Mining, milling and domestic; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10697.... 7-11-41....E. A. Clark; Underground source; Domestic and quasi-municipal; Approved July 29, 1942, for 2.0 c.f.s. G. S.

10709.... 7-31-41....Chas E. Barbee and Silvia Barbee; Underground source; Domestic and quasi-municipal; Approved July 6, 1942, for 0.25 c.f.s. G. S.

10714.... 8-14-41....George Whittell; Mill Creek or Fourth Creek; Irrigation and domestic; Approved August 25, 1942, for 0.5 c.f.s. G. S.

10717.... 8-22-41....Max M. Tenesch; Underground source; Quasi-municipal; Approved August 26, 1943, for 0.30 c.f.s. Canceled June 17, 1944, for failure of applicant to comply with the provisions of the permit.

10719.... 8-29-41....James and Emily Griel; Deadman's Canyon Creek; Irrigation and domestic;* Approved July 10, 1942, for 0.80 c.f.s.

10725.... 9- 8-41....John Sigurdson; Underground source; Quasi-municipal; Approved August 7, 1943, for 0.25 c.f.s. G. S.

10733.... 9-13-41....W. E. Licking; Humboldt River; to change point of diversion and manner of use of water formerly appropriated under Proof of Appropriation No. 00167; Irrigation; Approved August 11, 1942, for 729.78 acre-feet per annum, as allowed by the Humboldt River Decree.

10736....10- 2-41....John H. Conaway and James Ryan; Double Reservoir Delamar Flat West and North Drainage; Stockwatering and domestic; Approved August 25, 1942; for 0.0094 c.f.s. Certificate No. 2668 issued November 30, 1942, for 0.0055 c.f.s for stockwatering and domestic.

10737....10- 2-41....Louis Garavanta and Ray Clemons; Sheehan Springs Nos. 1, 2 and 3; Milling, mining and domestic;* Approved March 23, 1944, for 0.5 c.f.s. G. S.

10739....10- 4-41....H. H. Nickel; Underground source; Quasi-municipal, domestic and irrigation; Approved September 2, 1942, for 0.50 c.f.s. G. S.

10749....10-24-41....F. A. Allen and A. W. Blackman; Cabin Spring; Stockwatering and domestic; Approved August 27, 1942, for 0.001 c.f.s. G. S.

10752....10-27-41....Harvey S. Hale; Cedar Creek; Irrigation; Approved April 16, 1943, for 1.20 c.f.s. G. S.

10753....11- 1-41....C. B. Henderson; Underground source; Quasi-municipal; Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10757....11-15-41....Ivan M. Pinjuv; Underground source; Irrigation and domestic; Approved September 4, 1942, for 0.01 c.f.s. G. S.

10759....11-25-41....Ruth Motley McGuigan; Underground (McGuigan Well); Irrigation and domestic; Approved August 8, 1942, for 0.15 c.f.s. G. S.

10760....11-29-41....Mary E. Tobin; Crystal Springs; to change the point of diversion and place of use of water formerly appropriated under Permit No. 10518; Mining, milling and domestic; Approved July 28, 1943, for 1.0 c.f.s. G. S.

10763....12-12-41....Ralph Mariconi and Louis J. Isola, doing business under the fictitious name of Peoples Market; A well; Stockwatering and operation of a slaughterhouse; Approved July 10, 1942, for 0.30 c.f.s. Certificate No. 2670 issued January 5, 1943, for 0.150 c.f.s. for the operation of a slaughterhouse.

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*Protested application. G. S. Good standing.

10765....12-17-42....Thomas A. Campbell; Underground source; Domestic and quasi-municipal; Approved September 4, 1942, for 1.0 c.f.s. G. S.

10766....12-29-41....B. H. Robison; Piermont Creek; Irrigation; Approved September 22, 1943, for 6.40 c.f.s. G. S.

10779.... 1-28-42....Defense Plant Corporation; The Colorado River; Milling and metallurgical; Approved February 3, 1943, for 45 c.f.s. G. S.

10781.... 2- 6-42....Edwin J. Miller; Underground water, Las Vegas Artesian Basin; Irrigation and domestic; Approved July 17, 1942, for 0.40 c.f.s. G. S.

10782.... 2- 2-42....E. P. Osgood and Howard Brown; Underground source; Municipal; Approved February 8, 1943, for 3.2 c.f.s. Canceled June 17, 1944, because of failure of applicants to comply with the provisions of the permit.

10783.... 2-13-42....J. A. and Pearl Prichard; Flood and winter waters of Robinson Canyon and its Tributaries; Irrigation; Approved July 16, 1943, for 1.0 c.f.s. G. S.

10784.... 2-16-42....Louis Pisetta; Underground source; Quasi-municipal; Approved August 28, 1942, for 0.30 c.f.s. G. S.

10785.... 2-18-42....Roy Cram; Underground source; Mining, milling and domestic; Approved January 25, 1943, for 5.0 c.f.s. G. S.

10786.... 2-24-42....Allan L. Drew; Underground source, Las Vegas Artesian Basin; Domestic and irrigation; Approved September 12, 1942, for 0.02 c.f.s. G. S.

10787.... 2-26-42....Leo Pahor; Underground source, Las Vegas Artesian Basin; Irrigation and domestic; Approved January 6, 1943, for 0.05 c.f.s. G. S.

10788.... 2-27-42....Mike Broderick; Las Vegas Underground waters; Quasi-municipal; Canceled August 26, 1942, because of failure of applicant to refile corrected application within the statutory time.

10789.... 3- 4-42....John H. Conway, Press W. Duffin, Sr., and Chas Culverwell; Drainage from Delamar and Cedar Washes and from the area for a distance of about five miles south of Cedar Wash draining toward the west; Stockwatering and domestic; Approved August 25, 1942, for 0.0125 c.f.s. Certificate No. 2722 issued September 17, 1943.

10790.... 3- 6-42....George T. Baker; Baker & Lehman Creeks (high water); Irrigation and domestic;* Denied December 6, 1943.

10791.... 3-11-42....R. B. Griffith; Underground source (Las Vegas Artesian Basin); Irrigation and domestic; Approved July 6, 1943, for 0.5 c.f.s. G. S.

10792.... 3-11-42....Jack Weisberger; Underground source (Las Vegas Artesian Basin); Quasi-municipal and domestic; Approved September 4, 1942, for 0.20 c.f.s. G. S.

10793.... 3-13-42....Durrell Adams and Kay Bunker; Virgin River; Irrigation; Approved September 21, 1942, for 0.8047 c.f.s. G. S.

10794.... 3-18-42....William N. Hinson; Underground Wash (Las Vegas Artesian Basin); Irrigation and domestic; Approved August 25, 1942, for 0.40 c.f.s. G. S.

10795.... 3-21-42....Herbert M. Dixon; Underground source (Las Vegas Artesian Basin); Irrigation and domestic; Approved January 25, 1943, for 4.0 c.f.s. G. S.

10796.... 3-21-42....Carrara Portland Cement Company; (Assigned July 29, 1942, by Carrara Portland Cement Company to Elizalde & Company Ltd. Deed filed December 22, 1942); Amargosa River (surface and sub-surface); Manufacturing and domestic; Approved May 22, 1943, for 1.0 c.f.s G. S.

10798.... 3-28-42....Las Vegas Land and Water Company: Underground, Las Vegas Valley Artesian Basin or Subterranean Channel; Municipal supply and domestic; Canceled August 26, 1942, because of failure of applicant to refile corrected application within the statutory time.

10799.... 3-28-42....Defense Plant Corporation; Colorado River; Municipal; Approved February 3, 1943, for 12.0 c.f.s. G. S.

10800.... 3-30-42....Manganese Ore Company; Colorado River; Mining, milling and domestic; Approved August 8, 1942, for 5.0 c.f.s. G.S.

10802.... 4- 1-42....Leonard E. Billman; Underground, Las Vegas Valley Artesian Basin; Domestic and quasi-municipal; Approved August 27, 1942, for 0.50 c.f.s. G. S.

10803.... 4- 2-42....Basic Magnesium, Incorporated; (Assigned October 20, 1942, by Basic Magnesium Inc. to Defense Plant Corporation. Deed filed January 28, 1943); Underground water; Mining, milling and domestic; Approved October 29, 1942, for 2.0 c.f.s. G. S.

10809.... 4-11-42....George Eldridge; Spring Valley Wash, flood and waste water; Irrigation; Approved January 17, 1944, for 2.80 c.f.s. G. S.

10811.... 4-13-42....Joe Erquiaga; Continental Lake; Irrigation; Approved February 26, 1943, for 1.061 c.f.s. G. S.

10812.... 4-13-42....John E. Stout and Lee Kellar; Unnamed Creek; Mining, milling and domestic; Canceled October 28, 1942, because of failure of applicant to refile corrected application within the statutory time.

10813.... 4-16-42....Thomas A. Campbell; Underground source, Las Vegas Artesian Basin; Domestic and quasi-municipal; Approved August 14, 1942, for 1.0 c.f.s. G. S.

*Protested application. G. S. Good standing.

10814.... 4-20-42....Paul Stewart, Ernie Higbee and Lawrence Sharp; (Assigned January 3, 1944, by Paul E. Stewart and Paul Stewart, same person, his interest to Ainsley Sharp and V. Robinson. Deed filed February 9, 1944); East and South Sheep Mt. Dry Channels; Stockwatering; Approved September 5, 1942, for 0.0094 c.f.s. G. S.

10815.... 4-27-42....W. A. Unangst and J. C. Anderson; Log Spring; Mining and milling; Canceled October 28, 1942, because of failure of applicant to refile corrected application within the statutory time.

10816.... 4-27-42....W. A. Unangst and J. C. Anderson; Cucomongo Spring; Mining and milling; Canceled October 28, 1942, because of failure of applicant to refile corrected application within the statutory time.

10817.... 4-27-42....Henry Esplin; Bassett Creek; Irrigation; Canceled October 28, 1942, because of failure of applicant to refile corrected application within the statutory time.

10818.... 4-27-42....Opaco Lumber & Realty Company, a Nevada Corporation; Underground source, Las Vegas Artesian Basin; Manufacturing, fire protection and domestic; Approved August 25, 1942, for 1.0 c.f.s. G. S.

10820.... 4-28-42....Clark County Land Company Inc., a Nevada Corporation; Las Vegas Valley Artesian Basin; Domestic and quasi-municipal; Approved September 2, 1942, for 0.80 c.f.s. G. S.

10821.... 4-28-42....Clark County Land Company Inc.; Underground (Las Vegas Artesian Basin); Domestic and quasi-municipal; Approved May 4, 1943, for 0.8 c.f.s. G. S.

10822.... 5- 6-42....Allison Smith; Underground water; Quasi-municipal (domestic supply); Approved March 30, 1943, for 0.50 c.f.s. G. S.

10823.... 5- 7-42....Mary C. Gaddis; Underground (Las Vegas Artesian Basin); Irrigation and domestic; Approved July 28, 1943, for 0.40 c.f.s. G. S.

10824.... 5- 8-42....Angelo C. Florio; Underground source (Holly Well); Stockwatering and domestic;* Approved May 13, 1943, for 0.094 c.f.s. G. S.

10825.... 5-15-42....M. E. Ward and D. H. Johnston; to change the manner of use of water formerly appropriated under Permit No. 8830; Las Vegas Artesian Basin; Quasi-municipal; Approved January 31, 1944, for 0.4 c.f.s. G. S.

10826.... 5-15-42....M. E. Ward and D. H. Johnston; to change the manner of use of water formerly appropriated under Uermit No. 8845; Las Vegas Artesian Basin; Quasi-municipal; Approved January 31, 1944, for 0.4 c.f.s. G S.

10827.... 5-19-42....Andy Pastorino, Sr., Andy Pastorino, Jr., and Henry Pastorino; (Assigned June 3, 1942, by Andy Pastorino and Lena Pastorino, his wife, Henry O. Pastorino and Irene Pastorino, his wife, and Andy R. Pastorino, Jr., to Angelo C. Florio under omnibus clause. Deed filed October 21, 1942); Stockwatering and domestic; Approved May 13, 1943, for 0.094 c.f.s. G. S.

10829.... 5-25-42....J. N. and Helen V. Hawkins; Churchill Canyon and Tributaries; Irrigation and domestic;* Approved June 15, 1944, for 4.0 c.f.s. G. S.

10830.... 5-26-42....R. J. Kaltenborn; Las Vegas Valley Underground Artesian; Irrigation and domestic; Approved November 23, 1942, for 0.40 c.f.s. Canceled January 12, 1944, because of failure of applicant to comply with the provisions of the permit.

10832.... 6- 8-42....Grover C. Jackson; Underground water; Irrigation and domestic; Approved April 10, 1943, for 1.6 c.f.s. G. S.

10834.... 6-11-42....Security Industrial Corporation; Juniata Spring; Milling and domestic; Approved January 23, 1943, for 1.0 c.f.s. G. S.

10837.... 6-11-42....Emery E. Garrett; (Assigned October 7, 1943, by Emery E. Garret and Clara Garrett, husband and wife, to J. A. Hail and Lew Cook, doing business under the name and style of Buck Horn Cattle Company. Deed filed December 9, 1943); Goat Ranch Springs; Stockwatering and domestic; Denied June 22, 1944.

10839.... 6-12-42....E. C. Bradshaw; Underground water; Mining, milling and domestic; Withdrawn by applicant November 13, 1942.

10841.... 6-19-42....Hotels El Rancho Inc. DBA Hotel Last Frontier; Underground source, Las Vegas Artesian Basin; Domestic, irrigation and fire protection; Canceled November 10, 1942, because of failure of applicant to refile corrected application within the statutory time.

10844.... 6-24-42....A. C. Delkin; Las Vegas Artesian Basin; Manufacturing and domestic; Approved January 6, 1943, for 0.5 c.f.s. G. S.

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*Protested application. G. S. Good standing.

CHAPTER XV

Certificates Issued Under Permits, 1942–1944

Following is a condensed statement giving the salient data in connection with Certificates Issued Under Permits during the biennium for the period July 1, 1942, to June 30, 1944, in the order of:

1. Certificate number.
2. Book number.
3. Permit number.
4. Name of appropriator.
5. Source of water supply.
6. Purpose of appropriation.
7. Amount of water in cubic feet per second, unless otherwise noted.
8. Date of certificate issued.

2645	8	3203	George Eldridge and Mary Eldridge, as joint tenants; Deep Spring; Irrigation and domestic	0.35	8–11–42
2646	8	8522	Frank A. Nolan (Assigned by Grace A. Street); Rimrock Spring; Stockwatering	0.0020	8–25–42
2647	8	9982	Allen Nay; Pussy Willow Spring; Stockwatering	0.0031	8–25–42
2648	8	10134	R. H. Moore; Underground source (Jayansee Tunnel); Mining and domestic	0.0375	8–25–42
2649	8	10270	Lime Mountain Consolidated; Underground source; Mining	0.0415	9– 4–42
2650	8	10271	Lime Mountain Consolidated; Lime Mountain Spring; Domestic	0.02673	9– 4–42
2651	8	10245	Earl A. Honrath; Underground source; Irrigation and domestic	0.11	9– 4–42
2652	8	10241	Clara B. Richardson (Assigned by W. D. Murray); Underground source; Irrigation and domestic	0.05	9–14–42
2653	8	10260	William F. Moon; Underground source; Domestic and irrigation of lawns and gardens	0.04	9–21–42
2654	8	10077	The Utah Construction Company; Underground source; Stockwatering	0.035	10–20–42
2655	8	10078	The Utah Construction Company; Underground source; Stockwaterting	0.028	10–20–42
2656	8	10079	The Utah Construction Company; Underground source; Stockwatering	0.028	10–20–42
2657	8	10080	The Utah Construction Company; Underground source; Stockwatering	0.017	10–20–42
2658	8	10081	The Utah Construction Company; Underground source; Stockwatering	0.022	10–20–42
2659	8	10085	The Utah Construction Company; Underground source; Stockwatering	0.02	10–20–42
2660	8	10086	The Utah Construction Company; Underground source; Stockwatering	0.011	10–20–42
2661	8	10087	The Utah Construction Company; Underground source; Stockwatering	0.027	10–20–42
2662	8	10211	The Utah Construction Company; Unnamed Spring; Stockwatering	0.054	10–20–42
2663	8	10212	The Utah Construction Company; Unnamed Spring; Stockwatering	0.05	10–20–42
2664	8	10347	The Utah Construction Company; Underground source; Stockwatering	0.031	10–20–42
2665	8	10348	The Utah Construction Company; Underground source; Stockwatering	0.015	10–20–42
2666	8	9534	Fritz Walti; Valley Spring; Stockwatering	0.0031	11–24–42
2667	8	2675	Botella A. Palen and Edgar N. Palen, her husband, as joint tenants and not as tenants in common and the survivor of them; Carson River; Irrigation	0.1975	11–30–42
2668	8	10736	John H. Conaway and James Ryan; Delamar Flat West and North Drainage; Stockwatering and domestic	0.0055	11–30–42
2669	8	10592	City of Yerington; Underground source; Municipal	1.50	1– 5–43
2670	8	10763	Peoples Market (Ralph Moriconi and Louis J. Isola); Underground source; Operation of Slaughterhouse	0.150	1– 5–43

2671	8..10301	H. D. Gerken; Underground source; Irrigation and domestic	0.0473	1- 5-43
2672	8..10207	Ellison Ranching Company; Niagara Creek; Irrigation	0.315	1-21-43
2673	8..10208	Ellison Ranching Company; Willow Creek; Irrigation	21,555.84	1-21-43
2674	8..10127	Las Vegas Land and Water Company; Underground source; Municipal supply and domestic	2.7	1-25-43
2675	8..10146	United States Forest Service; Stanley B. Spring; Domestic	0.0211	1-25-43
2676	8..10338	Murray Wollman and Hayward Milligan; Ash Creek Springs; Domestic	0.01	1-25-43
2677	8..10149	Mountain City Copper Company; Under ground source; Milling and domestic	0.35	1-25-43
2678	8..10156	Mountain City Copper Company; Underground source; Milling and domestic	0.3	1-25-43
2679	8..10532	E. L. Cord; Robinson or Leidy Creek; Power and domestic	3.0	2-24-43
2680	8..10862	John H. Conaway; Balm of Gilead Spring; Stockwatering	0.003125	6-29-43
2681	8..10537	Mrs. E. N. Loftus; Underground source; Domestic and irrigation	0.025	6-29-43
2682	8....4815	Mrs. Lillie Martin; Rose Creek or Osborn Canon; Irrigation and domestic	0.1655	6-29-43
2683	8..10196	C. B. Stark; Underground source; Stockwatering	0.014	6-29-43
2684	8..10474	Robert E. Bunker; Underground source; Irrigation and domestic	0.1293	6-29-43
2685	8..10203	Mountain City Copper Company; East Fork of Owyhee River; to change point of diversion, Manner and Place of Use of Water formerly appropriated under Permit No. 9631; Milling and domestic	0.333	6-29-43
2686	8..10505	George, Richard, John and James Ralph and Hilary E. Bradish; Wood Spring; to change Manner of Use of Water formerly appropriated under Permit No. 5089; Stockwatering	0.009	6-29-43
2687	8..10152	Marie D. Lawton; Las Vegas Artesian Basin (Underground water); Irrigation and domestic	0.01	6-29-43
2688	8..10331	Getchell Mines, Inc.; Underground source (Getchell Well); Milling and domestic	1.0	6-29-43
2689	8..10899	John H. Conaway; Applewhite Wash; Stockwatering	0.0094	6-29-43
2690	8..10250	Charles McKellar; Erickson Well; Stockwatering	0.008	6-29-43
2691	8..10251	Charles McKellar; Tommy Johns Spring; Stockwatering	0.008	6-29-43
2692	8..10252	Charles McKellar; Tunnel Well; Stockwatering	0.008	6-29-43
2693	8..10239	Zenas Walmsley; Gold Canyon Creek; to change point of diversion, Manner and Place of Use of an alleged vested right; Tailings Disposal	0.31	6-29-43
2694	8....10435	Geo. W. Hennen; Warm Springs; Milling and domestic	0.25	6-29-43
2695	8..10105	James Johnson (Assigned on March 25, 1944, by Mames Johnson to Ralph Smith and Beth Smith, his wife. Deed filed April 1, 1944); Warm Springs; Irrigation and domestic	0.19	7-15-43
2696	8..10195	Manhattan Gold Dredging Company; Peavine Creek (surface and underground); Mining, milling and domestic	5.0	7-15-43
2697	8..10167	A. Roy Nesbitt; Cottonwood Creek; Irrigation	1.0	7-15-43
2698	8..10305	Robert B. Griffith; Mazey Spring; Domestic and Recreational	0.5	7-26-43
2699	8..10305	United States Department of Agriculture, Forest Service; Mazey Spring; Domestic and Recreational	0.5	7-26-43
2700	8..10306	Robert B. Griffith; Rainbow Creek; Domestic and Recreational	0.6	7-26-43
2701	8..10306	United States Department of Agriculture, Forest Service; Rainbow Creek; Domestic and Recreational	0.6	7-26-43
2702	8..10346	R. J. Bradshaw; Rock Seeps; Stockwatering	0.003	7-29-43
2703	8..10342	Frederick Steigmeyer; Underground and surface flow of Jefferson Creek; Mining, milling and domestic	1.0	7-29-43
2704	8....9267	H. Heidenreich; Underground source; Irrigation and domestic	0.01	7-29-43
2705	8....7528	Thomas Ormachea; Yankee Spring; Stockwatering	0.025	7-29-43
2706	8....7533	Thomas Ormachea; Deep Canyon Spring; Stockwatering	0.025	7-29-43

2707	8	7534	Thomas Ormachea; Willow Spring; Stockwatering	0.025	7–29–43
2708	8	7535	Thomas Ormachea; Florence Canyon Spring; Stockwatering	0.025	7–29–43
2709	8	10187	Chris Dahlstrom; West Spring; Stockwatering	0.005	7–29–43
2710	8	6373	J. W. Solen; Clear Creek; Irrigation and domestic	2.82	7–30–43
2711	8	9472	J. W. Solen; Underground source; Irrigation and domestic	0.6	7–30–43
2712	8	10922	John H. Conaway; Rock Spring; Stockwatering	0.00625	8–20–43
2713	8	10923	John H. Conaway; Mud Spring; Stockwatering	0.00156	8–20–43
2714	8	10924	John H. Conaway; Conaway Spring; Stockwatering	0.0025	8–20–43
2715	8	9014	Arthur K. Bourne; McFaul Creek and Tributaries; Irrigation and domestic	100*	8–20–43
2716	8	9093	Arthur K. Bourne; McFaul Creek and Tributaries; Irrigation and domestic	0.5	8–20–43
2717	8	9094	Arthur K. Bourne; South McFaul Creek (a tributary to McFaul Creek); Irrigation and domestic	0.025	8–20–43
2718	8	6990	Harry L. Wilson; Alkali Lake; Irrigation and domestic	462.6*	8–20–43
2719	8	10898	Town of Hawthorne (Unincorporated); Underground source; Municipal	1.50	8–20–43
2720	8	10440	John H. Conaway; Gregerson Basin; Stockwatering	0.0039	9–17–43
2721	8	10449	John H. Conaway and Dave Stewart; Greygory Basin; Stockwatering	0.0125	9–17–43
2722	8	10789	John H. Conaway, Press W. Duffin, Sr., and Chas Culverwell; Delamar and Cedar Washes; Stockwatering and domestic	0.0125	9–17–43
2723	8	10366	L. J. Nickerson; Underground source; domestic	0.0054	9–29–43
2724	8	10379	Wm. M. Donovan; American Flat Creek; Milling	0.50	10– 2–43
2725	8	7977	Thomas Ormachea; Cherry Spring No. 2; Stockwatering and domestic	0.02	10–20–43
2726	8	8318	Thomas Ormachea; Bernice Spring; Stockwatering	0.028	10–20–43
2727	8	10392	Michael Paps; Las Vegas Artesian Basin (Underground); Domestic (Quasi-municipal)	0.6355	10–20–43
2728	8	10313	Guy Saval; Underground source; Placer mining and domestic	1.075	10–20–43
2729	8	8025	Marie Isaacq Schneehagen; Big Spring; Irrigation and domestic	0.6 3	10–20–43
2730	8	10220	United States Forest Service; Scout Spring; Domestic (Public Campground)	0.011	10–21–43
2731	8	10246	Ben Fabian; Tiger Creek Springs; Mining and milling	0.01	10–28–43
2732	8	9393	Angelo C. Florio; Secret Canyon Springs (Murray Spring); Stockwatering and domestic	0.05	10–28–43
2733	8	9501	R. H. Pitchforth Company; Carter Well; Stockwatering	0.0625	11– 5–43
2734	8	9949	Oregon Short Line R. R. Company; Underground source; Railroad and domestic	1.0	11–17–43
2735	8	9950	Oregon Short Line R. R. Company; Underground source; Locomotive and domestic	1.0	11–17–43
2736	8	9951	Oregon Short Line R. R. Company; Underground source; Railroad and domestic	1.0	11–17–43
2737	8	9952	Oregon Short Line R. R. Company; Underground source; Locomotive and domestic	1.0	11–17–43
2738	9	9953	Oregon Short Line R. R. Company; Underground source; Railroad and domestic	1.0	11–17–43
2739	9	2535	Pacific States Savings and Loan Company; North Fork of Deep Creek; Irrigation	1.893	11–17–43
2740	9	10154	E. A. Clawson, Receiver, Pacific States Savings and Loan Company; Unnamed Spring; Domestic	0.017824	11–17–43
2741	9	8568	Chester L. Woodward; Columbia Creek (Flood Water); Irrigation	0.72	11–17–43
2742	9	2583	John A. Magnuson; Steptoe Slough; Irrigation	1.271	11–26–43
2743	9	10395	J. R. Schulz; Clear Creek; to change the point of diversion and place of use of water formerly appropriated under Permit No. 6428, Certificate No. 1643; Irrigation and domestic	*	11–29–43

*Acre-feet.

2.2% of entire stream flow (amount of water and priority of appropriation set up in decree entered July 22, 1872, in case entitled "Frederick Dangberg and Charles Schultz, Plaintiffs, v. Henry Ross, et al., Defendants."

2744	9	10185	City of Elko, Care of W. H. Settelmeyer; Underground source (Well No. 12); Municipal	1.3814	12- 4-43
2745	9	10859	Bartholomae Oil Corporation; (Assigned November 19, 1943, by Bartholomae Oil Corporation to Bartholomae Corporation by means of Amendment to Articles of Incorporation. Filed June 21, 1944); Underground source (Antelope Well No. 1); Stockwatering and domestic	0.011	12- 4-43
2746	9	10904	Bartholomae Oil Corporation; (Assigned November 19, 1943, by Bartholomae Oil Corporation to Bartholomae Corporation by means of Amendment to Articles of Incorporation. Filed June 21, 1944); Underground source (Antelope Well No. 2); Stockwatering and domestic	0.011	12- 4-43
2747	9	10906	Bartholomae Oil Corporation; (Assigned on November 19, 1943, by Bartholomae Oil Corporation to Bartholomae Corporation by means of Amendment to Articles of Incorporation. Filed June 21, 1944); Underground source (Fish Creek Well No. 2); Stockwatering and domestic	0.011	12- 4-43
2748	9	10361	S. R. Huntington; Underground source; Milling and domestic	0.025	12- 7-43
2749	9	10066	Wm. R. Smith; Underground source (Las Vegas Artesian Basin); Irrigation and domestic	0.273	12-14-43
2750	9	10563	William Lahti (Assigned on May 14, 1941, by William Lahti to V. E. Greenwald, a 1/5 interest. Deed filed January 31, 1944); Crystal Spring; Domestic	0.0375	12-16-43
2751	9	9796	Frank McGregor; Mill Creek; Mining	500*	12-20-43
2752	9	9797	Frank McGregor; Big Ben Creek; Mining	500*	12-20-43
2753	9	9954	Frank McGregor; Big Ben Creek; Mining	500*	12-20-43
2754	9	9955	Frank McGregor; Mill Creek; Mining	1500*	12-20-43
2755	9	9768	Frank McGregor; Martin Creek; Mining	1500*	12-20-43
2756	9	10002	Frank McGregor; Gold Creek or Hope Gulch; Mining and domestic	2.0	12-20-43
2757	9	10369	Getchell Mine, Inc.; S-524 Vertical Shaft Spring; Mining and milling	0.177	12-20-43
2758	9	10370	Getchell Mine, Inc.; Tunnel No. 4 Spring; Mining and milling	0.222	12-20-43
2759	9	10445	El Dorado-Rover Mining Company; Unnamed Wash; Milling and domestic	0.10	12-20-43
2760	9	10200	Old English Gold Corporation; Troy Creek; to change the point of diversion, manner and place of use of water formerly appropriated under Permit No. 9586; Mining, milling and domestic	0.111	1-13-44
2761	9	10908	Bartholomae Oil Corporation; (Assigned November 19, 1943, by Bartholomae Oil Corporation to Bartholomae Corporation by means of Amendment to Articles of Incorporation. Filed June 21, 1944.) Underground source (Fish Creek Well No. 4); Stockwatering	0.011	1-25-44
2762	9	10218	United States of America (U. S. Department of Agriculture, Forest Service); Three Springs Creek; Domestic and public use	0.09	1-25-44
2763	9	3702	Malvin Pedroli and Thomas Pedroli; Dry Creek; Irrigation	0.036	1-25-44
2764	9	10170	A. D. Drumm, Jr., and Doris W. Drumm; Smith Creek; Irrigation and domestic	2,000*	2- 2-44
2765	9	10439	Las Vegas Land and Water Company; Underground source (Las Vegas Artesian Basin); Stockwatering and domestic	0.10	2- 8-44
2766	9	10466	P. J. Goumond; Underground source (Las Vegas Artesian Basin); Swimming pool	0.05	2-10-44
2767	9	8417	Martin Lartirigoyen; High Rock Creek; Stockwatering	0.024	2-10-44
2768	9	8418	Martin Lartirigoyen; Upper Grassy Spring; Stockwatering	0.025	2-10-44
2769	9	8420	Martin Lartirigoyen; Head of High Rock Spring; Stockwatering	0.025	2-10-44
2770	9	10897	John H. Conaway, P. W., Mamie R., Thos. J. and P. W. Duffin, Jr.; Bishop Spring; Stockwatering	0.016	2-25-44
2771	9	10238	South Comstock Tailings Disposal Company; Gold Canyon Creek; Tailings Disposal	3.0	3- 1-44
2772	9	10111	The Town of Carlin; Arthur Spring; Municipal	1.0	3- 1-44
2773	9	10485	Ed. Filippini; Underground source; Stockwatering	0.016	3- 1-44

*Acre-feet.

2774	9	10854	Public Service Commission of Nevada; Underground source; Domestic	0.018	3- 3-44
2775	9	4933	Pacific States Savings & Loan Company; North Fork of Deep Creek; Irrigation	7.573	3- 3-44
2776	9	10309	Pierre Nouque; St. Martin Creek; Irrigation	0.50	3- 6-44
2777	9	10182	City of Las Vegas; Underground source (Las Vegas Artesian Basin); Municipal	0.60	3- 6-44
2778	9	10463	Lawrence Sharp, E. P. Higbee and Paul Stewart; Sheep Mountain Dry Lake (Crescent Valley Dry Channel); Stockwatering	0.00625	3- 9-44
2779	9	10409	Nettie Wittwer, Earl Leavitt and Gerald Leavitt; Underground source; Irrigation and domestic	0.20	5- 9-44
2780	9	9682	Fred Bartine; Underground source; Irrigation and domestic	0.6554	3-31-44
2781	9	10471	E. H. Allen; Underground source (Las Vegas Artesian Basin); Irrigation and domestic	0.02	4-11-44
2782	9	10426	Josie Alma Woods; Underground source; Irrigation and domestic	0.05	4-13-44
2783	9	10135	Mono Land & Livestock Company; Unnamed Spring; Stockwatering	0.0156	4-20-44
2784	9	9849	Ralph L. and Ruth Case Oakley; Underground source; Irrigation	1.354	5-29-44
2785	9	10322	Henry McCleary Timber Company; Unnamed Spring; Stockwatering	0.0072	6- 9-44
2786	9	10323	Henry McCleary Timber Company; Unnamed Spring; Stockwatering	0.0072	6- 9-44
2787	9	10324	Henry McCleary Timber Company; Unnamed Spring; Stockwatering	0.0072	6- 9-44
2788	9	10325	Henry McCleary Timber Company; Unnamed Spring; Stockwatering	0.0072	6- 9-44
2789	9	10326	Henry McCleary Timber Company; Unnamed Spring; Stockwatering	0.0072	6- 9-44
2790	9	10327	Henry McCleary Timber Company; Unnamed Spring; Stockwatering	0.0072	6- 9-44
2791	9	10328	Henry McCleary Timber Company; Unnamed Spring; Stockwatering	0.0072	6- 9-44
2792	9	10329	Henry McCleary Timber Company; Unnamed Spring; Stockwatering;	0.0072	6- 9-44
2793	9	10330	Henry McCleary Timber Company; Unnamed Spring; Stockwatering	0.0072	6- 9-44
2794	9	10616	Jack Ferguson and W. L. Fisk; Jack O'Conner Spring; Stockwatering and domestic	0.00625	6-14-44

FINANCIAL STATISTICS

CHAPTER XVI

Office Finances

Statement showing receipts and disbursements of State Engineer's office accounts, and statements of disbursements of other accounts controlled by this office for the period July 1, 1942, to June 30, 1944.

STATEMENT OF EXPENDITURES FROM APPROPRIATION FOR SUPPORT OF STATE ENGINEER'S OFFICE FOR THE PERIOD JULY 1, 1942, TO JUNE 30, 1944

Month and Year	Appropriation by Legislature	Office salaries	Travel expense	Office expense	Equipment	Total	Balance
Balance July 1, 1942							$12,832.99
1942							
July		$700.00	$128.53	$49.61		$878.14	
August		700.00	189.95	181.82		1,071.77	
September		700.00	163.39	44.44		907.83	
October		700.00	144.47	93.82		938.29	
November		700.00	309.19	68.84		1,078.03	
December		700.00	312.19	81.87	$16.25	1,110.31	*30.00
Totals		$4,200.00	$1,247.72	$520.40	$16.25	$5,984.37	$12,862.99 5,984.37
Balance January 1, 1943							$6,878.62
1943							
January		$673.60	$108.61	$193.48		$975.69	
February		683.60	74.88	100.33		858.81	
March		671.00	145.18	73.57	$123.75	1,013.50	*150.00
April		831.80	81.63	49.87	350.14	1,313.44	
May		750.00	196.81	139.97	65.18	1,151.96	*5.00
June		757.50	291.28	257.99	110.68	1,417.45	
Totals		$4,367.50	$898.39	$815.21	$649.75	$6,730.85	$7,033.62 6,730.85
Reverted June 30, 1943							$302.77
1943							
July	†$27,540.00	$766.24	$42.33			$808.57	$27,540.00
August		694.36	215.61	$135.43	$21.90	1,067.30	
September		923.00	172.33	105.47		1,200.80	
October		844.14	96.67	75.98		1,016.79	
November		766.26	248.45	165.44	61.93	1,242.08	
December		766.26	230.58	84.11		1,080.95	
Totals		$4,760.26	$1,005.97	$566.43	$83.83	$6,416.49	$6,416.49
Balance January 1, 1944							$21,123.51
1944							
January		$771.26	$185.06	$98.97	$140.00	$1,195.29	
February		801.26	159.97	45.07		1,006.30	

March	.....	766.26	126.66	91.98	16.95	1,001.85	
April	.....	766.26	280.18	38.12	.....	1,084.56	
May	.....	801.26	145.23	61.54	21.84	1,029.87	
June	.....	838.14	107.69	158.03	81.02	1,184.88	
Totals	.....	$4,744.44	$1,004.79	$493.71	$259.81	$6,502.75	$6,502.75
Balance July 1, 1944	.....	.....	.....	.....	.....	.....	$14,620.76

*Miscellaneous receipts. †Appropriation for support of State Engineer's Office not including statutory salary appropriations.

STATEMENT OF FEES COLLECTED BY THE STATE ENGINEER FROM JULY 1, 1942, TO JUNE 30, 1944

Month and year	Total fees received	Proofs of appropriation	Applications: Publications	Applications: Fees	Recording permits	Proofs of commencement	Proofs of completion	Proofs of beneficial use	Protests	Clerical	Blue prints	Excess collections	Advance for certificates
1942													
July	$291.00	$80.00	$75.00	$45.00	$50.00	$10.00	$5.00	$1.00	$3.00	$17.00	$5.00		
August	371.00	.....	87.50	62.50	160.00	10.00	9.00	4.00	5.00	20.00	8.00	$1.00	$4.00
September	496.00	20.00	200.00	130.00	100.00	11.00	4.00	2.00	.....	14.00	5.00	5.00	5.00
October	431.00	.....	225.00	135.00	20.00	5.00	1.00	3.00	2.00	18.00	8.00	2.00	12.00
November	117.00	.....	37.50	22.50	10.00	2.00	1.00	.....	9.00	17.00	14.00	3.00	1.00
December	470.50	.....	175.00	105.00	10.00	11.00	6.00	6.00	.....	62.00	8.00	85.50	2.00
Totals	$2,176.50	$100.00	$800.00	$500.00	$350.00	$49.00	$26.00	$16.00	$19.00	$148.00	$48.00	$96.50	$24.00
1943													
January	$1,002.00	.....	$100.00	$60.00	$710.00	$4.00	$11.00	$12.00	$8.00	$48.00	$38.00	.....	$11.00
February	474.30	.....	150.00	95.00	100.30	5.00	4.00	1.00	2.00	111.00	.....	.....	6.00
March	414.00	.....	100.00	60.00	180.00	8.00	4.00	3.00	1.00	54.00	3.00	.....	1.00
April	514.00	.....	200.00	120.00	104.00	8.00	8.00	8.00	.....	27.00	19.00	$12.00	8.00
May	227.00	.....	50.00	35.00	80.00	12.00	7.00	3.00	1.00	37.00	1.00	.....	1.00
June	250.50	.....	100.00	65.00	60.00	.....	4.00	2.00	6.00	5.00	6.50	.....	2.00
July	404.00	$10.00	87.50	52.50	160.00	11.00	8.00	12.00	5.00	34.00	6.00	.....	18.00
August	527.00	.....	250.00	155.00	85.00	3.00	6.00	1.00	3.00	16.00	1.00	1.00	6.00
September	808.00	.....	287.50	212.50	217.00	5.00	6.00	14.00	5.00	44.00	6.00	4.00	7.00
October	383.35	.....	112.50	67.50	117.35	11.00	24.00	6.00	2.00	36.00	1.00	.....	6.00
November	280.00	.....	50.00	30.00	60.00	11.00	14.00	6.00	1.00	71.00	2.00	20.00	15.00
December	747.00	.....	187.50	117.50	305.00	6.00	12.00	3.00	2.00	74.00	17.00	10.00	13.00
Totals	$6,031.15	$10.00	$1,675.00	$1,070.00	$2,178.65	$84.00	$108.00	$71.00	$36.00	$557.00	$100.50	$47.00	$94.00
1944													
January	$649.80	.....	$200.00	$120.00	$160.00	$10.00	$15.00	$9.00	$1.00	$121.00	$6.80	$1.00	$6.00
February	433.00	.....	150.00	95.00	120.00	13.00	2.00	7.00	2.00	33.00	3.00	1.00	7.00
March	658.50	.....	287.50	182.50	60.00	2.00	7.00	5.00	5.00	45.00	50.00	2.50	12.00
April	590.50	.....	212.50	132.50	130.00	8.00	13.00	4.00	8.00	38.00	37.50	4.00	3.00
May	421.00	$10.00	150.00	90.00	50.00	4.00	3.00	15.00	2.00	31.00	16.00	38.00	12.00
June	767.10	40.00	162.50	127.50	330.10	8.00	8.00	9.00	3.00	38.00	31.00	8.00	2.00
Totals	$3,519.90	$50.00	$1,162.50	$747.50	$850.10	$45.00	$48.00	$49.00	$21.00	$306.00	$144.30	$54.50	$42.00

STATEMENT OF DISBURSEMENTS FROM STATE ENGINEER'S FUND FOR THE PERIOD JULY 1, 1942, TO JUNE 30, 1944

Month and year	Total disbursements	Deposited with State Treasurer	Paid for publications	Refunds	Recording certificates	Blue prints
1942						
July	$283.50	$133.50	$150.00			
August	597.00	274.50	287.50	$31.00	$4.00	
September	274.00	264.00	.....	5.00	5.00	
October	301.50	187.50	100.00	2.00	12.00	
November	197.50	68.50	125.00	3.00	1.00	
December	304.00	204.00	.....	98.00	2.00	
Totals	$1,957.50	$1,132.00	$662.50	$139.00	$24.00	
1943						
January	$1,169.50	$872.00	$287.50	.....	$10.00	
February	420.30	318.30	100.00	.....	2.00	
March	461.50	311.50	75.00	$75.00		
April	496.50	284.50	187.50	24.50		
May	175.50	175.50				
June	429.10	145.25	125.00	75.00	15.00	$68.85
July	515.00	285.50	175.00	37.50	17.00	
August	428.50	269.50	150.00	1.00	8.00	
September	753.00	506.50	125.00	117.50	4.00	
October	373.35	264.35	100.00	.....	9.00	
November	412.50	194.00	187.50	20.00	11.00	
December	679.00	528.00	125.00	10.00	16.00	
Totals	$6,313.75	$4,154.90	$1,637.50	$360.50	$92.00	$68.85
1944						
January	$502.72	$439.40	.....	$5.00	$2.00	$56.32
February	437.00	213.50	$187.50	26.00	10.00	
March	680.50	331.50	275.00	65.00	9.00	
April	569.25	352.25	137.50	75.50	4.00	
May	342.00	203.00	100.00	38.00	1.00	
June	694.60	539.10	125.00	20.50	10.00	
Totals	$3,226.07	$2,078.75	$825.00	$230.00	$36.00	$56.32

STATEMENT OF RECEIPTS AND DISBURSEMENTS, JULY 1, 1942, TO JUNE 30, 1944, STATE ENGINEER'S FUND

Balance July 1, 1942	$5,221.99	
Receipts July 1, 1942, to June 30, 1944	*11,848.05	
Disbursements July 1, 1942, to June 30, 1944		$11,497.32
Balance July 1, 1944		5,572.72
	$17,070.04	$17,070.04

CASH RECONCILEMENT

Balance Carson Branch, First National Bank of Nevada, June 30, 1944	$4,961.82	
Less outstanding checks	639.10	
	$4,322.72	$4,322.72
Revolving fund		1,250.00
Balance July 1, 1944		$5,572.72

*Includes $120.50 uncashed checks over one year old that were taken back into the State Engineer's Fund.

HUMBOLDT RIVER DISTRIBUTION, STATEMENT OF EXPENSES FROM JULY 1, 1942, TO JUNE 30, 1944

Month and year	Salaries	Administration	Total
1942			
July	$1,419.60	$994.37	$2,413.97
August	811.35	160.95	972.30
September	830.63	234.66	1,065.29
October	670.30	127.01	797.31
November	632.62	53.39	686.01
December	390.70	209.30	600.00
Totals	$4,755.20	$1,779.68	$6,534.88
1943			
January	$327.70	$68.05	$395.75
February	298.65	6.86	305.51
March	322.60	40.61	363.21
April	912.05	66.78	978.83
May	1,285.00	153.72	1,438.72
June	1,306.81	410.55	1,717.36
July	1,260.30	55.25	1,315.55
August	962.81	216.34	1,179.15
September	807.31	339.15	1,146.46
October	789.50	175.62	965.12
November	410.45	1,030.40	1,440.85
December	543.73	142.34	686.07
Total	$9,226.91	$2,705.67	$11,932.58
1944			
January	$406.30	$44.77	$451.07
February	295.00	38.30	333.30
March	315.00	132.85	447.85
April	788.20	127.39	915.59
May	1,485.30	171.79	1,657.09
June	1,514.31	339.49	1,853.80
Totals	$4,804.11	$854.59	$5,658.70

LITTLE HUMBOLDT RIVER DISTRIBUTION, STATEMENT OF EXPENSES FROM JULY 1, 1942, TO JUNE 30, 1944

Month and year	Salaries	Administration	Total
1942			
July	.....	$336.19	$336.19
August	424.08	7.26	431.34
September	248.00	122.55	370.55
October	240.00	161.99	401.99
November	248.00	82.58	330.58
Totals	$1,160.08	$710.57	$1,870.65
1943			
March	$215.60	$134.50	$350.10
April	256.40	89.28	345.68
May	200.00	53.83	253.83
June	400.00	76.81	476.81
July	185.00	.....	185.00
August	185.00	87.03	272.03
September	185.00	89.35	274.35
October	185.00	.....	185.00
November	185.00	121.01	306.01
December	185.00	153.52	338.52
Totals	$2,182.00	$805.33	$2,987.33
1944			
January	$185.00	$85.28	$270.28
February	185.00	82.57	267.57
March	210.00	118.94	328.94
April	259.00	105.88	364.88
May	371.00	53.77	424.77
June	581.00	193.85	774.85
Totals	$1,791.00	$640.29	$2,431.29

CURRANT AND DUCKWATER DISTRIBUTION, STATEMENT OF EXPENSES FROM JULY 1, 1942, TO JUNE 30, 1944

Month and year	Salaries	Administration	Total
1942			
July	$188.50	$4.24	$192.74
August	195.00	4.39	199.39
September	195.00	4.39	199.39
Totals	$578.50	$13.02	$591.52
1943			
May	$16.25	$5.00	$21.25
June	145.00	46.40	191.40
July	150.00	48.00	198.00
August	155.00	49.60	204.60
September	155.00	49.60	204.60
October	150.00	48.00	198.00
December	75.00	24.00	99.00
Totals	$846.25	$270.60	$1,116.85
1944			
June	$85.00	$52.70	$137.70

PAHRANAGAT LAKE DISTRIBUTION, STATEMENT OF EXPENSES FROM JULY 1, 1942, TO JUNE 30, 1944

Month and year	Salaries	Administration	Total
1942			
July	$210.00	$18.97	$228.97
August	217.00	30.75	247.75
September	84.00	33.60	117.60
Totals	$511.00	$83.32	$594.32
1943			
July	$115.00	$95.04	$210.04
August	155.00	119.10	274.10
September	170.00	141.18	311.18
Totals	$440.00	$355.32	$795.32

MUDDY RIVER DISTRIBUTION, STATEMENT OF EXPENSES FROM JULY 1, 1942, TO JUNE 30, 1944

Month and year	Salaries	Administration	Total
1942			
July	$45.00	$1.01	$46.01
August	46.50	1.05	47.55
September	46.50	1.05	47.55
October	45.00	.....	45.00
November	15.50	.....	15.50
December	15.00	.....	15.00
Totals	$213.50	$3.11	$216.61
1943			
January	$15.50	.....	$15.50
February	15.50	.....	15.50
March	14.00	.....	14.00
April	15.50	.....	15.50
May	15.00	.....	15.00
June	46.50	.....	46.50
July	45.00	$0.90	45.90
August	46.50	.93	47.43
September	46.50	.....	46.50
October	45.00	.....	45.00
November	15.50	.....	15.50
December	15.00	.....	15.00
Totals	$335.50	$1.83	$337.33
1944			
January	$15.00	.....	$15.00
February	15.50	.....	15.50
March	15.00	.....	15.00
April	15.50	.....	15.50
May	15.00	.....	15.00
June	70.00	$1.40	71.40
Totals	$146.00	$1.40	$147.40

WHITE RIVER DISTRIBUTION, STATEMENT OF EXPENSES FROM JULY 1, 1942, TO JUNE 30, 1944

Month and year	Salaries	Administration	Total
1942			
September	$180.00	$3.24	$183.24
October	19.50	11.83	31.33
Totals	$199.50	$15.07	$214.57
1943			
August	$180.00	$3.60	$183.60
September	228.00	.....	228.00
Totals	$408.00	$3.60	$411.60

LAS VEGAS ARTESIAN BASIN EXPENSES FROM JULY 1, 1942, TO JUNE 30, 1944

Month and year	Salaries	Administration	Total
1943			
June	$500.00	$35.00	$535.00
July	250.00	.....	250.00
August	325.00	55.50	380.50
September	275.80	38.30	314.10
October	275.00	373.84	648.84
November	275.00	55.50	330.50
December	275.00	25.00	300.00
Totals	$2,175.80	$583.14	$2,758.94
1944			
January	$275.00	$30.50	$305.50
February	275.00	25.00	300.00
March	275.00	30.50	305.50
April	275.00	105.20	380.20
May	275.00	75.20	350.20
June	275.00	49.42	324.42
Totals	$1,650.00	$315.82	$1,965.82

PAHRUMP VALLEY ARTESIAN BASIN EXPENSES FROM JULY 1, 1942, TO JUNE 30, 1944

Month and year	Salaries	Administration	Total
1944			
April	.....	$16.50	$16.50

NEVADA COOPERATIVE SNOW SURVEY, STATEMENT OF DISBURSEMENTS FROM JULY 1, 1942, TO JUNE 30, 1944

Month and year	Appropriation by Legislature	Wages	Miscellaneous expenses	Total	Balance
Balance July 1, 1942	.....	.....	.....	.....	$498.21
1943					
March	.....	$157.50	.....	$157.50	
April	.....	277.50	.....	277.50	
May	.....	60.00	.....	60.00	
Totals	.....	$495.00	.....	$495.00	*$3.21
July 1, 1943	$1,500.00				
1944					
March	.....	$240.00	.....	$240.00	
April	.....	480.00	$27.50	507.50	
Totals	.....	$720.00	$27.50	$747.50	$752.50

*Reverted to General Fund.

NEVADA COOPERATIVE STREAM MEASUREMENT, STATEMENT OF EXPENSES FROM JULY 1, 1942, TO JUNE 30, 1944

Month and year	Appropriation by Legislature	Wages	Miscellaneous expenses	Total	Balance
Balance July 1, 1942	.....	.....	.....	.....	$1,204.07
July	.....	$153.55	$4.07	$157.62	
September	.....	208.04	54.45	262.49	
Totals	.....	$361.59	$58.52	$420.11	$783.96
1943					
January	.....	$177.90	$60.85	$238.75	
March	.....	149.91	31.94	181.85	
May	.....	224.75	43.01	267.76	
June	.....	72.60	.....	72.60	
Totals	.....	$625.16	$135.80	$760.96	*$23.00
July 1, 1943	$3,000.00				
November	.....	$494.53	.....	$494.53	
Totals	.....	$494.53	.....	$494.53	$2,505.47
1944					
February	.....	$499.15	.....	$499.15	
March	.....	355.84	.....	355.84	
May	.....	150.48	.....	150.48	
Totals	.....	$1,005.47	.....	$1,005.47	$1,500.00

*Reverted to General Fund.

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