STATE OF NEVADA

BIENNIAL REPORT
OF THE
STATE ENGINEER

For the Period
July 1, 1946, to June 30, 1948, Inclusive

ALFRED MERRITT SMITH
State Engineer of Nevada

CARSON CITY, NEVADA
STATE PRINTING OFFICE
1948
During the biennium covered by this report, there has been a great increase in both the office and field work. This is due in part to the fact that more applications for appropriation of water were received than in any similar period in the history of the office. The 885 applications filed exceeded the 886 applications filed during the period July 1, 1926, to July 1, 1928, by 89 applications. Other factors were the increasing activity brought about by the ground-water program, the Nevada Power survey, and the Lake Tahoe study, and increased work on water distribution problems. A great deal of time is taken up with examining all new applications and checking and filing maps submitted in support thereof. With respect to this work, the aim of the office has been to eliminate all errors before filing and publishing the notices of proposed appropriations. All proofs of commencement of work and completion of work, and proofs of application of water so beneficial use, together with the maps in support thereof, are carefully examined for errors before filing. Proofs of appropriation of water and supporting maps covering vested water rights or rights initiated prior to March 3, 1903, are also given careful study before filing as a part of our routine office work in order to expedite the work of preparing data for adjudication proceedings.

Issuance of certificates of appropriation of water under both permits and decreed rights under statutory adjudication has occupied considerable time. In connection with this work it must be borne in mind that the certificate of appropriation of water is the final step in a perfected water right and, therefore, it is of vital importance that no errors exist, and for this reason they are examined at least three times before they are sent to the County Recorder in the county where the appropriation exists for recording.

Budgets covering the costs of water distribution prepared and submitted to the county clerks are a part of our annual work.

Many deeds affecting the transfer of water rights of record are carefully examined in order to ascertain that there is no missing link in the chain of title from the owner of record to the new owner. In other words, the succession of title to the water right of record must be strictly adhered to so as to keep in close contact with the new owners, especially in cases of rights covering peeling applications and permits where the attention of the holder of such application and permit is required to keep it in good standing, and also for the purpose of enabling this office to issue the certificate of appropriation of the perfected right to the legal owner or owners of record. In cases where the State Engineer's file numbers are omitted in the deeds, but the description of the land and appurtenances are given, much time is devoted to searching through the records to determine with certainty that none of the water rights covered by such deeds are omitted.

Adjudication proceedings were completed on the following four streams during the period covered by this report: Kalamazoo Creek, Jumbo Creek, Rodeo Creek, and Warm and Big Springs. Pertinent information concerning these proceedings is given in chapter IV.

In July of 1947 the office reviewed and published the Nevada Water Law. This publication is available upon request. Chapter XI sets forth briefly the changes in the water law made by the 1945 and 1947 Legislatures.
CHAPTER I
Introductory and General

In the preparation of this report the following objectives have been kept in mind:

First—An accounting by the State Engineer to the Governor, the State Legislature and the taxpayers of his stewardship of the department during the biennial period.

Second—To benefit the water users or any persons interested in water rights by presenting in a condensed and concise form all data that have been recorded in connection with water rights during the two-year period.

Third—To familiarize water users and the public with the various duties and activities of the State Engineer's office.

Fourth—To perpetuate for future reference and historical use a résumé of numerous activities of the department that may not be permanently recorded in any other manner.

The office of the State Engineer was created by Legislative Act in 1903, primarily for the purpose of providing a statutory method for the determination and regulation of existing water rights. In 1905 the Legislature provided a statutory method by which future water rights could be acquired and perfected by application to the State Engineer for permission to appropriate and apply water to beneficial use.

The original water law has been amended several times since its passage as a result of needs made evident by its application. The result has been that our water law is now admirably adapted to conditions in Nevada. The 1930-1932 Biennial Report of the State Engineer contains a summary of the various changes in the water law dating back to the earliest Act pertaining to diversion of water in 1866.

The activities of the State Engineer's office may be divided into the following activities:

1. Water right applications which include the filing of applications, publication, investigations, hearings, action in either approving or denying same. (See chap. III.)
2. Adjudication of vested water rights. (See chap. IV.)
3. Distribution of water on adjudicated stream systems. (See chap. V.)
4. Ground-water program in cooperation with the United States Geological Survey and the administration of the ground water law. (See chap. VI.)
5. Stream measurement program in cooperation with the United States Geological Survey. (See chap. VII.)
6. Well Driller's Licensing program. (See chap. X.)
7. Miscellaneous office activities.

In addition, the State Engineer is the member of several State and Reclamation Boards which takes up a great deal of his time. These are listed on page 9.
Congress, Senator Pat McCarran, Senator George Malone, and Congressman Charles Russell, who have never failed to lend aid and counsel when called upon. I also thank the many other State and county officers throughout our State who have rendered valuable service to our department.

RECOMMENDATIONS

1. Additional Personnel. Due to the great increase of work in the Department, it is recommended that the Legislature appropriate funds sufficient to enable the State Engineer to employ the services of one additional engineer and one additional stenographer.

2. Cooperative Ground-Water Program. Due to the great increase in the use of ground water I recommend that the Legislature appropriate the same amount of money as was appropriated in 1947, i.e., $40,000 to carry this program forward.

3. Cooperative Stream Measurement Program. There are now 61 stream gaging stations being operated for Nevada under this program. Of this number, 16 were added during the biennium period 1946-1948. Due to the increased cost of operation and maintenance of the station, it is recommended that the Legislature increase the appropriation from the 1947 appropriation of $9,000 to $14,000.

4. Cooperative Snow Survey Program. During the biennium a cooperative agreement was entered into between the Soil Conservation Service, the Experiment Station, and the office of State Engineer relative to snow survey work and irrigation studies. In addition to the snow survey work, studies have been started on crop-transpiration losses. To carry this work forward, and in addition due to higher costs, it is recommended that the Legislature increase the appropriation for the biennium to at least $6,000.

ALFRED MERRITT SMITH,
State Engineer.

TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Letter of Transmittal</td>
<td>3</td>
</tr>
<tr>
<td>State Engineers Since Creation of Office</td>
<td>6</td>
</tr>
<tr>
<td>Personnel</td>
<td>7</td>
</tr>
<tr>
<td>Summary of the Work of the State Engineer</td>
<td>9</td>
</tr>
<tr>
<td>Acknowledgments and Recommendations</td>
<td>18</td>
</tr>
<tr>
<td>I—Introductory and General</td>
<td>15</td>
</tr>
<tr>
<td>II—State Water Right Surveys</td>
<td>16</td>
</tr>
<tr>
<td>III—Applications for Water Rights</td>
<td>25</td>
</tr>
<tr>
<td>IV—Adjudication of Water Rights</td>
<td>24</td>
</tr>
<tr>
<td>V—Water Distribution</td>
<td>25-30</td>
</tr>
<tr>
<td>Humboldt Water Distribution District:</td>
<td></td>
</tr>
<tr>
<td>1. Humboldt River</td>
<td></td>
</tr>
<tr>
<td>2. Little Humboldt River</td>
<td></td>
</tr>
<tr>
<td>3. Quinn River</td>
<td></td>
</tr>
<tr>
<td>Parker and Lake</td>
<td></td>
</tr>
<tr>
<td>Duckwater Creek</td>
<td></td>
</tr>
<tr>
<td>Current Creek</td>
<td></td>
</tr>
<tr>
<td>Baker-Lahman Creek</td>
<td></td>
</tr>
<tr>
<td>VI—Summary of Ground Water Studies by U. S. Geological Survey</td>
<td>31</td>
</tr>
<tr>
<td>VII—Cooperative Stream Measurement Work</td>
<td>34</td>
</tr>
<tr>
<td>VIII—Nevada Cooperative Snow Surveys, 1946—1948</td>
<td>41</td>
</tr>
<tr>
<td>IX—Inspection and Surveys of Lands Suitable for Irrigation by Pumping</td>
<td>62</td>
</tr>
<tr>
<td>X—Well Drilling</td>
<td>48</td>
</tr>
<tr>
<td>XI—New Law Affecting Water</td>
<td>48</td>
</tr>
<tr>
<td>XII—Quinn River Investigation</td>
<td>51</td>
</tr>
<tr>
<td>XIII—Humboldt River Advisory Board</td>
<td>60</td>
</tr>
<tr>
<td>XIV—Rules and Regulations of the State Engineer:</td>
<td>62</td>
</tr>
<tr>
<td>1. Interpretation of Ground Water Law</td>
<td>62</td>
</tr>
<tr>
<td>2. Petitions to Protest and Hearings</td>
<td>66</td>
</tr>
<tr>
<td>XV—State Board of Registered Professional Engineers</td>
<td>78</td>
</tr>
<tr>
<td>XVI—Irrigation Districts and Companies</td>
<td>76</td>
</tr>
<tr>
<td>XVII—Status Applications Filed During Period July 1, 1946, to June 30, 1948</td>
<td>80</td>
</tr>
<tr>
<td>XVIII—Status Applications Filed Prior to July 1, 1946</td>
<td>90</td>
</tr>
<tr>
<td>XIX—Certificates Issued Under Permits, 1945—1948</td>
<td>118</td>
</tr>
<tr>
<td>XX—Office Functions, State Engineer</td>
<td>122</td>
</tr>
<tr>
<td>XXI—Proceedings Second Water Conference</td>
<td>135</td>
</tr>
<tr>
<td>XXII—Colorado River Commission</td>
<td>195</td>
</tr>
</tbody>
</table>
BIENNIAL REPORT OF STATE ENGINEER, 1946-1948

ACKNOWLEDGMENTS

This report, covering the seventh two-year period of service by my associates and myself in the department of the State Engineer, will in part show the tremendous increase in work in the department during the past biennium. This can best be realized when attention is called to the fact that the work involved in handling applications to appropriate water now occupies at least 90 percent of our time. During the period covered by this report there were 815 applications filed to appropriate water as compared with 487 during the biennium 1944-1946, which is an increase of 63 percent. The increase during the 1946-1948 biennium over the biennium 1942-1944 was 203 percent. In addition to this many other new activities were carried on as described in this report during the 1946-1948 biennium, inclusive of the cooperative ground water study, the Quinn River Investigation, the Lake Tahoe Water Study, the handling of well driller's logs, the organization of the Humboldt River Advisory Board, the Nevada Power Market Survey, and the Clear Creek Reservoir study. Therefore, I wish especially to praise the splendid and unstinted service rendered by my staff.

Acknowledgments and sincere thanks are extended to the following agencies with which we have worked so closely during the past two years:

U. S. Soil Conservation Service.
U. S. Extension Service.
Nevada State Experiment Station.
Farmer's Home Administration.
United States Geological Survey.
United States Indian Service.
United States Weather Bureau.
Bureau of Land Management.
United States Forest Service.
U. S. Bureau of Reclamation.
U. S. Army Engineering Office.
Federal Power Commission.
Nevada State Farm Bureau.

May I again repeat a statement I have often made before which is that the services and efficiency of the department are in no small measure due to the help of State officers in other departments. These officers with whom we are in contact almost daily and whose work is often related to our own, have always given us their full cooperation. Governor Vail Pittman, Attorney General Alan Bible and his able assistants, Wm. T. Mathews, George P. Annand, and Homee Mooney, have all been of great assistance to me and my staff, and I take this means of publicly thanking them.

I wish also to extend my sincere thanks to our representatives in
LETTER OF TRANSMITTAL

TO HIS EXCELLENCY, HONORABLE VAIL PICTMAN, 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 1933, I have the honor to transmit herewith the Biennial Report of the State Engineer for the period ending June 30, 1948.

The report of the Colorado River Commission for the biennium is included herein as an appendix.

Respectfully submitted,

ALFRED MERRITT SMITH,
State Engineer.
### STATE ENGINEERS SINCE CREATION OF OFFICE

<table>
<thead>
<tr>
<th>Name</th>
<th>Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. E. Chandler</td>
<td>May 29, 1903, to May 1, 1905</td>
</tr>
<tr>
<td>Henry Thuret</td>
<td>May 1, 1905, to May 1, 1907</td>
</tr>
<tr>
<td>Frank B. Nicholas</td>
<td>May 1, 1907, to March 2, 1910</td>
</tr>
<tr>
<td>Emmett D. Boyle</td>
<td>March 8, 1910, to March 21, 1911</td>
</tr>
<tr>
<td>W. M. Kearney</td>
<td>March 21, 1911, to May 15, 1912</td>
</tr>
<tr>
<td>J. G. Scrugham</td>
<td>May 4, 1912, to January 10, 1918</td>
</tr>
<tr>
<td>Seymour Case</td>
<td>January 25, 1918, to March 28, 1919</td>
</tr>
<tr>
<td>J. G. Scrugham</td>
<td>March 29, 1919, to October 7, 1922</td>
</tr>
<tr>
<td>Robert A. Allen</td>
<td>October 7, 1922, to March 28, 1927</td>
</tr>
<tr>
<td>Alfred Merritt Smith</td>
<td>May 28, 1935</td>
</tr>
</tbody>
</table>

George Allard, 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.
6. Proofs of commencement of work filed, July 1, 1946, to June 30, 1948. 349
7. Proofs of completion of work filed, July 1, 1946, to June
   30, 1948. 290
8. Proofs of beneficial use filed, July 1, 1946, to June 30, 1948. 203
9. Protests filed against the granting of applications, July 1,
   1946, to June 30, 1948. 338
10. Certificates of appropriation issued under permitted water
    rights, July 1, 1946, to June 30, 1948. 188
11. Proofs of appropriation filed, 1905 to June 30, 1948. 2,350
12. Proofs of appropriation filed, July 1, 1946, to June 30, 1948. 19

COOPERATIVE WORK

The State Engineer also carries on cooperative work in stream
    gaging, snow survey, and ground-water studies through three State
    appropriations. The cooperating agencies are:
    The Nevada Cooperative Snow Surveys.
    The stream gaging and ground-water study programs are carried by
    the United States Geological Survey under two separate cooperative
    programs.

The activities of the State Engineer are related under their proper
    headings elsewhere.

PUBLIC SERVICE COMMISSION

The Nevada Public Service Commission is composed of the following
    members:
    George Allard, 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 carriers, protests as to
    public service, and requests for certificates of convenience and necessity
    for the operation of public utilities.

THE STATE IRRIGATION DISTRICT BOND COMMISSION

The State Irrigation District Bond Commission was created by an
    Act of the Legislators approved February 26, 1921, being sections
    5217-5229 Nevada Compiled Laws 1926. The commission consists of the
    following members:
    Vail Pittman, Governor of Nevada.
    Grant I. Robinson, 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:
    Vail Pittman, Governor of Nevada.
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 Irrigation District Bond Commission.
3. The State Range Commission.
4. The Nevada State Planning Board.
By gubernatorial appointment the present State Engineer is also a member of the following:
5. The Colorado River Commission of Nevada.
6. State Board of Registered Professional Engineers.

RECLAMATION ORGANIZATIONS
1. The Association of Western State Engineers (seventeen western States).
5. National Rivers and Harbors Congress.

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 .......................... 39
2. Acres under adjudicated streams ...................................... 289,199
3. Vested water uses under adjudicated streams ....................... 621
4. Adjudicated stream systems supervised by this office during the past biennium ........................................... 8
5. Adjudicated stream systems not supervised by this office during the past biennium ........................................... 32
6. Streams in process of adjudication ...................................... 22
7. Adjudications completed during past biennium ......................... 4
8. Stream systems on which decrees have been entered by civil suit not under supervision of this office ..................... 10
9. Stream systems adjudicated by United States District Court .......... 1
10. Stream systems under process of adjudication by United States District Court ........................................... 1

STATUS OF WATER APPLICATIONS AND PROOFS OF APPROPRIATION
1. Water applications filed 1903 to June 30, 1948 ....................... 10,319
2. Water applications acted upon, 1903 to June 30, 1948 .......... 11,889
3. Water applications on which no action has been taken ........ 630
4. Water applications acted on, July 1, 1946, to June 30, 1948 ... 688
5. Water applications filed, July 1, 1946, to June 30, 1948 ...... 895
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 Irrigation District Bond Commission.
3. The State Range Commission.
4. The Nevada State Planning Board.
By gubernatorial appointment the present State Engineer is also a member of the following:
5. The Colorado River Commission of Nevada.
6. State Board of Registered Professional Engineers.

RECLAMATION ORGANIZATIONS
1. The Association of Western State Engineers (seventeen western states).
5. National Rivers and Harbors Congress.

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 39
2. Acres under adjudicated streams 359,199
3. Vested water rights under adjudicated streams 621
4. Adjudicated stream systems supervised by this office during the past biennium 8
5. Adjudicated stream systems not supervised by this office during the past biennium 32
6. Streams in process of adjudication 22
7. Adjudications completed during past biennium 4
8. Stream systems on which decrees have been entered by civil suit not under supervision of this office 10
9. Stream systems adjudicated by United States District Court 4
10. Stream systems under process of adjudication by United States District Court 1

STATUS OF WATER APPLICATIONS AND PROOFS OF APPROPRIATION
1. Water applications filed 1903 to June 30, 1948 12,319
2. Water applications acted upon, 1903 to June 30, 1948 11,889
3. Water applications on which no action has been taken 630
4. Water applications acted on, July 1, 1946, to June 30, 1948 688
5. Water applications filed, July 1, 1946, to June 30, 1948 855
6. Proofs of commencement of work filed, July 1, 1946, to June 30, 1948... 349
7. Proofs of completion of work filed, July 1, 1946, to June 30, 1948... 290
8. Proofs of beneficial use filed, July 1, 1946, to June 30, 1948... 263
9. Protests filed against the granting of applications, July 1, 1946, to June 30, 1948... 338
10. Certificates of appropriation issued under permitted water rights, July 1, 1946, to June 30, 1948... 188
11. Proofs of appropriation filed, 1905 to June 30, 1948... 2,350
12. Proofs of appropriation filed, July 1, 1946, to June 30, 1948... 19

COOPERATIVE WORK

The State Engineer also carries on cooperative work in stream gaging, snow survey, and ground-water studies through three State appropriations. The cooperating agencies are:

- The Nevada Cooperative Snow Survey.
- The stream gaging and ground-water study programs are carried by the United States Geological Survey under two separate cooperative programs.

The activities of the State Engineer are related under their proper headings elsewhere.

PUBLIC SERVICE COMMISSION

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

George Allard, Chairman, Carson City.
Charles V. Williams, Yerington.
Alfred Merrill 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 carriers, complaints as to public service, and requests for certificates of convenience and necessity for the operation of public utilities.

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 2217-2229 Nevada Compiled Laws 1920. The commission consists of the following members:

Vail Pittman, Governor of Nevada.
Grant I. Robison, Bank Examiner.
Alfred Merrill Smith, State Engineer.

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

THE STATE RANGE COMMISSION

This commission consists of the following members:

Vail Pittman, Governor of Nevada.

OFFICIAL ROSTER DEPARTMENT OF STATE ENGINEER

OFFICE PERSONNEL

Carson City, Nevada
July 1, 1946, to June 30, 1948

ALFRED MERRILL SMITH
State Engineer

HUGH A. SHAMBERGER
Assistant State Engineer

EDWARD CRAYE
Assistant State Engineer

F. W. HOWARD
Assistant State Engineer

J. A. MILLER
Office Engineer

C. B. THOMPSON
Chief Clerk

ALFA THIEDE
Stenographer

VIVIAN E. SCOTT
Secretary

EDWARD MURPHY
Extra Confidential

SHIRLEY HINES
Extra Confidential

HELEN CRIETH
Stenographer

WATER DISTRIBUTION PERSONNEL

Las Vegas and Yuma Artesian Basin

HARRY T. JAMSCHEN
Commissioner, 1945-1948

HUMBOLDT RIVER

J. A. MILLER, Supervising Water Commissioner... Lovelock
ALBERT M. QUILL, Assistant Commissioner... Lovelock

HUMBOLDT RIVER, 1947

C. W. WOOD, Supervising Commissioner... Lovelock
GEORGE H. HARRIS, Assistant Commissioner... Lovelock

HUMBOLDT RIVER, 1948

CHAS. H. ALLEN, Assistant Commissioner... Lovelock

HUMBOLDT RIVER, 1948

W. R. MOBLEY, Water Commissioner... Lovelock

IRREGULARITY COMMISSION

GERALD H. HAVENS, Commission Secretary...

IRREGULARITY COMMISSION

W. E. HAWKINS, Commission Secretary...

Entire District

Entire District

Entire District

Entire District

Entire District

Entire District

Entire District

Entire District

Entire District
STATE ENGINEERS SINCE CREATION OF OFFICE

A. E. Chandler. .. May 29, 1903, to May 1, 1905
Henry Thurtel. .. May 1, 1905, to May 1, 1907
Frank B. 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 29, 1919, to October 7, 1922
Robert A. Allen. .. October 7, 1922, to March 28, 1927
Alfred Merritt Smith. .. May 28, 1935—

George Allard, 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 pub-
licly-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.
LETTER OF TRANSMITTAL

To His Excellency, Honorable Vail P. Partch, 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 1913, I have the honor to transmit herewith the Biennial Report of the State Engineer for the period ending June 30, 1948.

The report of the Colorado River Commission for the biennium is included herein as an appendix.

Respectfully submitted,

ALFRED MERRITT SMITH,
State Engineer.
ACKNOWLEDGMENTS

This report, covering the seventh two-year period of service by my associates and myself in the department of the State Engineer, will in part show the tremendous increase in work in the department during the past biennium. This can best be realized when attention is called to the fact that the work involved in handling applications to appropriate water now occupies at least 80 percent of our time. During the period covered by this report there were 895 applications filed to appropriate water as compared with 487 during the biennium 1944-1946, which is an increase of 83 percent. The increase during the 1946-1948 biennium over the biennium 1942-1944 was 203 percent. In addition to this many other new activities were carried on as described in this report during the 1946-1948 biennium, inclusive of the cooperative ground water study, the Quinn River Investigation, the Lake Tahoe Water Study, the handling of Well Driller’s logs, the organization of the Humboldt River Advisory Board, the Nevada Power Market Survey, and the Clear Creek Reservoir study. Therefore, I wish especially to praise the splendid and unselfish service rendered by my staff.

Acknowledgments and sincere thanks are extended to the following agencies with which we have worked so closely during the past two years:

- Soil Conservation Service.
- U. S. Extension Service.
- Nevada State Experiment Station.
- Farmer’s Home Administration.
- United States Geological Survey.
- United States Indian Service.
- United States Weather Bureau.
- Bureau of Land Management.
- United States Forest Service.
- U. S. Bureau of Reclamation.
- U. S. Army Engineering Office.
- Nevada State Farm Bureau.

May I again repeat a statement I have often made before which is that the services and efficiency of the department are in no small measure due to the help of State officers in other departments. These officers with whom we are in contact almost daily and whose work is often related to our own, have always given us their full cooperation. Governor Vail Pittman, Attorney General Alan Bible and his able assistants, Wm. T. Mathews, George P. Annand, and Homer Mooney, have all been of great assistance to me and my staff, and I take this means of publicly thanking them.

I wish also to extend my sincere thanks to our representatives in
Congress, Senator Pat McCarran, Senator George Malone, and Congressman Charles Russell, who have never failed to lend aid and counsel when called upon. I also thank the many other State and county officers throughout our State who have rendered valuable service to our department.

RECOMMENDATIONS

1. Additional Personnel. Due to the great increase of work in the Department, it is recommended that the Legislature appropriate funds sufficient to enable the State Engineer to employ the services of one additional engineer and one additional stenographer.

2. Cooperative Ground-Water Program. Due to the great increase in the use of ground water I recommend that the Legislature appropriate the same amount of money as was appropriated in 1947, i.e., $40,000 to carry this program forward.

3. Cooperative Stream Measurement Program. There are now 61 stream gaging stations being operated for Nevada under this program. Of this number, 56 were added during the biennium period 1946-1948. Due to the increased cost of operation and maintenance of the stations, it is recommended that the Legislature increase the appropriation from the 1947 appropriation of $9,000 to $14,000.

4. Cooperative Snow Survey Program. During the biennium a cooperative agreement was entered into between the Soil Conservation Service, the Experiment Station, and the office of State Engineer relative to snow survey work and irrigation studies. In addition to the snow survey work, studies have been started on crop-transpiration losses. To carry this work forward, and in addition due to higher costs, it is recommended that the Legislature increase the appropriation for the biennium to at least $6,000.

ALFRED MERRITT SMITH,
State Engineer.
CHAPTER I

Introductory and General

In the preparation of this report the following objectives have been kept in mind:
First—An accounting by the State Engineer to the Governor, the State Legislature and the taxpayers of his stewardship of the department for the biennial period.
Second—To benefit the water users or any persons interested in water rights by presenting in a condensed and concise form all data that have been recorded in connection with water rights during the two-year period.
Third—To familiarize water users and the public with the various duties and activities of the State Engineer's office.
Fourth—To perpetuate for future reference and historical use a resume of numerous activities of the department that may not be permanently recorded in any other manner.

The office of the State Engineer was created by Legislative Act in 1903, primarily for the purpose of providing a statutory method for the determination and regulation of existing water rights. In 1905 the Legislature provided a statutory method by which future water rights could be acquired and perfected by application to the State Engineer for permission to appropriate and apply water to beneficial use.

The original water law has been amended several times since its passage as a result of needs made evident by its application. The result has been that our water law is now admirably adapted to conditions in Nevada. The 1930-1932 Biennial Report of the State Engineer contains a summary of the various changes in the water law dating back to the earliest Act pertaining to diversion of water in 1866.

The activities of the State Engineer's office may be divided into the following activities:
1. Water right applications which include the filing of applications, publication, investigations, hearings, action in either approving or denying same. (See chap. III.)
2. Adjudication of vested water rights. (See chap. IV.)
3. Distribution of water on adjudicated stream systems. (See chap. V.)
4. Ground-water program in cooperation with the United States Geological Survey and the administration of the ground water law. (See chap. VI.)
5. Stream measurement program in cooperation with the United States Geological Survey. (See chap. VII.)
6. Well Driller's licensing program. (See chap. X.)
7. Miscellaneous office activities.

In addition, the State Engineer is the member of several State and Reclamation Boards which take up a great deal of his time. These are listed on page 9.
During the biennium covered by this report, there has been a great increase in both the office and field work. This is due in part to the fact that more applications for appropriate water were received than in any similar period in the history of the office. The 855 applications filed exceeded the 806 applications filed during the period July 1, 1928, to July 1, 1926, by 89 applications. Other factors were the increasing activity brought about by the ground-water program, the Nevada Power Survey, and the Lake Tahoe study, and increased work on water distribution problems. A great deal of time is taken up with examining all new applications and checking and filing maps submitted in support thereof. With respect to this work, the aim of this office has been to eliminate all errors before filing and publishing the notices of proposed appropriations. All proofs of commencement of work and completion of work, and proofs of application of water to beneficial use, together with the maps in support thereof, are carefully examined for errors before filing. Proofs of appropriation of water and supporting maps covering vested water rights or rights initiated prior to March 3, 1903, are also given careful study before filing as a part of our routine office work in order to expedite the work of preparing data for adjudication proceedings.

Issuance of certificates of appropriation of water under both permits and decreed rights under statutory adjudication has occupied considerable time. In connection with this work it must be borne in mind that the certificate of appropriation of water is the final step in a perfected water right and, therefore, it is of vital importance that no errors exist, and for this reason they are examined at least three times before they are sent to the County Recorder in the county where the appropriation exists for recording.

Budgets covering the costs of water distribution prepared and submitted to the county clerks are a part of our annual work.

Many deeds affecting the transfer of water rights of record are carefully examined in order to ascertain that there is no missing link in the chain of title from the owner of record to the new owner. In other words, the succession of title to the water right of record must be strictly adhered to so as to keep in close contact with the new owners, especially in cases of rights covering pedaling applications and permits where the attention of the holder of such application and permit is required to keep it in good standing, and also for the purpose of enabling this office to issue the certificate of appropriation of the perfected right to the legal owner or owners of record. In cases where the State Engineer's file numbers are omitted in the deeds, but the description of the land and appurtenances are given, much time is devoted in searching through the records to determine with certainty that none of the water rights covered by such deeds are omitted.

Adjudication proceedings were completed on the following four streams during the period covered by this report: Ralayanos Creek, Jumbo Creek, Rodeo Creek, and Warm and Big Springs. Pertinent information concerning these proceedings is given in chapter IV.

To July of 1947 the office reviewed and published the Nevada Water Law. This publication is available upon request. Chapter XI sets forth briefly the changes in the water law made by the 1945 and 1947 Legislatures.


Ground Water in the Vicinity of Elko, Nevada (mimeographed) 1947.

Detailed studies will be continued in selected valleys as rapidly as the demand for this type of study warrants. Such studies are under way at present in Smith Valley in Lyon County, and Truckee Meadows in Washoe County. The study in Smith Valley will be completed early in the coming biennium. The reports based on detailed studies give information on the estimated quantity of ground water that may be developed annually without exceeding the safe yield, quality of the water, characteristics of the water-bearing beds, probable depth to which wells must be drilled to obtain water, depth to the water level, and the approximate area where the pumping lift will not be excessive.

Reconnaissance studies have been completed, or are in progress, in 16 valleys. These valleys are listed below by counties. Some of the valleys lie in two or more counties, but are listed for the county in which the major part of the valley lies:

Churchill: Edwards Valley, Douglas; Carson Valley; Elko, Goshute Valley; Esmeralda; Fish Lake Valley; Eureka, Crescent; Humboldt, Quinn River; Lander, Lower Reese River, including Arroyo Swamp, Upper Reese River; Lincoln, Pensley Valley; Mineral, Whiskey Flat, Teels Marsh; Nye, Hot Creek Valley, Reels Valley; Nye, Eagle Valley; Pershing, Roena Vista Valley; Washoe, Spanish Springs, Warm Springs.

For the present it is planned that only reconnaissance reports will be prepared for these valleys, or other valleys in which similar studies are made. These reports will be filed with the State Engineer and the Geological Survey. They will give general information on the ground water of the valley, such as favorable or unfavorable conditions, depth to water level, information on existing wells, and recommendations for future study. Those valleys which appear to have definite ground-water possibilities will be studied in detail at some future date. From the studies already made, it is known that in some of these valleys the prospects are good for developing ground-water supplies, whereas in others the prospects are poor. It is planned to cover in this manner all the major valleys in the State not covered by detailed studies.

The following valleys have been tentatively selected for reconnaissance studies in the near future:

In preparation.

Many field investigations and hearings were held in connection with applications to appropriate water. Numerous complex water commissioner problems arise every year relative to the distribution of water, which occupy our immediate attention and time. In certain cases charts and tables relative to the division and allotment of water have been prepared for the water commissioners to facilitate the work. A great deal of office and field work has been devoted to straightening out the many complex details associated with distribution problems. Deputy State Engineer Edmund Muth is in charge of water distribution problems.

Assistance was given to the Water Resources Branch of the United States Geological Survey by making measurements of the flows of the Carson River at the Carson City gaging station. Frequent checks and adjustments are made on the Carson City water stage recording gauge.

There has been a notable increase in the submitted number of documents in connection with applications as shown by the filing of 343 proofs of commencement of work, 290 affidavits of completion of work, 208 proofs of water to beneficial use, 988 protests to the granting of applications. There were 185 certificates of appropriation issued under permits to appropriate water. There were 500 blueprints of maps of record in this office made available on request for which the sum of $661 was received for this service. In addition there were 1,592 other documents filed during this biennium.

A summary of some of the documents filed during this biennium as against the 1944-1946 biennium is herewith given:

<table>
<thead>
<tr>
<th>Year</th>
<th>Applications filed</th>
<th>Proofs of Appropriation filed</th>
<th>Proofs of Commencement filed</th>
<th>Proofs of Completion filed</th>
<th>Proofs of Beneficial Use filed</th>
<th>Protests filed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1944-1946</td>
<td>487</td>
<td>4</td>
<td>241</td>
<td>175</td>
<td>154</td>
<td>101</td>
</tr>
<tr>
<td>1946-1948</td>
<td>895</td>
<td>20</td>
<td>340</td>
<td>250</td>
<td>308</td>
<td>338</td>
</tr>
</tbody>
</table>

Prompt and cordial attention has been accorded to the many visitors on matters chiefly pertaining to water engineering; and to matters pertaining to this State. In many instances the entire day was devoted to these visitors. The daily routine office correspondence, official notices, and clerical work also required our attention.
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

Beatty—Charles A. Walker.
Carson City—Wayne Cox.
Carson City—John R. Chappin.
Ely—John A. Kline.
Elko—S. E. Raines.
Ely—E. W. Millard.
Fernley—Robert W. Millard.
Henderson—John V. Castell.
Henderson—M. M. Harcourt.
Laughlin—Floyd Sadler.
Nevada City—Thomas M. Cahill.
Pioche—L. W. Crogan.
Pioche—R. F. Osgood.
Pioche—J. C. Cotrell.
Pioche—W. A. Pryz.
Pioche—G. N. Housman.
Reno—Ed S. Ellis.
Reno—William H. Hulse.
Reno—Ernest H. Clary.
Reno—P. W. Thomas.
Las Vegas—C. D. Baker.
Las Vegas—Jack Asher.
Las Vegas—William Clark.
Las Vegas—Harlan Brown.
Las Vegas—Charles L. Knaus.
Las Vegas—Von O. Stetzen.
Las Vegas—F. D. Ruthier, Jr.
Las Vegas—George W. Von Tobi.
Reno—Sherman Mason.

Love Lock—Robert S. Leighton.
Las Vegas—J. H. Cawston.
Las Vegas—Peter F. Anker.
Las Vegas—Arthur E. Smith.
Minden—L. R. Spencer.
Minden—J. A. Miller.
Montana City—Edward C. Stephens.
Montana City—John B. Smith.
Paradise Valley—F. B. Stewart.
Pioche—Frank Walker.
Reno—C. T. Simmons.

CHAPTER VI

Summary of Ground-Water Studies by the U. S. Geological Survey,
Division of Ground Water

By THOMAS W. ROBINSON, District Engineer, G. W.

During the biennium beginning July 1, 1944, the cooperative study of the ground-water resources of Nevada, begun in July 1944, has been continued without let-up. During this period some phase of ground water has received attention in nearly every part of the State. In connection with the ground-water studies the Ground Water Division has consulted, or cooperated with, most of the State and Federal agencies concerned with the development and use of water in the State. Broadly speaking, the ground-water studies may be grouped into three general phases, although the work is all closely related. There are:
1. Detailed studies of ground-water conditions, in areas or valleys selected by the State Engineer. Such studies are quantitative in nature, and involve an estimate of the quantity of ground water that may be developed by the drilling of wells, for irrigation or other uses.
2. Reconnaissance studies of selected valleys to evaluate the possibilities for future ground-water development. These studies are not quantitative, but are made only for the purpose of determining whether the conditions for the development of ground water are generally favorable or unfavorable.
3. Ground-water information furnished by special request. This phase of the work ranges from inquiries by individuals such as farmers and ranchers concerning the drilling or development of a well for water, to requests from State and Federal agencies for information concerning the development of a ground-water supply for a specific purpose or in a particular area.

Detailed studies have been made in 10 areas or valleys, and reports based on these studies have been or are in the process of publication by the State Engineer. In some of the reports more than one area or valley have been combined in order to simplify publication. The reports published, or in the process of publication or preparation, since the present program was begun in 1944 are listed below:


The water users under Hiko Springs have been discussing the formation of an irrigation company and are considering the lining of their main irrigation ditch.

**DUCKWATER CREEK**

Wm. Hawkins—1946, 1947, 1948

Many improvements have been made on Duckwater Creek during the past biennium. The U. S. Indian Service has installed meter gates at all their diversion points, constructed new ditches, obiated channel, reinforced the dikes on the “track” and built a diversion structure at the Big Warm Springs. The work done by the Indian Service has been very beneficial to all the water users on Duckwater Creek.

Parshall flumes have been installed at the diversion points of the other water users.

A new “tail ditch” was constructed by the lowest water users on the system and a regulatory diversion dam was placed in the flood channel under the supervision of the State Engineer. This dam will divert the water into the new “tail ditch.”

The work done at Duckwater has greatly improved the water use and irrigation practices in the valley.

It is a recommendation of the State Engineer that diversion structures and headgates be installed as soon as it is practical.

**BAKER-LEHMAN CREEK**

D. B. Breck—1946, 1947, 1948

Some improvement of the Baker-Lehman Creek distribution system has been made through constructing some new ditches and installing regulatory headgates.

A weir should be installed immediately at the point where the lateral ditches divert from the main ditch.

In cooperation with the County Commissioners of White Pine County, and the U. S. Geological Survey, Surface Water Division, the State Engineer has installed a gauging station on Baker Creek and one on Lehman Creek. The immediate purpose of these stations is to determine the feasibility of constructing a hydroelectric plant at Baker, Nevada, to produce electricity under a rural electrification program.
together with the off-set distance. Lots within a lotted section in
which the location of the point of diversion and place of use of
water, whether for irrigation or other purposes, must be shown and
designated.
4. Map must show all sections containing at intersections.
5. Map must contain a full description of the corners to which the
tie is made, especially if metal or monument, etc., together with all
markings thereof.
6. On any line on which a bearing is shown there must be a state-
ment as to the method of obtaining such bearing, i.e. (a) compass
bearing, (b) solar or polaris observation, or (c) by turning an angle
off of a line of known bearing. If (c) method is used the source of
the known bearing should be given. If by (a) compass bearing the
magnetic declination used should be given.
7. The appropriation must be from a natural source of water sup-
ply or channel, such as a river, creek, spring, lake, underground, etc.
In all cases the source must be shown and designated on the map.
If from a natural water course the channel must be shown at least
500 feet on each side of the point of diversion. The channel from a
spring if such exists must be shown, if not then the direction of the
drainage. The shores of large lakes or bodies of water must be shown
for at least 500 feet on each side of the point of diversion. If water
is to be diverted from a well the source must be given as an "under-
ground source." The name of the well can be given in parenthesis.
8. Description of works or proposed works of diversion must be
given on the map.
9. The map must show the place of use of water by means of the
government land survey, the exterior boundaries of which must be
shown, and may be indicated by means of heavy dash lines. The
proposed place of use whether for irrigation or other purposes
must be indicated, such as lands proposed to be irrigated, proposed place
of use, etc.
10. Maps to accompany applications to change the point of diver-
sion or manner and place of use of water must show:
   a. In case of change of point of diversion, the locations of existing
      point of diversion and the proposed point of diversion, must be shown
      in the same manner as hereinabove described.
   b. In case of change of place and manner of use, the location of
      the existing place of use together with the location of the point of
      diversion of water must be shown. In case of irrigated land the
      acres by means of the 40-acre legal subdivisions, from which it is pro-
      posed to sever the water, must be shown on the map.
Should any condition arise whereby the State Water Right Surveyor
feels that a modification of any of the above regulations would
be warranted he is privileged to write to the State Engineer giving
full facts, and if the State Engineer feels that the request is justi-
ifiable he can authorize such modification.
Palouse was 239 acre-feet. During August and September the mean flow was 52.5 and 33.4 acre-feet, respectively. The total flow at Palouse for the water season of October 1, 1945, to September 30, 1946 was 357,900 acre-feet.

**Humboldt Water Distribution District—January 1 to December 31, 1947**

Personnel

<table>
<thead>
<tr>
<th>Position</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chairman, Supervising Commissioner</td>
<td>Entire River</td>
</tr>
<tr>
<td>George Herring, Assistant, Supervising Commissioner</td>
<td>Entire River</td>
</tr>
<tr>
<td>Nevada Alaniz, Water Commissioner</td>
<td>South Fork, Lovelock, Lamoille, South Fork, Washoe</td>
</tr>
<tr>
<td>William Heyer, Water Commissioner</td>
<td>South Fork, Washoe, Battle Mountain</td>
</tr>
<tr>
<td>John Clark, Water Commissioner</td>
<td>Lovelock, Battle Mountain</td>
</tr>
<tr>
<td>Mike Pena, Water Commissioner</td>
<td>Lovelock, Battle Mountain</td>
</tr>
<tr>
<td>Jerry Howell, Hydrographer</td>
<td>Little Humboldt, Lovelock</td>
</tr>
</tbody>
</table>

Humboldt Water Distribution District was below normal. Rains in late May and early June were of particular benefit to the wild hay meadows in Elko County. Most ranches received sufficient water to grow a hay crop which was only slightly below average in quantity, but better than average in quality.

During the 1947 irrigation season the flow of the streams within the area of the Humboldt Water Distribution District was below normal. A great deal of work was done in preparing priority charts on the Humboldt River. These charts will be printed after the final check on their accuracy has been made.

**Humboldt Water Distribution District—January 1 to July 1, 1948**

Personnel

<table>
<thead>
<tr>
<th>Position</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chairman, Supervising Commissioner</td>
<td>Entire River</td>
</tr>
<tr>
<td>George Herring, Assistant, Supervising Commissioner</td>
<td>Entire River</td>
</tr>
<tr>
<td>Nevada Alaniz, Water Commissioner</td>
<td>Little Humboldt, Lovelock, Lamoille, South Fork</td>
</tr>
<tr>
<td>William Heyer, Water Commissioner</td>
<td>Quinn River, Elko</td>
</tr>
<tr>
<td>Mike Pena, Water Commissioner</td>
<td>Loveck, Battle Mountain</td>
</tr>
<tr>
<td>Jerry Howell, Hydrographer</td>
<td>Little Humboldt, Lovelock</td>
</tr>
<tr>
<td>William Heyer, Water Commissioner</td>
<td>Elko Office</td>
</tr>
<tr>
<td>Alaniz, Water Commissioner</td>
<td>Elko Office</td>
</tr>
<tr>
<td>Howell, Hydrographer</td>
<td>Elko Office</td>
</tr>
</tbody>
</table>

On March 10, 1948, the Sixth Judicial District Court entered an order directing the State Engineer to distribute the waters of the Quinn River and its tributaries in Humboldt County, Nevada. (See chapter XII.) This stream system is within the area designated as the Humboldt Water Distribution District.

The winter of 1947–1948 was cold with little snow; late spring rains prevented one of the worst droughts of record. Most ranches received enough water to produce a fair hay crop. Lack of early water and a late growing season were the principal factors contributing to the short crop.
CHAPTER V

Water Distribution

HUMBOLDT WATER DISTRIBUTION DISTRICT
Season 1946—J. A. Millar, Supervising Water Commissioner.
Season 1947—Chester Wood, Supervising Water Commissioner.
Season 1948—George Hennon, Supervising Water Commissioner.

Advisory Board Members, 1948
A. V. Tallman, Winnemucca, Chairman.
Warren Monroe, Elko.
George Oglivie, Elko.
René Lemaire, Battle Mountain.
Silver Hill, Battle Mountain.
Jack Korna, Winnemucca.
Clarence Sommer, Lovelock.
Victor Aribio, Lovelock.
Robert Leighton, Lovelock.

On January 7, 1947, the Humboldt Water Distribution District was created by an order of the State Engineer. This district embraces all of Humboldt, Pershing, and Elko Counties, and those portions of Lander and Eureka Counties lying north of the township line between townships 24 and 25 north. The following stream systems in this district have been adjudicated and the distribution of their waters is under the supervision of the State Engineer:
Humboldt River, Little Humboldt River, Quinn River, Salmon River, Tonopah Creek, Clear Creek, Thousand Springs Creek, Risco Creek, Plate Creek, Battle Creek, Bartlett Creek, Cane Spring Creek, Six Mile Creek, Crum, and Wilson Creek.

Several of the smaller streams do not, at present, require any supervision by the State Engineer.
The Humboldt Water Distribution District was created for the purpose of giving better service to the water users in the area within the district. A district office was set up in Elko, Nevada. In the near future a complete set of records will be on file in this office.
The Elko office is under the supervision of a water commissioner who is permanently stationed in Elko. This will provide year around service to the water users. (See chap. XIII for Advisory Board report.)

Humboldt River Distribution System—July 1 to September 30, 1946
Personnel
J. A. MILLAR, Supervising Water Commissioner—Entire River
Alfred M. Quill, Water Commissioner—Starr Valley, North Fork, Lamonts, Jumbo Valley
Jerry Wynnall, Hydrographer—Lovelock

The July run-off from the Elko District fell off quite rapidly during July, resulting in a flow at Palisade of 7,185 acre-feet as compared to the June run-off of 29,270 acre-feet. The mean flow during July at
WARM SPRINGS AND BIG SPRINGS

Warm Springs and Big Springs are located on the westerly slope of Hat Mountain, and on the easterly side of Surprise Valley, in northern Washoe County, and being about in Township 46 and 31 N., Range 18 E., M. D. M. There is one claimant, namely, R. M. Miller. October 16, 1947—Petition requesting determination of relative rights in and to the waters of said stream system filed in office of State Engineer.

November 22, 1947—Reporting of investigation of the stream system filed.

June 10, 1948—Order of Determination filed. 102.86 acres of cultural land.

The great increase in the number of applications filed is due to the development of ground water for irrigation and stockwatering purposes. Out of the 895 applications filed, 638 were to appropriate ground water. There were 250 applications filed to appropriate ground water for irrigation purposes alone, which indicates the trend towards the development of ground water for irrigation purposes. The following tabulation shows the manner of use of water applied for during the past five biennial periods.

<table>
<thead>
<tr>
<th>MANNER OF USE COMPARISON</th>
<th>1946-47</th>
<th>1944-45</th>
<th>1943-44</th>
<th>1941-42</th>
<th>1939-40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigation</td>
<td>309</td>
<td>159</td>
<td>96</td>
<td>101</td>
<td>73</td>
</tr>
<tr>
<td>Mining and milling</td>
<td>56</td>
<td>28</td>
<td>25</td>
<td>26</td>
<td>75</td>
</tr>
<tr>
<td>Stockwatering</td>
<td>729</td>
<td>179</td>
<td>104</td>
<td>46</td>
<td>40</td>
</tr>
<tr>
<td>Domestic</td>
<td>54</td>
<td>13</td>
<td>7</td>
<td>21</td>
<td>10</td>
</tr>
<tr>
<td>To change point of diversion</td>
<td>48</td>
<td>27</td>
<td>26</td>
<td>11</td>
<td>19</td>
</tr>
<tr>
<td>Municipal</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Power</td>
<td>8</td>
<td>1</td>
<td>6</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Fish rearing</td>
<td>8</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacturing</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Quasi-municipal</td>
<td>57</td>
<td>61</td>
<td>19</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>Railroad</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bathing</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Gravel and sand washing</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recreational</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total: 895

Definite action has been taken on 638 applications during this biennium. This represents action on 387 applications filed prior to July 1, 1946, and 251 filed during this biennium 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 1946-1948, chapter XVII.
2. Status of applications filed prior to July 1, 1946, upon which action has been taken during the past biennium, chapter XVIII.
3. Certificates issued under permits during the 1946-1948 biennium, chapter XIX.
CHAPTER IV
Adjudication of Water Rights

Section 1, chapter 4, Statutes of 1905, provided a law creating the
office of State Engineer and furnished a method for the determina-
tion of the relative rights in and to waters already appropriated. Sev-
eral 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.

Amending Acts were passed during the 1927 and 1929 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,
either as to the adjudication procedure on the determination of vested
rights and the appropriation of water procedure on the determina-
tion of vested rights, and the appropriation of water procedure by applica-
tion to the State Engineer. Subsequent amendments to the laws relat-
ing to the adjudication procedure were enacted in the following sessions
of the Legislature, viz., 1915, 1919, 1921, 1923, 1925, 1927, 1931,
1933, and 1937. A brief description of these various amendments may
be found in chapter 6 of the 1924-1926 Biennial Report, where
a summary of all the laws enacted by the Nevada Legislature relating to
water and the office of the State Engineer is given. The statutory pro-
cedure to determine the relative rights in and to the waters of a stream
system under a claim of vested right is set forth in sections 18 to 58
of the water law. A summary of this procedure may be found on
page 99 of the 1947 compiled water laws of Nevada, which is available
upon request.

PROOFS OF APPROPRIATION FILED DURING THE YEARS OF THE
PRESENT BIENNIAL

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 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.

KALAMAZOO CREEK

Kalamazoo Creek is located on the easterly slope of Shell Creek
Range in White Pine County, and about Township 20 N., Range
66 E., M.D.M. There are two claimants to the waters of this source,
namely, B. H. Robison and George H. Ridgway.

January 4, 1940 and January 31, 1940—Petitions requesting the
determination of the relative rights filed in office of State Engineer.

December 1, 1938—Report of investigation of the stream system.

June 14, 1940—State Engineer entered order granting the petition. 
April 26, 1945—Waiver of Notice, etc., pursuant to section 36 to
chapter 106, Statutes of 1921, signed.

June 20, 1947—Abstract of claim filed in office of State Engineer.

November 4, 1947—Order of Determination filed in office of State
Engineer. Harvest lands 332.66.

JUMBO CREEK

Jumbo Creek originates in the mountains easterly from Washoe Lake
in and about Township 16 N., R. 20 E., M. D. M. There is only one
claimant, namely, Roy A. Judd. Petition requesting determination
of relative rights in and to the waters of Jumbo Creek filed in office
of State Engineer.

August 22, 1946—State Engineer entered order granting the peti-
tion.

February 26, 1947—Order of Determination filed.

September 26, 1947—Decree filed. 66.37 acres of cultural acreage.

RODOO CREEK

Rodeo Creek is located westward from the southern end of Pyramid
Lake in Washoe County, on the easterly slope of Pah Rah Range
of Mountains, and flows in a northerly direction towards Pyramid Lake.
There is one claimant, namely, Ira C. Hunspler.

September 23, 1946—Petition requesting determination of relative
rights in and to the water of Rodeo Creek filed in office of State
Engineer.

February 20, 1947—The report of investigation of the stream system
filed in office of State Engineer.

June 10, 1948—Order of Determination filed. 58.36 acres of cultural
land.
CHAPTER IV
Adjudication of Water Rights

Section 1, chapter 4, Statutes of 1938, 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 1927 and 1928 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 on the determination
of vested rights, and the appropriation of water procedure by applica-
tion to the State Engineer. Subsequent amendments to the laws relat-
ing to the adjudication procedure were enacted in the following sessions
of the Legislature, viz., 1919, 1919, 1920, 1921, 1925, 1927, 1931,
1933, and 1937. A brief description of these various amendments
may be found in chapter 6 of the 1955-1956 Biennial Report, wherein
a summary of the laws enacted by the Nevada Legislature relating to
water and the office of the State Engineer is given. The statutory pro-
cedure to determine the relative rights in and to the waters of a stream
system under a claim of vested right is set forth in sections 18 to 58
of the water law. A summary of this procedure may be found on
page 59 of the 1947 compiled water laws of Nevada, which is available
upon request.

PROOFS OF APPROPRIATION FILED DURING THE YEARS OF THE
PRESENT BIENNIAL

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.

KALAMAZOO CREEK
Kalamazoo Creek is located on the easterly slope of Shell Creek
Range in White Pine County, in and about Township 16 N., Range
66 E., M. D. M. There are two claimants to the waters of this source,
known as B. H. Robinson and George H. Eldridge.

January 4, 1940 and January 31, 1940—Petitions requesting the
determination of the relative rights filed in office of State Engineer.

December 1, 1949—Report of investigation of the system stream.

June 14, 1949—State Engineer entered order granting the petition.

April 28, 1945—Waiver of Notice, etc., pursuant to section 38 to
chapter 106, Statutes of 1921, signed.

June 20, 1947—Abstract of Claim filed in office of State Engineer.

November 4, 1947—Order of Determination filed in office of State
Engineer. Harvest lands 232.46.

JUNIJO CREEK
Jumbo Creek originates in the mountains easterly from Washoe Lake, in and about Township 16 N., R. 20 E., M. D. M. There is only
one claimant, namely, Roy A. Judd. Petition requesting determination
of relative rights in and to waters of Jumbo Creek filed in office of
State Engineer. The report of the investigation of the stream system
filed in office of State Engineer.

August 22, 1946—State Engineer entered order granting the peti-
tion.

February 26, 1947—Order of Determination filed.

September 26, 1947—Decree filed. 66.27 acres of cultural aeraage.

RODOO CREEK
Rodeo Creek is located westward from the southern end of Pyramid
Lake in Washoe County, on the easterly slope of Pah Rah Range of
Mountains, and flow in a northerly direction towards Pyramid Lake.

There is one claimant, namely, Ira H. Umbell.

September 23, 1946—Petition requesting determination of relative
rights in and to the water of Rodeo Creek filed in office of State Engi-
neer.

February 29, 1947—The report of investigation of the stream system
filed in office of State Engineer.

June 10, 1948—Order of Determination filed. 58.36 acres of cultural
land.
WARM SPRINGS AND BIG SPRINGS

Warm Springs and Big Springs are located on the westerly slope of Hat Mountain, and on the easterly side of Surprise Valley, in northern Washoe County, and being about in Township 40 and 41 N., Range 18 E., M. D. M. There is one claimant, namely, R. M. Miller.

October 16, 1947—Petition requesting determination of relative rights in and to the waters of said stream system filed in office of State Engineer.

November 22, 1947—Reporting of investigation of the stream system filed.

June 10, 1948—Order of Determination filed. 102.86 acres of cultural land.

MANNER OF USE COMPARISON

<table>
<thead>
<tr>
<th>Year</th>
<th>Irrigation</th>
<th>Mining and milling</th>
<th>Stockwatering</th>
<th>Domestic</th>
<th>To Change point of diversion</th>
<th>Municipal</th>
<th>Power</th>
<th>Fish rearing</th>
<th>manufacturing</th>
<th>Quasi-municipal</th>
<th>Railroad</th>
<th>Baking</th>
<th>Gravel and sand washing</th>
<th>Recreational</th>
</tr>
</thead>
<tbody>
<tr>
<td>1942</td>
<td>209</td>
<td>55</td>
<td>129</td>
<td>50</td>
<td>13</td>
<td>10</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>57</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1943</td>
<td>150</td>
<td>96</td>
<td>103</td>
<td>21</td>
<td>7</td>
<td>10</td>
<td>9</td>
<td>8</td>
<td>1</td>
<td>61</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1944</td>
<td>86</td>
<td>101</td>
<td>73</td>
<td>21</td>
<td>10</td>
<td>10</td>
<td>8</td>
<td>6</td>
<td>6</td>
<td>19</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>1945</td>
<td>130</td>
<td>73</td>
<td>40</td>
<td>10</td>
<td>6</td>
<td>10</td>
<td>8</td>
<td>6</td>
<td>6</td>
<td>19</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>1946</td>
<td>329</td>
<td>179</td>
<td>104</td>
<td>46</td>
<td>40</td>
<td>10</td>
<td>8</td>
<td>6</td>
<td>6</td>
<td>19</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>1947</td>
<td>101</td>
<td>101</td>
<td>73</td>
<td>21</td>
<td>10</td>
<td>10</td>
<td>8</td>
<td>6</td>
<td>6</td>
<td>19</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>1948</td>
<td>130</td>
<td>73</td>
<td>40</td>
<td>10</td>
<td>6</td>
<td>10</td>
<td>8</td>
<td>6</td>
<td>6</td>
<td>19</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

Total | 890      | 467               | 293           | 318      | 272                          |           |      |             |               |                |          |       |                           |               |

The great increase in the number of applications filed is due to the development of ground water for irrigation and stockwatering purposes. Out of the 890 applications filed, 329 were to appropriate ground water. There were 290 applications filed to appropriate ground water for irrigation purposes alone, which indicates the trend towards the development of ground water for irrigation purposes. The following tabulation shows the manner of use of water applied for during the past five biennial periods:

Definite action has been taken on 890 applications during this biennium. This represents action on 387 applications filed prior to July 1, 1946, and 301 filed during this biennium 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 1946-1948, chapter XVII
2. Status of applications filed prior to July 1, 1946, upon which action has been taken during the past biennium, chapter XVIII
3. Certificates issued under permits during the 1946-1948 biennium, chapter XIX.
CHAPTER V

Water Distribution

HUMBOLDT WATER DISTRIBUTION DISTRICT
Season 1946—J. A. Millar, Supervising Water Commissioner.
Season 1947—Chester Wood, Supervising Water Commissioner.
Season 1948—George Hemen, Supervising Water Commissioner.

Advisory Board Members, 1948

A. V. Tallman, Winnemucca, Chairman.
Warren Monroe, Elko.
George Ogilvie, Elko.
Rene Lemaire, Battle Mountain.
Glenn Hill, Battle Mountain.
Jack Korn, Winnemucca.
Clarence Somner, Lovelock.
Victor Arabo, Lovelock.
Robert Leighton, Lovelock.

On January 7, 1947, the Humboldt Water Distribution District was created by an order of the State Engineer. This district embraces all of Humboldt, Pershing, and Elko Counties, and those portions of Lander and Eureka Counties lying north of the township line between townships 24 and 25 north. The following stream systems in this district have been adjudicated and the distribution of their waters is under the supervision of the State Engineer:

Humboldt River, Little Humboldt River, Quinn River, Salmon River, Tony Creek, Clear Creek, Thousand Springs Creek, Rice Creek, Plate Creek, Battle Creek, Hartlett Creek, Cane Spring Creek, Six Mile Creek, Crum and Wilson Creek.

Several of the smaller streams do not, at present, require any supervision by the State Engineer.

The Humboldt Water Distribution District was created for the purpose of giving better service to the water users in the area within the district. A district office was set up in Elko, Nevada. In the near future a complete set of records will be on file in this office.

The Elko office is under the supervision of a water commissioner who is permanently stationed in Elko. This will provide year around service to the water users. (See chap. XIII for Advisory Board report.)

Humboldt River Distribution System—July 1 to September 30, 1946

Personnel

J. A. MILLAR, Supervising Water Commissioner.
KEVIN M. QUILL, Water Commissioner...Starr Valley, North Fork, Lamoille Valley

JERRY WENZEL, Hydrographer...Lovelock

The July runoff from the Elko District fell off quite rapidly during July, resulting in a flow at Palisade of 7,365 acre-feet as compared to the June runoff of 29,370 acre-feet. The mean flow during July at
Palisade was 239 acre-feet. During August and September the mean flow was 52.5 and 33.4 acre-feet, respectively. The total flow at Palisade for the water season of October 1, 1945, to September 30, 1946, was 387,900 acre-feet.

**Humboldt Water Distribution District—January 1 to December 31, 1947**

**Personnel**

- Chetzer Woods, Supervising Commissioner
- George Hensley, Assistant Supervising Commissioner
- Wayne Allen, Water Commissioner
- William G. Kemp, Water Commissioner
- Lyman Clark, Water Commissioner
- John Winhall, Hydrographer
- William Hood, Water Commissioner

Humboldt Water Distribution District was on the rise in 1947. The water distribution was better than average, with an increase in the number of applications filed for water rights. The increase in water usage was reflected in the office receipts which increased from 1945 to 1946.

During the 1947 irrigation season the flow of the streams within the area of the Humboldt Water Distribution District was below normal. Rainfall in late May and early June was of particular benefit to the wild hay meadows in Elko County. Most ranches received sufficient water to grow a hay crop which was only slightly below average in quantity, but better than average in quality.

During the 1947 irrigation season, the flow of the streams within the area of the Humboldt Water Distribution District was below normal. Rainfall in late May and early June was of particular benefit to the wild hay meadows in Elko County. Most ranches received sufficient water to grow a hay crop which was only slightly below average in quantity, but better than average in quality.

A great deal of work was done in preparing priority charts on the Humboldt River. These charts will be printed after the final check on their accuracy has been made.

**Humboldt Water Distribution District—January 1 to July 1, 1948**

**Personnel**

- Chetzer Woods, Supervising Commissioner
- Wayne Allen, Assistant Supervising Commissioner
- William G. Kemp, Water Commissioner
- Lyman Clark, Water Commissioner
- John Winhall, Hydrographer
- William Hood, Water Commissioner

Applications for Water Rights

During this biennium there were 895 applications filed with this office for permission to appropriate water. This was the greatest number of applications filed during a similar period since the establishment of the office. Of the 895 applications filed, there have been 338 protests filed against the granting of permits under said applications. All of the protests applications have to have field investigations made, and in many instances hearings have to be held which greatly increases the work of the office. The increase in work is somewhat reflected by the office receipts which during the 1946-1948 biennial period amounted to $27,547.28 as compared to $15,809.02 during the 1944-1946 biennial, and the $11,727.55 received during the 1942-1944 period. The following chart illustrates graphically the growth of the office.
together with the offset distance. Lots within a lotted section in which are the location of the point of diversion and place of use of water, whether for irrigation or other purposes, must be shown and designated.

4. Map must show all sections containing at intersections.

5. Map must contain a full description of the corner to which the tie is made, especially if metal or monument, etc., together with all markings thereon.

6. On any line on which a bearing is shown there must be a statement as to the method of obtaining such bearing, i.e. (a) compass bearing, (b) solar or polaris observation, or (c) by turning an angle off of a line of known bearing. If (c) method is used the source of the known bearing should be given. If by (a) compass bearing, the magnetic declination used should be given.

7. The appropration must be from a natural source of water supply or channel, such as a river, creek, spring, lake, underground, etc. In all cases the source must be shown and designated on the map. If from a natural water course the channel must be shown at least 500 feet on each side of the point of diversion. The channel from a spring if such exists must be shown, if not then the direction of the drainage. The shores of large lakes or bodies of water must be shown for at least 500 feet on each side of the point of diversion. If water is to be diverted from a well the source must be given as an "underground source." The name of the well can be given in parenthesis.

8. Description of works or proposed works of diversion must be given on the map.

9. The map must show the place of use of water by means of the government land survey, the exterior boundaries of which must be shown, and may be indicated by means of heavy dash lines. The proposed place of use whether for irrigation or other purposes must be indicated, such as lands proposed to be irrigated, proposed place of use, etc.

10. Maps to accompany applications to change the point of diversion or manner and place of use of water must show:
   a. In case of change of point of diversion, the locations of existing point of diversion and the proposed point of diversion, must be shown in the same manner as hereinabove described.
   b. In case of change of place and manner of use, the location of the existing place of use together with the location of the point of diversion of water must be shown. In case of irrigated land the acres by means of the 40-acre legal subdivision, from which it is proposed to sever the water, must be shown on the map.

Should any condition arise whereby the State Water Right Surveyor feels that a modification of any of the above regulations would be warranted he is privileged to write to the State Engineer giving full facts, and if the State Engineer feels that the request is justifiable he can authorize such modification.

Summary—January 1, 1947, to July 1, 1948

The low water years of 1947 and 1948 show definitely the need for channel improvement on all the streams within the Humboldt District. These years have also emphasized the need for some satisfactory method of beaver control.

The first 18 months of operation of the Humboldt Water Distribution District has, we feel, definitely shown beneficial results in the handling of water within the district area.

Two seasons of study of distribution problems under low water conditions has been made on the areas of the Humboldt River below Pahranagat. Within the next year the State Engineer will be in a position to make definite recommendations on distribution matters on the lower sections of the river.

Information is being gathered and compiled on all the streams within the district as fast as time and personnel limitations will allow. From time to time as the studies progress, the State Engineer will present his analysis of the conditions and recommendations for improvement to those water users immediately concerned.

PAHRANAGAT LAKES DISTRIBUTION
July 1, 1946, to June 30, 1948
ALLEN SWETLAND—Session 1946.
GILBERT STEWART—Session 1947.
GUY JACK—Session 1948.

The biennia period July 1, 1946, to June 30, 1948 has been a period of improvement of water distribution facilities and betterment of conditions in general in the area served by the waters of Ash Springs.

A new irrigation company known as the Ash Springs Irrigation Company was organized to handle the water of Ash Springs below the so-called "Middle Ranch." Only two users of water from Ash Springs are now the members of an irrigation company. Since the formation of this company many of the small vexing problems which confronted the water commissioners and State Engineer have been eliminated. The rotation schedule adopted by the company has improved the water use and bettered the irrigation conditions for all the members of the company.

The directors of the Ash Springs and Alamo Irrigation Companies have tentatively agreed on a method of maintaining and cleaning ditches that are jointly used. It is hoped that a signed agreement can be executed.

The Alamo Irrigation Company has completed a fine piece of work in concrete lining all their main ditches. This work will save a large quantity of water and be of great benefit to the members of the company.

Under the supervision of the State Engineer six Parshall flumes were installed near the diversion points in the main irrigation ditches. During the present irrigation season, four meter gates are to be installed on the high line canal. These measuring devices will make a more equitable distribution of the water possible.
The water users under Hiko Springs have been discussing the formation of an irrigation company and are considering the lining of their main irrigation ditch.

**Duckwater Creek**


Many improvements have been made on Duckwater Creek during the past biennium.

The U.S. Indian Service has installed meter gates at all their diversion points, constructed new ditches, altered channel, reinforced the dikes on the “valley” and built a diversion structure at the Big Warm Springs. The work done by the Indian Service has been very beneficial to all the water users on Duckwater Creek.

Parshall flumes have been installed at the diversion points of the other water users.

A new “tail ditch” was constructed by the lowest water users on the system and a regulatory diversion dam was placed in the flood channel under the supervision of the State Engineer. This dam will divert the water into the new “tail ditch.”

The work done at Duckwater has greatly improved the water use and irrigation practices in the valley.

It is a recommendation of the State Engineer that diversion structures and headgates be installed as soon as it is practical.

**Baker-Lehman Creek**


Some improvement of the Baker-Lehman Creek distribution system has been made through constructing some new ditches and installing regulatory headgates.

A weir should be installed immediately at the point where the lateral ditches divert from the main ditch.

In cooperation with the County Commissioners of White Pine County, and the U.S. Geological Survey, Surface Water Division, the State Engineer has installed a gating station on Baker Creek and one on Lehman Creek. The immediate purpose of these stations is to determine the feasibility of constructing a hydroelectric plant at Baker, Nevada, to produce electricity under a rural electrification program.
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

Battle Mountain—James H. Wilson.
Benton—Charles G. Walker.
Caliente—Wayne Cox.
Carson City—John B. Bache.
Nevada City—Arthur J. Smith.
Minden—E. C. Stephens.
Montana City—Edward C. Stephens.
Mounteb—John D. Smith.
Paradise Valley—F. M. Stewart.
Pioche—Frank Walker.
Reno—Dan Moore.

ELKO

R. W. Pringle.

Ely

W. H. Kettenmeyer.
S. A. Kline.
John W. King.
N. L. Raines.

FALLEN

F. W. Miller.
Robert W. Miller.
John Victor Castell.

Genoa

R. E. Hamernik.

Goldfield

R. S. Clites.

Henderson

William H. Hulse.

Las Vegas

J. D. Baker.
Jack Asher.
William Clark.
Harlan Brown.
Chas. L. Reagan.

Lyn, N. Ralston.

Pahrump

Fred S. Hallum, Jr.
George W. Vor Tobe.
Sherman Mason.

Lovelock

Robert S. Leighten.
J. H. Cutmore.
Parker F. Anker.

Minden—Arthur E. Smith.

Mounteb—J. A. Miller.

Nevada City—Arthur J. Smith.

Paradise Valley—F. M. Stewart.

Pioche—Frank Walker.

Reno—Dan Moore.

Las Vegas—Edward C. Stephens.

Mounteb—John D. Smith.

Paradise Valley—F. M. Stewart.

Pioche—Frank Walker.

Reno—Dan Moore.

Las Vegas—Edward C. Stephens.

Mounteb—John D. Smith.

Paradise Valley—F. M. Stewart.

Pioche—Frank Walker.

Reno—Dan Moore.
Water Resources Bulletin No. 7: Geology and Ground Water in the Meadow Valley Wash Drainage Area, Nevada, Above the Vicinity of Caliente, 1948.

Water Resources Bulletin No. 8: Ground Water in White River Valley, Nevada.

Water Resources Bulletin No. 9: Geology and Ground Water in Grass Valley, and Adjacent Parts of Humboldt River Valley, Nevada.


Ground Water in the Vicinity of Elko, Nevada (Miscellaneous) 1947.

Detailed studies will be continued in selected valleys as rapidly as the demand for this type of study warrants. Such studies are under way at present in Smith Valley, Lyon County, and Truckee Meadows in Washoe County. The study in Smith Valley will be completed early in the coming biennium. The reports based on detailed studies give information on the estimated quantity of ground water that may be developed annually without exceeding the safe yield, quality of the water, characteristics of the water-bearing beds, probable depth to which wells must be drilled to obtain water, depth to the water level, and the approximate area where the pumping lift will not be excessive.

Reconnaissance studies have been completed, or are in progress, in 16 valleys. These valleys are listed below by counties. Some of the valleys lie in two or more counties, but are listed for the county in which the major part of the valley lies:

Churchill: Edwards Valley; Douglas: Carson Valley; Elko: Goshute Valley; Esmeralda: Fish Lake Valley; Eureka: Crescent; Humboldt: Quinn River; Lander: Lower Reese River, including Argenta Swamp; Upper Reese River; Lincoln: Penoyer Valley; Mineral: Whiskey Flat; Teels Marsh; Nye: Hot Creek Valley; Revere Valley; Gamy: Eagle Valley; Pershing: Roena Vista Valley; Washoe: Spanish Springs, Warm Springs.

For the present it is planned that only memorandum reports will be prepared for these valleys, or other valleys in which similar studies are made. These reports will be filed with the State Engineer and the Geological Survey. They will give general information on the ground water of the valley, such as favorable or unfavorable conditions, depth to water level, information on existing wells, and recommendations for future study. Those valleys which appear to have definite ground-water possibilities will be studied in detail at some future date. From the studies already made, it is known that in some of these valleys the prospects are good for developing ground-water supplies, whereas in others the prospects are poor. It is planned to cover in this manner all the major valleys in the State not covered by detailed studies.

The following valleys have been tentatively selected for reconnaissance studies in the next future:

In preparation.

Many field investigations and hearings were held in connection with applications for appropriation of water. Numerous complex water commissioner problems arise every year relative to the distribution of water, which occupy our immediate attention and time. In certain cases, charts and tables relative to the division and allotment of water have been prepared for the water commissioners to facilitate the work. A great deal of office and field work has been devoted to straightening out the many complex details associated with distribution problems. Deputy State Engineer Edmund Math is in charge of water distribution problems.

Assistance was given to the Water Resources Branch of the United States Geological Survey by making measurements of the flows of the Carson River at the Carson City gaging station. Frequent checks and adjustments are made on the Carson City water stage recording gage.

There has been a noticeable increase in the submitted number of documents in connection with applications as shown by the filing of 348 proofs of commencement of work, 290 affidavits of completion of work, 309 proofs of water to beneficial use, 338 protests to the granting of applications. There were 189 certificates of appropriation issued under permits to appropriate water. There were 508 blueprints of maps of record in this office made available on request for which the sum of $661 was received for this service. In addition there were 1,529 other documents filed during this biennium.

A summary of some of the documents filed during this biennium as against the 1944-1946 biennium is herewith given:

<table>
<thead>
<tr>
<th>Category</th>
<th>1944-1946</th>
<th>1946-1948</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applications filed</td>
<td>487</td>
<td>895</td>
</tr>
<tr>
<td>Proofs of Appropriation filed</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Proofs of Commencement filed</td>
<td>241</td>
<td>349</td>
</tr>
<tr>
<td>Proofs of Completion filed</td>
<td>175</td>
<td>290</td>
</tr>
<tr>
<td>Proofs of Beneficial Use filed</td>
<td>134</td>
<td>268</td>
</tr>
<tr>
<td>Protests filed</td>
<td>101</td>
<td>338</td>
</tr>
</tbody>
</table>

Prompt and cordial attention has been accorded to the many visitors on matters chiefly pertaining to water engineering, and to matters pertaining to this State. In many instances the entire day was devoted to these visitors. The daily routine office correspondence, official notes, and clerical work also required our attention.
CHAPTER XI

New Laws Affecting Water

This chapter will deal briefly with legislation passed by the 1945 and 1947 sessions of the State Legislature pertaining to water and which comes under the administration of the State Engineer.

A. DUTY OF WATER UNDER PERMITTED RIGHTS

Sec. 15, chap. 140, Stat. 1915 (As amended, chap. 56, 1946)

Under this section, as amended, the amount of water appropriated is limited to such water as shall reasonably be required for the beneficial use thereof. Wherefore the amount was limited to one hundredth of one cubic foot per second for each one hundredth of one cubic foot per second for each acre of land irrigated. Under the same existing law, the State Engineer is determining the amount of water to be granted in a permit to appropriate water shall take into consideration the irrigation requirements in the section of the State in which the appropriation is to be made. This section also was amended to exclude reservoir evaporation losses in determining the acre-footage to be granted in a permit.

B. WATER DISTRIBUTION UNDER CIVIL ACTION DECREES

Sec. 56, chap. 109, Stat. 1947

This is a new section. Prior to the enactment of a State water law, under which an equitable method was provided for the adjudication of water rights, the District Courts of the State adjudicated water rights on many of our smaller streams under civil action. Hereafter, the State Engineer has no authority to exercise any jurisdiction over such rights (Pacific Livestock Co. v. Malone, 54 Nevada). Section 46 provides a method whereby such rights may be placed under the jurisdiction of the State Engineer, the same as water rights established by a statutory adjudication, if the District Court determines that the administration of such water rights by the State Engineer would be to the best interests of the water users. During the spring of 1948 the water rights of Quinn River and tributaries in Humboldt County were brought under the supervision of the State Engineer under the provisions of this section. A report on the procedure followed may be found in chapter XII.

C. WATER COMMISSIONERS’ SALARIES

Sec. 56, chap. 209, Stat. 1933 (As amended chap. 109, 1947)

The salary of water commissioners was set at not to exceed ten dollars per day and necessary travel expenses, and fixing the salary of water commissioners in a supervisory capacity as not to exceed forty-five dollars per annum and necessary travel expenses. The 1945 Legislature increased the salary of water commissioners from five dollars per day to seven dollars and fifty cents, and supervisory commissioners from ten dollars per day to twelve dollars per day.

D. WATER DISTRIBUTION—ADVISORY BOARDS

Sec. 56, chap. 140, Stat. 1915 (As amended chap. 56, 1946)

This section as originally enacted provided that the State Engineer...
CHAPTER VII
Cooperative Stream Measurement Work in Nevada
By L. R. Sawyer, Engineer-in-Charge, Surface Water Division, Water Resources Branch, United States Geological Survey.

The importance of water to the economy of the State of Nevada cannot be too strongly emphasized. The development and use of all other resources is directly affected and often limited by the available water supply. A careful analysis of the fundamental uses of water will lead to the conclusion that water is our most valuable mineral. It is essential for domestic, agricultural, power development, and manufacturing uses, and to life itself. The dollar value of water is very high when it is considered that it is a basic and fundamental need for irrigation and power projects, municipal and industrial supplies, livestock, mining, recreation, and many other activities on which the State of Nevada depends.

The importance and value of this material resource make it imperative that a reliable and intensive investigation be continued to determine the available supply and distribution, in order that the ultimate development of the State may proceed on a wise and efficient basis. The Congress of the United States has recognized the Federal responsibility for developing the water resources of the country by appropriating funds for cooperative investigations with the States and other political subdivisions since 1900. These Federal funds for stream gaging are available only for cooperative work requested by State and local interests. It is important, therefore, that the present and future needs of the State and local interests for water resources information be given careful consideration in planning and financing this work.

Stream gaging is fundamentally the work of collecting basic data relative to water supplies; however, it is very closely connected with the investigation of ground-water resources as covered in chapter VI of this report. The two programs are closely coordinated, since surface water records are used to determine the recharge to ground water reservoirs, and ground-water supplies are available for supplementing surface runoff.

For the period covered by this report there has been an increasing demand for additional water resources information, particularly by the Army Engineers in the investigation of desirable flood control projects, and by the Bureau of Reclamation in plans for additional irrigation developments. The cooperative stream gaging program, financed by funds made available by the State Legislature, local water users, and the Geological Survey, was entirely inadequate to satisfy current requests. The Army Engineers, therefore, made available supplemental funds for the installation and operation of three gaging stations in the Truckee and Walker River Basins, and the Bureau of Reclamation allotted funds for the installation and operation for one year of eight gaging stations in the Carson and Little Truckee River Basins. The State of California has made available $1,000 to assist in the continued operation of the new gaging stations installed in that
9. In any proven artesian basin or any basin or subbasin designated by the State Engineer as provided for in sec. 4, before a person shall be permitted to sink a well for water, and before performing any work in connection with the sinking of said well, he must first make application for, and obtain from the State Engineer, a permit to appropriate such water in accordance with the general water law.

Therefore, in such a designated area, the well driller shall not commence any work in connection with the drilling of a well upon the property of a person until he shall have obtained the necessary permits from the State Engineer.

6. Wells drilled into or through artesian aquifers or through material which will cause cave and caving material:
   1. In artesian wells that are not gravel packed there must be a satisfactory seal between the casing and the confining material to prevent upward leakage. In artesian wells the perforations must not extend above the confining material so that there will be no leakage from inside the casing when the well is shut off. In a gravel-packed well penetrating an artesian aquifer, the gravel must not be placed above the confining strata. Above the gravel the well must be cemented in order to prevent escape of water up the outside of the casing when the valve is closed.
   2. Wherever a well flows naturally upon completion, the well driller shall, prior to moving his rig from the well, install an effective shut-off valve of a type approved by the State Engineer.
   3. Wells which are to be used for domestic purposes shall be constructed as to prevent contamination or pollution.
   4. The well driller shall keep a log of each well, making current records as drilling progresses. The log shall contain the following:
      (a) Location of well in reference to legal subdivisions, if possible, or in reference to some landmark, such as roads, towns, etc.
      (b) The kind and nature of material in each stratum passed through, or penetrated; each change of formation with at least one entry for each ten-foot vertical interval.

*Gaging stations established during this biennium.
LITTLE HUMBOLDT RIVER AT CHIMNEY DAM SITE NEAR PARADISE VALLEY.
MARTIN CREEK NEAR PARADISE VALLEY.
COTTONWOOD CREEK NEAR PARADISE VALLEY.
HUMBOLDT-LOVELock IRRIGATION LIGHT & POWER COMPANY'S FEEDER
CANAL NEAR IMLAY.

PYRAMID AND WINNEMUCOBA LAKES BASIN
Pyramid Lake near Nixon.
Truckee River at Tahoe, California.
Truckee River near Truckee, California.
Truckee River at Farad, California.
*Truckee River at Reno.
Donner Creek near Truckee, California.
*Little Truckee River near Hobart Mills, California.
*Frenkstown Creek at Frenkstown.

CARSON RIVER BASIN
*East Fork Carson River near Markleeville, California.
East Fork Carson River near Gardnerville.
Carson River near Carson City.
Carson River near Fort Churchill.
*Silver King Creek near Coleville, California.
*Wolf Creek near Markleeville, California.
*Silver Creek near Markleeville, California.
*Markleeville Creek near Markleeville, California.
*Pleasant Valley Creek near Markleeville, California.
*West Fork Carson River above Woodfords, California.
West Fork Carson River at Woodfords, California.
*Clear Creek near Carson City.

WALKER LAKE BASIN
Walker Lake near Hawthorne.
Bridgeport Reservoir near Bridgeport, California.
East Walker River near Bridgeport, California.
*East Walker River near Yerington.
West Walker River below East Fork, near Coleville, California.
*West Walker River near Hudson.
East Fork West Walker River near Bridgeport, California.
Topa Topa Reservoir near Topa, California.

VIRGIN RIVER BASIN
Virgin River at Littlefield, Arizona.
Meadow Valley Wash near Panaca.

COLORADO RIVER MAIN STEM
Lake Mead at Hoover Dam.
Colorado River below Boulder Dam.

MINOR BASINS
*Baker Creek near Baker.
*Lehman Creek near Baker.

*Staging stations established during the biennium.

FEES
The fee for issuing a well driller's license is $5. The fee for the renewal of the license is $2 for each year.

DEFINITIONS
The definitions of the words and phrases used in the law and rules and regulations are as follows:
"Person," means any firm, partnership, association, company or corporation, municipal corporation, power district, political subdivision of this or any State or United States government agency.
"Aquifer," means a geological formation or structure that transmits water.
"Wells," means an artificial excavation put down by any method for the purpose of withdrawing water from the underground reservoir.
"Artesian Well," means a well tapping an aquifer underlaying an impervious material in which the static water level is said well stands above where it is first encountered in said aquifer.
"Waste," means permitting an artesian well to discharge water unnecessarily above or below the surface of the ground so that the waters thereof are lost for beneficial use, or conveying water from a well by means of canal, ditch or pipeline whereby the loss of water in transit is more than twenty percent of the amount of water discharged from said well, or in any event when over twenty percent of the water discharged from a well is lost from beneficial use.
"Well Driller," means any person, firm, copartnership, association or corporation, who shall drill a well or wells for compensation or otherwise, upon land other than his own.
"General Water Law," means the statutory water laws of 1913, and all amendments thereto.

RULES AND REGULATIONS
(The section referred to relates to the 1960 underground water laws as amended in 1949 and 1957.)
1. It is the purpose and intent of these rules and regulations:
(a) To obtain complete logs of all wells drilled, bored, jetted or otherwise, in Nevada.
(b) Prevent over-appropriation of water.
(c) Prevent pollution and contamination of underground water.
(d) Insure the construction and repair of wells in such manner that the flow, if any, can be completely controlled.
(e) Prevent waste of water from wells at the ground surface, and from one aquifer to another under the ground.
(f) Prevent undue interference with existing water rights.
2. The well driller's name and address, in legible letters together with a license plate issued by the State Engineer, shall be conspicuously displayed on the drilling rig or rigs operated or owned by the well driller. The license plate shall be provided by the State Engineer for each rig operated by the well driller. If the well driller operates more than one rig his license shall cover all of the rigs and each rig will bear the same license number. In other words, if a licensed well driller hires an operator for one of his rigs, the operator will not be required to obtain a license to drill.
The well drillers have cooperated quite well under this program by submitting to the State Engineer logs of wells drilled by them. One of the provisions under this licensing section is that the drillers must submit logs of wells drilled within thirty days following the completion of the well. The importance of this can be realized when we consider that 542 logs were made of record in the office of State Engineer during this biennium. Without such a law, very few of these logs would have been furnished with the result that information of great value would have been lost. As soon as time permits, the locations of wells as shown on the log forms will be indexed on township cards.

Well drillers' licenses must be renewed on July 1, 1948, and each year thereafter. A tabulation of licensed well drillers will be available on request.

**RULES AND REGULATIONS FOR DRILLING WELLS**

**STATUTORY REQUIREMENTS**

The State law requires that every person, firm, corporation, or partnership before engaging in the drilling of water wells after July 1, 1947, for compensation or otherwise, upon land other than his own, must make application and obtain a well driller's license from the State Engineer. Applications for well driller's license shall be made on forms prescribed by the State Engineer. Annual licenses expire on the 30th day of June following the issuance thereof and are not transferable.

Licenses may be revoked by the State Engineer if it appears after an investigation and hearing that the well driller has failed to comply with the laws and rules and regulations. Any well driller as defined in the Act who drills a well in violation of the rules and regulations and the State law, shall be guilty of a misdemeanor and upon conviction thereof shall be punished by a fine of not less than $50 nor more than $500 or by imprisonment in the county jail, not exceeding six months, or by both such fine and imprisonment.

It is mandatory that the well driller keep a log of the depth, thickness and character of the different strata penetrated and the location of water-bearing strata together with other data set forth in sec. 74 of the underground water law. The log must be signed by the driller and forwarded to the State Engineer within thirty days following the completion of each well.

Forty-six of these gaging stations are financed by State-Federal cooperative funds, and seven by Federal non-cooperative funds. The gaging station on Salmon Falls Creek near San Jacinto is operated under the supervision of R. B. Newell, District Engineer for the U. S. Geological Survey in Boise, Idaho, and is operated in cooperation with the Salmon River Canal Co., Ltd., of Twin Falls, Idaho. The two gaging stations on the Colorado River are operated under a cooperative agreement between the Bureau of Reclamation and the U. S. Geological Survey office at Tucson, Arizona, in charge of District Engineer John Gardiner. The gaging station on the Virgin River at Littlefield, Arizona, is also under the supervision of Mr. Gardiner. Records for gaging stations Nos. 2, 4, and 6 in the Pyramid and Winnemucca Lakes Basin are furnished by Walter Bell, Federal Court Watermaster. Records for Carson River at Fort Churchill are furnished by the Nevada Project.

**HUMBOLDT RIVER BASIN**

Humboldt River near Rose Creek Location—Water-stage recorder, lat. 40° 22', long. 118° 39', in NW1/4 sec. 36, T. 35 N., R. 35 E., 9 1/2 miles southeast of Rose Creek and 15 1/2 miles southwest of Winnemucca.


**PYRAMID AND WINNEMUCCA LAKES BASIN**

Truckee River at Reno Location—Water-stage recorder, lat. 39° 42', long. 119° 47', in sec. 10, T. 19 N., R. 19 E., half a mile east of Reno.


Remarks—Records collected in 1908-1919 equivalent during high water periods, but may differ materially during periods of low flow.

Little Truckee River near Hobart Mills, California Location—Water-stage recorder, lat. 39° 59', long. 120° 16', in sec. 14, T. 19 N., R. 18 E., half a mile upstream from Independence Creek and 1 1/2 miles northwest of Hobart Mills.

Records available—December 1946 to September 1947.

Remarks—Records collected 1908-1910 at station near Truckee not equivalent. One transmountain diversion above station to Sierra Valley.

Franktown Creek at Franktown Location—Water-stage recorder, lat. 39° 16', long. 119° 51', in sec. 9, T. 16 N., R. 19 E., half a mile west of Franktown and 3 miles upstream from Washoe Lake.

Remarks—Established April 18, 1948.

**CARBON RIVER BASIN**

East Fork Carson River above Soda Springs Ranger Station near Markleeville, California Location—Water-stage recorder, lat. 38° 31', long. 119° 41', in
NW¼ sec. 33, T. 6 N., R. 21 E., 1½ miles above Soda Springs ranger station and 16 miles south of Markleville, California. Records available—September 1946 to September 1947.

Silver King Creek near Coleville, California
Location—Water-stage recorder, lat. 38° 31' 30", long. 119° 36' 13", in SW¼ sec. 33, T. 6 N., R. 21 E., 6½ miles above mouth and 7 miles southwest of Coleville.
Records available—September 1946 to September 1947.

Wolf Creek near Markleville, California
Location—Water-stage recorder, lat. 38° 31' 30", long. 119° 44' 30", in SW¼ sec. 24, T. 6 N., R. 20 E., 6½ miles above mouth and 12 miles south of Markleville, California.
Records available—September 1946 to September 1947.

Silver Creek below Pennsylvania Creek near Markleville, California
Location—Water-stage recorder, lat. 38° 36' 36", long. 119° 47', in NW¼ sec. 28, T. 6 N., R. 20 E., 300 feet downstream from Pennsylvania Creek, 4 miles above mouth, and 6 miles south of Markleville.
Records available—December 1946 to September 1947.

Markleville Creek above Grover Hot Springs near Markleville, California
Location—Water-stage recorder, lat. 38° 36' 36", long. 119° 51', in NE¼ sec. 23, T. 6 N., R. 19 E., 1 mile upstream from Buck Creek, 4 miles upstream from mouth, and 4 miles west of Markleville.
Records available—October 1946 to September 1947.

Markleville Creek above Silver Creek near Markleville, California
Location—Water-stage recorder, lat. 38° 39', long. 119° 50', in SW¼ sec. 12, T. 6 N., R. 18 E., 7½ miles upstream from Markleville, California.
Records available—October 1946 to September 1947.

Silver Creek above Raymond Canyon near Markleville, California
Location—Water-stage recorder, lat. 38° 39', long. 119° 52', in NE¼ sec. 23, T. 6 N., R. 19 E., 1½ mile above mouth, and 5 miles southwest of Markleville, California.
Records available—October 1946 to September 1947.

Raymond Canyon Creek above Woodfords, California
Location—Water-stage recorder, lat. 38° 46' 23", long. 119° 53' 50", in NW¼ sec. 31, T. 6 N., R. 19 E., 1 mile above Horsetail Canyon, 1½ miles below Willet Creek, and 4 miles west of Woodfords.
Records available—December 1946 to September 1947.

Markleville Creek above Cooper Creek near Markleville, California
Location—Water-stage recorder, lat. 39° 07', long. 119° 49', in sec. 28, T. 6 N., R. 21 E., 1½ miles above Cooper Creek, and 6 miles southwest of Markleville.

CHAPTER X
Well Drillers
The 1947 Legislature added a new section to the underground water law (Sec. 7a, chap. 178, Stats. 1947), providing for the licensing of well drillers subsequent to July 1, 1947. During this biennium, well drillers were licensed, which we believe included all active well drillers operating within the State. The name of the well drillers licensed up to July 1, 1948, their license number and address are herewith given.

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>J. D. Hartley</td>
<td>Fallon, Nevada</td>
</tr>
<tr>
<td>2</td>
<td>J. C. Perry &amp; Son</td>
<td>Reno, Nevada</td>
</tr>
<tr>
<td>3</td>
<td>Max Meyer Well Drilling Co.</td>
<td>Reno, Nevada</td>
</tr>
<tr>
<td>4</td>
<td>Louis C. Glasson</td>
<td>Reno, Nevada</td>
</tr>
<tr>
<td>5</td>
<td>Fred C. Hinsley</td>
<td>Reno, Nevada</td>
</tr>
<tr>
<td>6</td>
<td>Jesse W. Harrison</td>
<td>Carson City, Nevada</td>
</tr>
<tr>
<td>7</td>
<td>J. M. Hargrove</td>
<td>Las Vegas, Nevada</td>
</tr>
<tr>
<td>8</td>
<td>B. B. Brown</td>
<td>Los Angeles, California</td>
</tr>
<tr>
<td>9</td>
<td>C. P. M. Fowkes</td>
<td>Las Vegas, Nevada</td>
</tr>
<tr>
<td>10</td>
<td>Harry Meyer</td>
<td>Carson City, Nevada</td>
</tr>
<tr>
<td>11</td>
<td>R. L. North &amp; Son</td>
<td>Reno, Nevada</td>
</tr>
<tr>
<td>12</td>
<td>Cecil D. H.</td>
<td>Reno, Nevada</td>
</tr>
<tr>
<td>13</td>
<td>Claude R. Kersee</td>
<td>Winnemucca, Nevada</td>
</tr>
<tr>
<td>14</td>
<td>J. D. Milling Co.</td>
<td>Ely, Nevada</td>
</tr>
<tr>
<td>15</td>
<td>Warren W. Overbey</td>
<td>Winnemucca, Nevada</td>
</tr>
<tr>
<td>16</td>
<td>C. J. Brady</td>
<td>Fallon, Nevada</td>
</tr>
<tr>
<td>17</td>
<td>C. C. Reed</td>
<td>Las Vegas, Nevada</td>
</tr>
<tr>
<td>18</td>
<td>Charles A. Nelson</td>
<td>Lovelock, Nevada</td>
</tr>
<tr>
<td>19</td>
<td>B. G. Arrington</td>
<td>Las Vegas, Nevada</td>
</tr>
<tr>
<td>20</td>
<td>J. W. Holm</td>
<td>Las Vegas, Nevada</td>
</tr>
<tr>
<td>21</td>
<td>F. W. Brooking &amp; Sons</td>
<td>Carson City, Nevada</td>
</tr>
<tr>
<td>22</td>
<td>Earl Miller</td>
<td>Fallon, Nevada</td>
</tr>
<tr>
<td>23</td>
<td>Dennis Smith</td>
<td>Ely, Nevada</td>
</tr>
<tr>
<td>24</td>
<td>F. C. Ferguson</td>
<td>Tonopah, Nevada</td>
</tr>
<tr>
<td>25</td>
<td>C. O. Kneatter</td>
<td>Carson City, Nevada</td>
</tr>
<tr>
<td>26</td>
<td>Geo. D. Allen</td>
<td>Fallon, Nevada</td>
</tr>
<tr>
<td>27</td>
<td>Wm. E. Rhoads</td>
<td>Pioche, Nevada</td>
</tr>
<tr>
<td>28</td>
<td>J. B. Reynolds</td>
<td>Fallon, Nevada</td>
</tr>
<tr>
<td>29</td>
<td>John Champion</td>
<td>Reno, Nevada</td>
</tr>
<tr>
<td>30</td>
<td>Fred H. Breyer</td>
<td>Pioche, Nevada</td>
</tr>
<tr>
<td>31</td>
<td>Rodgers &amp; Smith</td>
<td>Las Vegas, Nevada</td>
</tr>
<tr>
<td>32</td>
<td>E. B. Prentice</td>
<td>Gardnerville, Nevada</td>
</tr>
<tr>
<td>33</td>
<td>Dan Crawford</td>
<td>Yreka, Nevada</td>
</tr>
<tr>
<td>34</td>
<td>A. G. Ritter</td>
<td>Winder City, Nevada</td>
</tr>
<tr>
<td>35</td>
<td>Joseph E. Moxon</td>
<td>North Las Vegas, Nevada</td>
</tr>
<tr>
<td>36</td>
<td>Harry C. House</td>
<td>Cedar City, Utah</td>
</tr>
<tr>
<td>37</td>
<td>Louis R. Rignons</td>
<td>Gerlach, Nevada</td>
</tr>
<tr>
<td>38</td>
<td>J. L. Simmons</td>
<td>Las Vegas, Nevada</td>
</tr>
<tr>
<td>39</td>
<td>Prince W. McIntyre</td>
<td>Airlie, Nevada</td>
</tr>
<tr>
<td>40</td>
<td>Tom Miller</td>
<td>Pioche, Nevada</td>
</tr>
<tr>
<td>41</td>
<td>I. L. Construction Co.</td>
<td>Reno, Nevada</td>
</tr>
<tr>
<td>42</td>
<td>A. E. Godfrey</td>
<td>Long Beach, California</td>
</tr>
<tr>
<td>43</td>
<td>Harry Wilson and Preston Bradshaw</td>
<td>Cedar City, Utah</td>
</tr>
<tr>
<td>44</td>
<td>Harden &amp; Company</td>
<td>Boise, Idaho</td>
</tr>
<tr>
<td>45</td>
<td>R. B. McKee</td>
<td>Las Vegas, Nevada</td>
</tr>
<tr>
<td>46</td>
<td>L. C. Smith</td>
<td>Carson City, Nevada</td>
</tr>
<tr>
<td>47</td>
<td>Stanley Ford</td>
<td>Pahrump, Nevada</td>
</tr>
<tr>
<td>48</td>
<td>Kari Ward</td>
<td>Rhyolite Mountain, Nevada</td>
</tr>
<tr>
<td>49</td>
<td>Edward E. Issacs</td>
<td>Reno, Nevada</td>
</tr>
</tbody>
</table>
CHAPTER IX
Inspection and Surveys of Lands Suitable for Irrigation by Pumping

By Howard G. Martin, Agricultural Experiment Station, University of Nevada.

This activity was undertaken near the end of the biennium following several conferences between representatives of the State Engineer’s office, the Water Resources Branch of the U. S. Geological Survey, the Soil Conservation Service U. S. D. A., and the Nevada Agricultural Experiment Station of the University of Nevada. The work by the Experiment Station is being carried on under a formal project, approved by the Office of Experiment Stations, entitled: “An Inventory of Lands Suitable for Irrigation by Pumping.”

The purpose of these studies is two-fold. They are intended first, to aid in determining the priority of detailed water investigations for different areas. They are also intended to delineate the approximate areas of agricultural land located over potential ground-water supplies. The procedure in making these investigations as far as has been possible to make a quick visit to areas under consideration to determine whether or not they appear worthy of further study at an early date.

If the area has a rather limited possibilities it is given a low priority and set aside for further study after more promising ones have been taken care of. Where there is a relative abundance of land found to be susceptible to development, the practice has been to proceed with a reconnaissance type of land classification as soon as possible after the area estimated to be underlaid with a potential ground-water supply has been determined.

The land classification is based upon data on available technical information gathered by others and by field examination. The field work includes observations of soil texture and profile, native vegetation, and alluvial conditions. Three classes of land are delineated as accurately as possible by reconnaissance methods and the availability of ground control. Class I land is that which is considered definitely suitable for development with a pumped supply of irrigation water. Class II land is on the borderline, or consists of a mixture of suitable and unsuitable land difficult to separate by the survey methods used. Class III lands are considered to be definitely unsuitable for development by pumping.

Work on this project to date consists of a completed report on Grass Valley, in Humboldt and Pershing Counties; completion of field work of a land classification of White River Valley in White Pine and northeastern Nye County; and inspection trips to Diamond Valley, Railroad Valley, Hot Creek Valley, and Penoyer Valley.

WALKER LAKE BASIN
East Walker River near Yerington
Location—Water-stage recorder, lat. 39° 48', long. 119° 02', in sec. 14, T. 11 N., R. 29 E., 13½ miles southeast of Yerington.
Records available—October 1942 to July 1943 (gage heights only); January to September 1947.
Remarks—Flows affected by Bridgeport Reservoir. Diversions above station for irrigation.

West Walker River near Hudson
Location—Water-stage recorder, lat. 39° 49', long. 119° 14', in sec. 18, T. 11 N., R. 25 E., half a mile upstream from Wilson Canyon and 4 miles southeast of Hudson.
Records available—May 1921 to March 1925, January to September 1947.
Remarks—Flow affected by Topaz Reservoir and diversions above station.

MINOR BASINS
Baker Creek at the Narrows near Baker
Location—Water-stage recorder, lat. 39° 50', long. 114° 13', in sec. 22, T. 13 N., R. 69 E., one-half mile downstream from Pole Canyon, 1 mile downstream from the Narrows, and 4½ miles southwest of Baker.
Remarks—Established December 13, 1947. Records at this site will not be equivalent to those obtained in 1933-1935 at former site three-quarters of a mile downstream because of probable channel losses between the two locations.

Lehman Creek near Baker
Location—Water-stage recorder, lat. 39° 01', long. 114° 18', in sec. 10, T. 13 N., R. 69 E., 4½ miles west of Baker.
Remarks—Station established December 14, 1947.

Surface water supplies for the biennium covered by this report varied from good to fair. Records for the key gaging station on the Humboldt River at Palisade show that the discharge for the water years ending September 30, 1946, and 1947, was 100 percent and 85 percent, respectively, of the 30-year normal. Runoff from the West Walker River, draining from the Sierra Nevada Mountains, was 33 percent and 77 percent of its 37-year normal for the same periods. The large yearly variations in stream flow shown by these comparisons emphasize the necessity of recording runoff information over a long period of time if reliable plans are to be made for the complete development of this resource.

A suboffice of the Surface Water Distribution of the Geological Survey was established in Carson City in August 1946, in order to carry on the cooperative stream gaging program more intensively, and to make records more readily available to State officials and citizens using them.

The detailed information collected as a result of these cooperative investigations are published in the annual water-supply papers of the
CHAPTER VIII
Nevada Cooperative Snow Surveys, 1946-1948

By C. E. Harned, Irrigation Engineer, Division of Irrigation, Soil Conservation Service, U. S. D. A.

Most of the past fall and winter the time of this office was spent in compiling past snow survey data for inclusion in a summary for the period 1930 through 1948. The summary will be completed and mailed to water users and interested parties during the next biennial.

Snowfall in Nevada and the eastern Sierra in California was at an all time low prior to March 1, 1948. Reservoir storage was also extremely short. As a result, conservation measures were taken to prepare for an extremely short irrigation season water supply. Storms throughout the higher elevations during March and April alleviated the immediate shortages of this year's supplies but, to date, reservoir shortages are the outlook for next season.

During the 1948 snow survey season 106 men traveled about 1,000 miles on snowshoes or skis to obtain the 3,000 measurements required on the 100 snow courses in Nevada and the Eastern Sierra in California.

Snow Survey—Streamflow forecasts were issued for three additional gaging points during the past spring. These were: Carson River near Carson City, Nevada, West Carson River at Woodfords, California, East Carson River near Gardnerville, Nevada. This brings to thirteen the total number of forecasting points in Nevada.

Three informal forecast committees met at Minden, Fallon, and Yerington, Nevada, early in April of this year. The meetings were attended by representatives of irrigation farmers, irrigation districts, and Federal and State agencies. The purpose of the meeting was to pool all available hydrologic information and determine irrigation season water supplies for the coming season. The meetings were quite successful and it was the unanimous opinion of those in attendance that such meetings should be held every year. Plans for next year call for expansion of these forecast meetings to about three communities along the Humboldt River.
Geological Survey. The published reports are available for consultation at the State Engineer's Office, the State Library, and the Geological Survey suboffice at Carson City, and also at several district offices of the Survey, in addition to many educational institutions and public libraries scattered throughout the States. Current data in advance of publication and information for previous years can be furnished in blueprint form on application to the Engineer-in-Charge, P. O. Box 327, Carson City, Nevada.

CHAPTER VIII

Nevada Cooperative Snow Surveys, 1946-1948

By Caryl E. Hudson, Irrigation Engineer Division of Irrigation, Soil Conservation Service, U. S. D. A.

Most of the past fall and winter the time of this office was spent in compiling past snow survey data for inclusion in a summary for the period 1930 through 1948. The summary will be completed and mailed to water users and interested parties during the next biennium.

Snowfall in Nevada and the eastern Sierra in California was at an all time low prior to March 1, 1948. Reservoir storage was also extremely short. As a result, conservation measures were taken to prepare for an extremely short irrigation season water supply. Storms throughout the higher elevations during March and April alleviated the immediate shortage of this year's supplies but, to date, reservoir shortages are the outlook for next season.

During the 1948 snow survey season 100 men traveled about 1,000 miles on snowshoes or skis to obtain the 3,000 measurements required on the 100 snow courses in Nevada and the Eastern Sierra in California.

Snow Survey—Streamflow forecasts were issued for three additional gaging points during the past spring. These were: Carson River near Carson City, Nevada, West Carson River at Woodfork, California, East Carson River near Gardnerville, Nevada. This brings to thirteen the total number of forecasting points in Nevada.

Three informal forecast committees met at Minden, Fallon, and Yerington, Nevada, early in April of this year. The meetings were attended by representatives of irrigation farmers, irrigation districts, and Federal and State agencies. The purpose of the meeting was to pool all available hydrologic information and determine irrigation season water supplies for the coming season. The meetings were quite successful and it was the unanimous opinion of those in attendance that such meetings should be held every year. Plans for next year call for expansion of these forecast meetings to about three communities along the Humboldt River.
CHAPTER IX
Inspection and Surveys of Lands Suitable for Irrigation by Pumping
by Howard G. Martin, Agricultural Experiment Station, University of Nevada

This activity was undertaken near the end of the biennium, following several conferences between representatives of the State Engineer's office, the Water Resources Branch of the U. S. Geological Survey, the Soil Conservation Service U. S. D. A., and the Nevada Agricultural Experiment Station of the University of Nevada. The work by the Experiment Station is being carried on under a formal project, approved by the Office of Experiment Stations, entitled: "An Inventory of Lands Suitable for Irrigation by Pumping."

The purpose of these studies is twofold. They are intended first, to aid in determining the priority of detailed water investigations for different areas. They are also intended to delineate the approximate areas of agricultural land located over potential ground-water supplies. The procedure in making these investigations so far has been to make a quick visit to areas under consideration to determine whether or not they appear worthy of further study at an early date.

If the area has rather limited possibilities it is given a low priority and set aside for further study after more promising ones have been taken care of. Where there is a relative abundance of land found to be susceptible to development, the practice has been to proceed with a reconnaissance type of land classification as soon as possible after the area estimated to be underlain with a potential ground-water supply has been determined.

The land classification is based upon any available technical information gathered by other agencies and by field examination. The field work includes observations of soil texture and profile, native vegetation, and alluvial conditions. Three classes of land are delineated as accurately as possible by reconnaissance methods and the availability of ground control. Class I land is that which is considered definitely suitable for development with a pumped supply of irrigation water. Class II land is on the borderline, or consists of a mixture of suitable and unsuitable land difficult to separate by the survey methods used. Class III lands are considered to be definitely unsuitable for development by pumping.

Work on this project to date consists of a completed report on Grass Valley, in Humboldt and Pershing Counties; completion of field work of a land classification of White River Valley in White Pine and northeastern Nye County; and inspection trips to Diamond Valley, Railroad Valley, Hot Creek Valley, and Penoyer Valley.

WALKER LAKE BASIN
East Walker River near Yerington
Location—Water-stage recorder, lat. 38° 48', long. 119° 02', in sec. 14, T. 11 N., R. 26 E., 133½ miles southeast of Yerington.

Records available—October 1902 to July 1908 (gage heights only); January to September 1947.

Remarks—Flow affected by Bridgeport Reservoir. Diversions above station for irrigation.

West Walker River near Hudson
Location—Water-stage recorder, lat. 38° 49', long. 119° 14', in sec. 18, T. 11 N., R. 25 E., half a mile upstream from Wilson Canyon and 4 miles southeast of Hudson.

Records available—May 1921 to March 1925, January to September 1947.

Remarks—Flow affected by Topaz Reservoir and diversions above station.

MINOR BASINS
Baker Creek at the Narrows near Baker
Location—Water-stage recorder, lat. 38° 59', long. 114° 13', in sec. 10, T. 13 N., R. 69 E., 4½ miles west of Baker.

Remarks—Station established December 13, 1947.

Surface water supplies for the biennium covered by this report varied from good to fair. Records for the key gaging station on the Humboldt River at Palisade show that the discharge for the water years ending September 30, 1946, and 1947, was 150 percent and 50 percent, respectively, of the 39-year normal. Runoff from the West Walker River, draining from the Sierra Nevada Mountains, was 31 percent and 77 percent of its 37-year normal for the same periods. The large yearly variations in stream flow shown by these comparisons emphasize the necessity of recording runoff information over a long period of time if reliable plans are to be made for the complete development of this resource.

A suboffice of the Surface Water Distribution of the Geological Survey was established in Carson City in August 1946, in order to carry on the cooperative stream gaging program more intensively, and to make records more readily available to State officials and citizens using them.

The detailed information collected as a result of these cooperative investigations are published in the annual water-supply papers of the
NW¼ sec. 33, T. 8 N., R. 21 E., 1½ miles above Soda Springs ranger station and 16 miles south of Markleeville, California. Records available—September 1946 to September 1947.

Silver King Creek near Coleville, California
Location—Water-stage recorder, lat. 38° 31', long. 119° 36', in SW¼ sec. 30, T. 8 N., R. 22 E., 6½ miles above mouth and 7 miles southwest of Coleville.
Records available—September 1946 to September 1947.

Wolf Creek near Markleeville, California
Location—Water-stage recorder, lat. 38° 31' 30", long. 119° 41' 30", in SE¼ sec. 24, T. 8 N., R. 20 E., 6½ miles above mouth and 12 miles south of Markleeville, California.
Records available—September 1946 to September 1947.

Silver Creek above Pennsylvania Creek near Markleeville, California
Location—Water-stage recorder, lat. 38° 36', long. 119° 41', in NE¼ sec. 28, T. 9 N., R. 20 E., 800 feet downstream from Pennsylvania Creek, 4 miles above mouth, and 6 miles south of Markleeville.
Records available—December 1946 to September 1947.
Remarks—Records probably not equivalent to those collected at station near Markleeville 1910-1912.

Markleeville Creek above Grover Hot Springs near Markleeville, California
Location—Water-stage recorder, lat. 38° 36', long. 119° 51', in SE¼ sec. 23, T. 10 N., R. 19 E., 1½ mile upstream from Rush Creek, 4 miles upstream from mouth, and 4 miles west of Markleeville.
Records available—October 1946 to September 1947.
Remarks—Records will not be equivalent to those collected at Markleeville 1910-1951, or above Markleeville 1911-1930.

Fleishaker Valley Creek above Raymond Canyon Creek near Markleeville, California
Location—Water-stage recorder, lat. 38° 39', long. 119° 50', in SE¼ sec. 13, T. 9 N., R. 19 E., 1½ miles upstream from Raymond Canyon Creek, 4½ miles above mouth, and 5 miles southwest of Markleeville, California.
Records available—October 1946 to September 1947.
Remarks—Records will not be equivalent to those collected at station near Markleeville 1910-1912.

West Fork Carson River above Woodfords, California
Location—Water-stage recorder, lat. 38° 46' 28", long. 119° 53' 50", in NW¼ sec. 31, T. 11 N., R. 19 E., 1 mile above Horsethief Canyon, 1½ miles below Willows Creek, and 4 miles west of Woodfords.
Records available—December 1946 to September 1947.
Remarks—This gaging station is about 3 miles upstream from station at Woodfords and records are not expected to be equivalent at all times.

Clear Creek near Carson City

CHAPTER X
Well Drillers

The 1947 Legislature added a new section to the underground water law (Sec. 7a, chap. 178, Stats. 1941), providing for the licensing of well drillers subsequent to July 1, 1947. During this biennium, well drillers were licensed which we believe included all active well drillers operating within the State. The name of the well drillers licensed up to July 1, 1948, their license number and address are herewith given.

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>J. J. Barry</td>
<td>Fallon, Nevada</td>
</tr>
<tr>
<td>2</td>
<td>J. C. Purcell &amp; Son</td>
<td>Reno, Nevada</td>
</tr>
<tr>
<td>3</td>
<td>Maley Well Drilling Co</td>
<td>Reno, Nevada</td>
</tr>
<tr>
<td>4</td>
<td>Louis Closkey</td>
<td>Reno, Nevada</td>
</tr>
<tr>
<td>5</td>
<td>Fred E. Huestel</td>
<td>Paradise Valley, Nevada</td>
</tr>
<tr>
<td>6</td>
<td>Jesse E. Harrison</td>
<td>Carson City, Nevada</td>
</tr>
<tr>
<td>7</td>
<td>E. H. Hattinger</td>
<td>Las Vegas, Nevada</td>
</tr>
<tr>
<td>8</td>
<td>LaBelle Mine Company</td>
<td>Los Angeles, Calif.</td>
</tr>
<tr>
<td>9</td>
<td>John F. Peters</td>
<td>Las Vegas, Nevada</td>
</tr>
<tr>
<td>10</td>
<td>Harry J. Meyer</td>
<td>Carson City, Nevada</td>
</tr>
<tr>
<td>11</td>
<td>R. E. North &amp; Son</td>
<td>Reno, Nevada</td>
</tr>
<tr>
<td>12</td>
<td>Cecil S. Hill</td>
<td>Elko, Nevada</td>
</tr>
<tr>
<td>13</td>
<td>Claude R. Kessinger</td>
<td>Winnemucca, Nevada</td>
</tr>
<tr>
<td>14</td>
<td>J. E. Hill Drilling Co</td>
<td>Elko, Nevada</td>
</tr>
<tr>
<td>15</td>
<td>Warren W. Overholt</td>
<td>Winnemucca, Nevada</td>
</tr>
<tr>
<td>16</td>
<td>C. J. Goodwin</td>
<td>Fallon, Nevada</td>
</tr>
<tr>
<td>17</td>
<td>Commons Drilling Co.</td>
<td>Las Vegas, Nevada</td>
</tr>
<tr>
<td>18</td>
<td>Henry L. Nelson</td>
<td>Lovelock, Nevada</td>
</tr>
<tr>
<td>19</td>
<td>J. C. Arnaud</td>
<td>Las Vegas, Nevada</td>
</tr>
<tr>
<td>20</td>
<td>W. L. Holm</td>
<td>Las Vegas, Nevada</td>
</tr>
<tr>
<td>21</td>
<td>W. W. Brown &amp; Son</td>
<td>Carson, California</td>
</tr>
<tr>
<td>22</td>
<td>Earl Miller</td>
<td>Carlin, Nevada</td>
</tr>
<tr>
<td>23</td>
<td>Dennis Smith</td>
<td>Elko, Nevada</td>
</tr>
<tr>
<td>24</td>
<td>F. C. Ferguson</td>
<td>Tonopah, Nevada</td>
</tr>
<tr>
<td>25</td>
<td>C. O. Koester</td>
<td>Carson City, Nevada</td>
</tr>
<tr>
<td>26</td>
<td>Geo Dalton</td>
<td>Fallon, Nevada</td>
</tr>
<tr>
<td>27</td>
<td>Wm. Emory Rhodes</td>
<td>Pittman, Nevada</td>
</tr>
<tr>
<td>28</td>
<td>J. B. Reynolds</td>
<td>Fallon, Nevada</td>
</tr>
<tr>
<td>29</td>
<td>John Champion</td>
<td>Reno, Nevada</td>
</tr>
<tr>
<td>30</td>
<td>Jesse C. Harder</td>
<td>Pioche, Nevada</td>
</tr>
<tr>
<td>31</td>
<td>Rodgers &amp; Smith</td>
<td>Las Vegas, Nevada</td>
</tr>
<tr>
<td>32</td>
<td>Ed Prenger</td>
<td>Gardnerville, Nevada</td>
</tr>
<tr>
<td>33</td>
<td>Dan Caswold</td>
<td>Vr, Nevada</td>
</tr>
<tr>
<td>34</td>
<td>A. G. Butcher</td>
<td>Wellington, Nevada</td>
</tr>
<tr>
<td>35</td>
<td>cheeses C. Meets</td>
<td>North Las Vegas, Nevada</td>
</tr>
<tr>
<td>36</td>
<td>J. G. House</td>
<td>Cedar City, Utah</td>
</tr>
<tr>
<td>37</td>
<td>Louis D. Simmons</td>
<td>Gertrude, Nevada</td>
</tr>
<tr>
<td>38</td>
<td>A. L. Simpson</td>
<td>Las Vegas, Nevada</td>
</tr>
<tr>
<td>39</td>
<td>Prince W. McIntyre</td>
<td>Ashland, Nevada</td>
</tr>
<tr>
<td>40</td>
<td>Tom Miller</td>
<td>Pioche, Nevada</td>
</tr>
<tr>
<td>41</td>
<td>I. S. Construction Co</td>
<td>Reno, Nevada</td>
</tr>
<tr>
<td>42</td>
<td>Al Godfrey</td>
<td>Long Beach, Calif.</td>
</tr>
<tr>
<td>43</td>
<td>Harry Wilson &amp; Whitehead</td>
<td>Las Vegas, Nevada</td>
</tr>
<tr>
<td>44</td>
<td>H. J. English</td>
<td>Reno, Nevada</td>
</tr>
<tr>
<td>45</td>
<td>R. E. DeHaven</td>
<td>Carson City, Nevada</td>
</tr>
<tr>
<td>46</td>
<td>Stanley Ford</td>
<td>Fallon, Nevada</td>
</tr>
<tr>
<td>47</td>
<td>Karl Ward Jung</td>
<td>Round Mountain, Nevada</td>
</tr>
<tr>
<td>48</td>
<td>Edward E. Edens</td>
<td>Reno, Nevada</td>
</tr>
</tbody>
</table>
The well drillers have cooperated quite well under this program by submitting to the State Engineer logs of wells drilled by them. One of the provisions under this licensing section is that the drillers must submit logs of wells drilled within thirty days following the completion of the well. The importance of this can be realized when we consider that 842 logs were made of record in the office of the State Engineer during this biennium. Without such a law, very few of these logs would have been furnished with the result that information of great value would have been lost. As soon as time permits, the locations of wells as shown on the log forms will be indexed on township cards.

Well drillers' licenses must be renewed on July 1, 1948 and each year thereafter. A tabulation of licensed well drillers will be available on request.

RULES AND REGULATIONS FOR DRILLING WELLS
STATUTORY REQUIREMENTS

The State law requires that every person, firm, copartnership, association, or corporation before engaging in the drilling of water wells after July 1, 1947, for compensation or otherwise, upon land other than his own, must make application and obtain a well driller's license from the State Engineer. Applications for well drillers' license shall be made on forms prescribed by the State Engineer. All licenses expire on the 30th day of June following the issuance thereof and are not transferable.

Licenses may be revoked by the State Engineer if it appears after an investigation and hearing that the well driller has failed to comply with the law and the rules and regulations. Any well driller as defined in the Act who drills a well in violation of the rules and regulations and the State law, shall be guilty of a misdemeanor and upon conviction thereof shall be punished by a fine of not less than $50 nor more than $500 or by imprisonment in the county jail, not exceeding six months, or by both such fine and imprisonment.

It is mandatory that the well driller keep a log of the depth, thickness and character of the different strata penetrated and the location of water-bearing strata together with other data set forth in Sec. 7a of the underground water law. The log must be signed by the driller and forwarded to the State Engineer within thirty days following the completion of each well.

Forty-six of these gaging stations are financed by State-Federal cooperative funds, and seven by Federal incooperative funds. The gaging station on Salmon Falls Creek near San Jacinto is operated under the supervision of T. B. Newell, District Engineer for the U. S. Geological Survey in Boise, Idaho, and is operated in cooperation with the Salmon River Canal Co., Ltd., of Twin Falls, Idaho. The two gaging stations on the Colorado River are operated under a cooperative agreement between the Bureau of Reclamation and the U. S. Geological Survey office at Tucson, Arizona, in charge of District Engineer John Gardiner. The gaging station on the Virgin River at Littlefield, Arizona, is also under the supervision of Mr. Gardiner. Records for gaging stations Nos. 2, 4, and 6 in the Pyramid and Winnemucca Lakes Basin are furnished by Walter Bell, Federal Court Watermaster. Records for Carson River at Fort Churchill are furnished by the Newlands Project.

Location and Description of Gaging Stations Established During the Biennium, 1946-1948

**HUMBOLDT RIVER BASIN**

Humboldt River near Rose Creek

Location—Water-stage recorder, lat. 40° 52', long. 118° 00', in NV/1 sec. 36, T. 35 N., R. 35 E.; 31/4 miles southwest of Rose Creek and 101/4 miles southwest of Winnemucca.


**PYRAMID AND WINNEMUCCA LAKES BASIN**

Truckee River at Reno

Location—Water-stage recorder, lat. 39° 32', long. 119° 47', in sec. 12, T. 19 N., R. 19 E., half a mile east of Reno.


Remarks—Records collected in 1908-1919 equivalent during high water periods, and may differ materially during periods of low flow.

Little Truckee River near Hobart Mills, California

Location—Water-stage recorder, lat. 39° 30', long. 120° 16', in sec. 14, T. 19 N., R. 19 E., half a mile upstream from Independence Creek and 71/4 miles north of Hobart Mills.

Records available—December 1946 to September 1947.

Remarks—Records collected 1908-1910 at station near Truckee not equivalent.

One transmountain diversion above station to Sierra Valley.

Franktown Creek at Franktown

Location—Water-stage recorder, lat. 39° 16', long. 119° 51', in sec. 9, T. 16 N., R. 19 E., half a mile west of Franktown and 3 miles upstream from Washoe Lake.

Remarks—Established April 18, 1946.

**CARSON RIVER BASIN**

East Fork Carson River above Soda Springs Ranger Station near Markleeville, California

Location—Water-stage recorder, lat. 38° 31', long. 119° 41', in
Little Humboldt River at Chimney dam site near Paradise Valley.
Martin Creek near Paradise Valley.
Cottonwood Creek near Paradise Valley.
Humboldt-Loveland Irrigation Light & Power Company's Feeder Canal near Imlay.

**PYRAMID AND WINNEMUDDA LAKES BASIN**
Pyramid Lake near Nixon.
Truckee River at Tahoe, California.
Truckee River at Truckee, California.
Truckee River at Farad, California.
*Truckee River at Reno.*
Donner Creek near Truckee, California.
*Little Truckee River near Hobart Mills, California.*
*Francktown Creek at Francktown.*

**CARSON RIVER BASIN**
*East Fork Carson River near Markleeville, California.*
East Fork Carson River near Gardnerville.
Carson River near Carson City.
Carson River near Fort Churchill.
*Silver King Creek near Coleville, California.*
*Wolf Creek near Markleeville, California.*
*Silver Creek near Markleeville, California.*
Markleeville Creek near Markleeville, California.
*Pleasant Valley Creek near Markleeville, California.*
*West Fork Carson River above Woodfords, California.*
West Fork Carson River at Woodfords, California.
*Cedar Creek near Carson City.*

**WALKER LAKE BASIN**
Walker Lake near Hawthorne.
Bridgeport reservoir near Bridgeport, California.
East Walker River near Bridgeport, California.
*East Walker River near Yerington.*
West Walker River below East Fork, near Coleville, California.
*West Walker River near Hudson.*
East Fork West Walker River near Bridgeport, California.
Toiyabe Reservoir near Topaz, California.

**VIRGIN RIVER BASIN**
Virgin River at Littlefield, Arizona.
Meadow Valley Wash near Panaca.

**COLORADO RIVER MAIN STEM**
Lake Mead at Hoover Dam.
Colorado River below Boulder Dam.

**MINOR BASINS**
*Baker Creek near Baker.*
*Lehrman Creek near Baker.*

---

**FEES**
The fee for issuing a well driller's license is $5. The fee for the renewal of the license is $2 for each year.

**DEFINITIONS**
The definitions of the words and phrases used in the law and rules and regulations are as follows:

*Person:* means any firm, partnership, association, company, corporation, municipal corporation, power district, political subdivision of this or any State or United States government agency.

*Aquifer:* means a geological formation or structure that transmits water.

*Well:* an artificial excavation put down by any method for the purpose of withdrawing water from the underground reservoir.

*Artesian Well:* means a well tapping an aquifer underlyng an impervious material in which the static water level in said well stands above where it is first encountered in said aquifer.

*Waste:* means permitting an artesian well to discharge water unnecessarily above or below the surface of the ground so that the waters thereof are lost for beneficial use, or conveying water from a well by means of canal, ditch, or pipeline whereby the loss of water in transit is more than 20 percent of the amount of water discharged from said well, or in any event when over 20 percent of the water discharged from a well is lost from beneficial use.

*Well Driller:* means any person, firm, corporation, association or corporation, who shall drill a well or wells for compensation or otherwise, upon land other than his own.

*General Water Law:* means the statutory water laws of 1913, and all amendments thereto.

**RULES AND REGULATIONS**
(The section referred to relates to the 1923 underground water law as amended in 1943 and 1967.)

1. It is the purpose and intent of these rules and regulations:
   (a) To obtain complete logs of all wells drilled, bored, jetted or otherwise, in Nevada.
   (b) To prevent over-appropriation of water.
   (c) To prevent pollution and contamination of underground water.
   (d) To insure the construction and repair of wells in such manner that the flow, if any, can be completely controlled.
   (e) To prevent waste of water from wells at the ground surface, and from one aquifer to another under the ground.
   (f) To prevent undue interference with existing water rights.

2. The well driller's name and address, in legible letters together with a license plate issued by the State Engineer, shall be conspicuously displayed on the drilling rig or rigs operated or owned by the well driller. The license plate shall be provided by the State Engineer for each rig operated by the well driller. If the well driller operates more than one rig his license shall cover all of the rigs and each rig will bear the same license number. In other words, if a licensed well driller hires an operator for one of his rigs, the operator will not be required to obtain a license to drill.
9. In any proven artesian basin or any basin or subbasin designated by the State Engineer as provided for in sec. 4, before a person shall be permitted to sink a well for water, and before performing any work in connection with the sinking of such well, he must first make application for, and obtain from the State Engineer, a permit to appropriate such water in accordance with the general water law.

Therefore, in such designated area, the well driller shall not commence any work in connection with the drilling of a well until the person for whom the well is to be drilled can produce a permit from the State Engineer to appropriate water at a point at which the well is to be drilled. To date, July 1, 1947, only two areas have been designated, viz, the Las Vegas Artisan Basin and the Pahrump Artisan Basin. As other areas are designated, the State Engineer will advise the well drillers.

4. In basins or subbasins which have not been designated by the State Engineer, or which are not proven artesian basins, no application or permit to appropriate water is necessary until after the well is sunk and a water supply has been thereby developed. Before any legal diversion of water can be made for a well, the appropriator must make application to the State Engineer and obtain a permit to appropriate water. (Sec. 6.) In such areas the well driller can proceed to drill without the owner of the property having a permit to appropriate water, but in all cases the well driller must furnish a well log on the prescribed form to the State Engineer.

5. No application for a permit to appropriate water for domestic purposes is necessary where the drought does not exceed two gallons per minute and the water so developed is not from an artesian well in a designated basin. In all cases, the well driller shall furnish logs of such wells.

6. Wells drilled into or through artesian aquifers or through material which will cause the water to have a quality unsuitable for domestic use shall be used for irrigation purposes only.

7. In artesian wells that are not gravel packed there must be a satisfactory seal between the outside of the casing and the confining material so as to prevent upward leakage. In artesian wells the perforations must not extend above the confining material so that there will be no leakage from inside the casing when the well is shut off.

8. In a gravel packed well penetrating an artesian aquifer, the gravel must not be placed above the confining strata. Above the gravel the well must be cemented in order to prevent escape of water up the outside of the casing when the valve is closed.

9. Wherever a well flows naturally upon completion, the well driller shall, prior to moving his rig from the well, install an effective shut-off valve of a type approved by the State Engineer.

10. All wells which are to be used for domestic purposes, shall be constructed so as to prevent contamination or pollution.

11. The well driller shall keep a log of each well, making current records as drilling progresses. The log shall contain the following:

(a) Location of well in reference to legal sub-divisions, if possible, or in reference to some landmark, such as roads, towns, etc.

(b) The kind and nature of material in each stratum passed through, or penetrated; each change of formation with at least one entry for each ten foot vertical interval.

State in the Carson and Little Truckee River Basins. With the total funds made available by the State, local water users, and Federal agencies, 16 gaging stations were constructed during this biennium, locations of which are given on page 37. Continuous type water-stage recorders were installed at all of these gaging stations. Seven of these instruments are housed in galvanized corrugated metal pipe gage-house structures, and the remaining nine in timber structures, either because the sites were inaccessible except by pack train, or because the expected period of operation of the station did not warrant the more permanent type of installation, or both. Gaging cabrioles for making highwater discharge measurements were constructed at 13 of the stations. This is an excellent improvement in the Nevada stream gaging program, but current requests of those agencies planning the present and future development of the State’s water resources are not fully satisfied. Several new stations are particularly needed in the Truckee River Basin.

The gaging stations operated in and for the State of Nevada are listed below. Locations and descriptions of these stations are given in the report of the State Engineer for the biennium 1944-1946, except for stations installed during this biennium, which are described on page 37 of this report.

**SALMON FALLS CREEK BASIN**
Salmon Falls Creek near San Jacinto.

**OWYHEE RIVER BASIN**
Wild Horse Reservoir near Gold Creek.
Owyhee River near Gold Creek.
Owyhee River at Mountain City.
Owyhee River near Owyhee.

**HUMBOLDT RIVER BASIN**
Humboldt River near Elko.
Humboldt River near Carlin.
Humboldt River at Palaute.
Humboldt River near Ardena.
Humboldt River at Battle Mountain.
Humboldt River at Caroga.
Humboldt River near Rose Creek.
Humboldt River near Inlay.
Rye Patch Reservoir near Rye Patch.
Humboldt River near Rye Patch.
Mary River below Hot Springs Creek near Deeth.
Lamplow Creek near Lamplow.
North Fork Humboldt River at Devil’s Gate near Halcro.
South Fork Humboldt River near Lee.
South Fork Humboldt River near Elko.
Pine Creek near Palaute.
Rock Creek near Battle Mountain.
Little Humboldt River near Paradise Valley.

*Gaging stations established during the biennium.
CHAPTER VII
Cooperative Stream Measurement Work in Nevada
By L. R. Sawyer, Engineer-in-Charge, Surface Water Division, Water Resources Branch, United States Geological Survey.

The importance of water to the economy of the State of Nevada cannot be too strongly emphasized. The development and use of all other resources is directly affected and often limited by the available water supply. A careful analysis of the fundamental uses of water will lead to the conclusion that water is our most valuable mineral. It is essential for domestic, agricultural, power development, and manufacturing uses, and to life itself. The dollar value of water is very high when it is considered that it is a basic and fundamental need for irrigation and power projects, municipal and industrial supplies, livestock, mining, recreation, and many other activities on which the State of Nevada depends.

The importance and value of this material resource make it imperative that a reliable and intensive investigation be continued to determine the available supply and distribution, in order that the ultimate development of the State may proceed on a wise and efficient basis. The Congress of the United States has recognized the Federal responsibility for developing the water resources of the country by appropriating funds for cooperative investigations with the States and other political subdivisions since 1900. These Federal funds for stream gaging are available only for cooperative work requested by State and local interests. It is important, therefore, that the present and future needs of the State and local interests for water resources information be given careful consideration in planning and financing this work.

Stream gaging is fundamentally the work of collecting basic data relative to water supplies; however, it is very closely connected with the investigation of ground-water resources as covered in chapter VI of this report. The two programs are closely coordinated, since surface water records are used to determine the recharge to ground-water reservoirs, and ground-water supplies are available for supplementing surface runoff.

For the period covered by this report there has been an increasing demand for additional water resources information, particularly by the Army Engineers in the investigation of damable flood control projects, and by the Bureau of Reclamation in planning for additional irrigation developments. The cooperative stream gaging program, financed by funds made available by the State Legislature, local water users, and the Geological Survey, was entirely inadequate to satisfy current requests. The Army Engineers, therefore, made available supplemental funds for the installation and operation of three gaging stations in the Truckee and Walker River Basins, and the Bureau of Reclamation allotted funds for the installation and operation for one year of eight gaging stations in the Carson and Little Truckee River Basins. The State of California has made available $1,000 to assist in the continued operation of the new gaging stations installed in that
CHAPTER XI
New Laws Affecting Water

This chapter will deal briefly with legislation passed by the 1945 and 1947 sessions of the State Legislature pertaining to water and which comes under the administration of the State Engineer.

A. DUTY OF WATER UNDER PERMITTED RIGHTS
Sec. 15, chap. 140, State 1913 (As amended, chap. 36, 1945)
Under this section, as amended, the amount of water hereafter appropriated is limited to such water as shall reasonably be required for the beneficial use to be served. Herefore the amount was limited to one one-hundredth of one cubic foot per second for each acre of land irrigated. Under the now existing law, the State Engineer in determining the amount of water to be granted in a permit to appropriate water shall take into consideration the irrigation requirements in the section of the State in which the appropriation is to be made. This section also was amended to exclude reservoir evaporation losses in determining the acre-footage to be granted in a permit.

B. WATER DISTRIBUTION UNDER CIVIL ACTION DEEDS
Sec. 66, chap. 396, Stat. 1947
This is a new section. Prior to the enactment of a State water law, under which a statutory method was provided for the adjudication of water rights, the District Courts of the State adjudicated water rights on many of our smaller streams under civil actions. Herefore, the State Engineer had no authority to exercise any jurisdiction over such rights (Pacific Livestock Co. v. Malone, 24 Nevada). Section 46] provides a method whereby such rights may be placed under the jurisdiction of the State Engineer, the same as water rights established by a statutory adjudication, if the District Court determines that the administration of such water rights by the State Engineer would be to the best interests of the water users.

During the spring of 1948 the waters of Quinn River and tributaries in Humboldt County were brought under the supervision of the State Engineer under the provisions of this section. A report on the procedure followed may be found in chapter XII.

C. WATER COMMISSIONER'S SALARIES
Sec. 66, chap. 206, Stat. 1933 (As amended chap. 159, 1947)
The salary of water commissioners was set at not to exceed ten dollars per day and necessary travel expenses, and fixing the salary of water commissioners in a supervisory capacity as not to exceed forty-five hundred dollars per annum and necessary travel expenses. The 1945 Legislature increased the salary of water commissioners from five dollars per day to seven dollars and fifty cents, and supervisory commissioners from ten dollars per day to twelve dollars per day.

D. WATER DISTRIBUTION—ADVISORY BOARDS
Sec. 63, chap. 140, Stat. 1913 (As amended chap. 159, 1947)
This section as originally enacted provided that the State Engineer received, Dixie Valley; Elko, Ruby Valley, Clover Valley, Independence Valley; Lincoln, Pahranagat; Lyon, Mason Valley; Mineral, Gabby Valley; Nye, Big Smoky Valley; Washoe, Long Valley, Smoke Creek, Washoe Valley, White Pine, Steptoe Valley, Spring Valley.

The amount of information dealing with ground water furnished to individuals or State and Federal agencies upon inquiry or special request has been continually increasing. Several hundred such requests were received and answered during the present biennium. In most cases the requests were answered from data already in the files, but in some instances requests from State and Federal agencies required field trips to the area in question. Generally the information was supplied in the course of an interview, or by letter. In some cases a short memorandum was prepared. The requests for ground-water information are many and varied. A few examples will illustrate: water supply for goats, other livestock, fish propagation, irrigation, recreational areas, highway maintenance stations, air conditioning, heating purposes (thermal waters); mining purposes, municipal water supply, and for sanitariums and medicinal use.

Some of the State and Federal agencies that have requested information on ground water are: State of Nevada, Department of Highways; water supply for proposed or existing stations: State of Nevada, Fish and Game Commission; water for propagation of fish; State of Nevada, Penitentiary, water for irrigation; State of Nevada, Board of Health, communication of well water; Nevada Cooperative Snow Surveys, stage of ground-water levels to assist in forecasting runoff; U. S. Forest Service, water supply for Nevada Indian reservoir area at Lake Tahoe, water supply for warehouses; and Farmers Home Administration, water supplies for irrigation.

In addition to these phases of ground-water work, the Division of Ground Water participated in conferences with State and Federal agencies dealing with the water resources of the State in planning and solving water problems. Two conferences of the subcommittee on Hydrologic Data, one at San Francisco, California, and the other at Salt Lake City, Utah, were attended, where problems relating to the long-range planning for the collection of basic hydrologic data were considered, and recommendations made for the type of instrumentation needed. These activities will be continued in the future.

In the course of the cooperative studies the Division of Ground Water has received a great deal of assistance from State and Federal agencies in one form or another that has been quite helpful in the studies. For this assistance grateful acknowledgment is made to the Soil Conservation Service, Department of Agriculture, for maps, soil classification, and basic data; to the Forest Service of the same department for maps; to the Bureau of Land Management, Department of the Interior, for maps and well data; to the Experiment Station, University of Nevada, for soil classification and water analyses; to the State Board of Health for water analyses, to the Nevada Cooperative Snow Survey for snowfall data; to the State of Nevada, Department of Highways, for maps and map data, and to the State Engineer for basic hydrologic data.
which have not been declared proven artesian basins as heretofore outlined, a person may have a well drilled prior to obtaining a permit to appropriate. However, before any legal diversion of water can be made a permit to appropriate water must be obtained.

The question of legal diversion as herein used and the necessity thereof merits discussion. In an unassigned area if a person has a well and uses the water therefrom without obtaining a permit to appropriate water, or without having a vested right as described in section 9a, and providing the well is not a domestic well under the provisions of section 10, such use would be illegal. There is little the State Engineer could do to restrict this use until such time as the area is designated wherein the owner could be forced to either obtain a permit to appropriate the water as provided for in section 5. Under such a condition owners of legal water rights in the area who are affected by such illegal use could petition the State Engineer to proceed under the provisions of section 10 if the illegal use was from a flowing artesian well or under the provisions of section 4 to designate the area.

Section 7a provides for the licensing of well drillers, the keeping of a log, and submission of such log to the office of State Engineer within thirty days following completion of well.

Section 8. This section provides a method whereby the State Engineer can control waste of water from an artesian well located anywhere within the State, regardless of whether it is located within a designated area or not. The procedure to be followed is for the State Engineer to notify the owner of such well which is wasting water by registered mail to abate or at least to take proper steps to abate such waste within fifteen days from the date of the notice. If the owner fails to do this the State Engineer is empowered to take such steps as is necessary to stop the waste. The cost of such repair is first paid by the State Engineer from the Water Distribution Fund as provided for in section 5, but becomes a lien on the property of the well owner following the filing of a statement of costs, within thirty days after completing the repair. The Commission of the City in which the well is located may enforce the lien in the manner provided by law for the enforcement of mechanics' liens.

Section 9 clearly sets forth the only method whereby a legal right to appropriate water can be obtained from wells not having a vested right as defined in section 9a. Such method is by complying with the provisions of the general water law pertaining to the appropriation of water, i.e., by making application to appropriate. This indicates that the owners of wells excepted under section 3 would not have gained a legal appropriation in the sense of a water right but would have a perpetual right to use such water without unnecessary interference.

The section further provides that following a designation of the area as provided for in section 4 anyone using water, other than proven as provided for in section 3, without the right to use such water either under a vested right or a permitted right, must, following notice by the State Engineer, either proceed with acquiring a permit or cease using water therefrom. If such owner refuses to cease using water from such well and fails to initiate proceedings to secure a permit he shall be deemed guilty of a misdemeanor.
made or where court actions are pending, the State Engineer may withhold action until such time as it is determined there is unappropriated water, or the court action becomes final.

II. CONTROL OF WATER RIGHTS ORANTED UNDER PERMITS
Sec. 72A, chap. 106, Stats. 1921 (As amended, chap. 156, 1947)
There was added to this section a provision to the effect that the State Engineer may regulate and control any permitted right to water on a stream that has not been adjudicated, to the same extent and in the same manner as if it had been adjudicated pursuant to the water law.

I. UNDERGROUND WATER—THE FOR ISSUING PERMITS
Sec. 73, chap. 106, Stats. 1921 (As amended, chap. 156, 1947)
The change in this section is the elimination of the provision that the fee for issuing a permit for irrigation purposes shall not apply to permits for underground waters. Before this amendment was made, fees for permits to appropriate underground water for irrigation purposes were based on the number of cubic feet per second of water supplied to the number of acres irrigated. However, the minimum fee of ten dollars still applies.

J. PROCEEDINGS IN DISTRICT COURT—STATE ENGINEER DEEMED PARTY IN INTEREST
Sec. 75, chap. 156, Stats. 1947
This is a new section which provides that when the State Engineer brings any proceedings into a District Court, either of a civil or criminal nature, concerning the administration and for the enforcement of the provisions of a decree, wherein the validity of the decree or any of its provisions has been drawn into question and the decision or judgment of the said court is that the said decree is invalid and/or void, the State Engineer shall be deemed to be a party in interest with the right to take an appeal from such decision or judgment to the Supreme Court.

UNDERGROUND WATER LAW
During the 1947 session of the Legislature, practically all of the sections of the underground water law were amended and some new sections added. The State Engineer's interpretation of this law will be found in chapter XIV.

The term "domestic use" as herein applied, extends to culinary and household purposes, the watering of a family garden, lawn, and the watering of domestic animals such as milk cows, horses, etc.

The State Engineer construes the term "two gallons per minute" to mean that the owner can use a quantity of water equal to 2,880 gallons every 24 hours (1,440 minutes in each 24 hours), not necessarily in a continuous flow, but rather when the water is needed during the 24-hour period.

Section 4 provides a method for the designation of a basin and supervision of underground water development.

The petition can be signed by anyone having a permit to appropriate underground water, or by anyone who can substantiate a vested right as defined in section 9a.

Supervision such as regulatory measures cannot be exercised on wells having vested rights unless such vested rights have been adjudicated nor on wells coming under the provisions of section 3, except as to controlling waste. In other words, should it become necessary to restrict withdrawals of water due to over depletion such restrictive measures cannot be taken against unadjudicated vested rights, unless water from such wells is being wasted.

Section 5 provides for the employment of a well supervisor, payment of salary, etc., and is self-explanatory.

Section 6. The first part of this section provides that every person desiring to drill a well in any proven artesian basin or any designated basin as provided for in section 4, shall first make application to and obtain a permit to appropriate such water.

The question here is what is the definition of a "proven artesian basin." It might be said that any basin where a few artesian wells exist could be said to be a proven artesian basin. If so, before any wells could be drilled, a person would have to obtain a permit to appropriate water—a matter that takes a minimum of two and one-half months following the filing of the application and supporting map. Where such restriction is not necessary it would tend to impede development.

The interpretation of the State Engineer is that in order for an artesian basin to come under this category, i.e., requiring a permit to appropriate water prior to drilling without being designated pursuant to section 4, it will be necessary for the State Engineer to make an order declaring such area a "proven artesian basin," and specifically stating in such order that permits to appropriate must be obtained prior to drilling. Such order to be published in a newspaper of general circulation in the county within which the basin is located, and further all licensed well drillers shall be advised of the order. In such areas the State Engineer would not have any administrative power over the distribution of water as outlined in section 4 until the area was designated.

It would appear that the main objective of such procedure would be to afford the State Engineer the opportunity to keep track of well-drilling operations, or to prevent drilling until such time as the State Engineer determined that there was unappropriated water.

The balance of the section is to the effect that in undesignated areas,
CHAPTER XIV

Rules and Regulations

STATE ENGINEER’S INTERPRETATION OF CERTAIN ASPECTS OF
THE GROUND WATER LAW

Section 1 provides that all underground water belongs to the public, and subject to all existing rights are subject to appropriation for beneficial use only under the laws of the State relating to the appropriation and use of water and not otherwise. The procedure then to appropriate underground water is the same as for the appropriation of surface water and is set out in sections 39 to 74 of the General Water Law of 1939 Act.

It is also provided that the State Engineer can make rules and regulations within the terms of this Act as may be necessary for the proper execution of the provisions of the 1939 Act. The following interpretations are in accordance with this provision:

Section 2 defines the following words: “person,” “aquifer,” “artesian well,” “waste,” “well driller,” and “general water law.”

Section 3. The purpose of this section was and is to make it unnecessary for a person to go to the expense of making an application to appropriate water for purely domestic purposes. In section 4 provision is made for the designation of areas within which the State Engineer has jurisdiction over the distribution of ground water and in section 9 it is provided that in such areas the State Engineer may compel the owner of a well who is using water therefrom without a legal right to cease such use until he has complied with the laws pertaining to the appropriation of water. The provisions of section 9 would not apply to domestic wells as provided for in section 9.

However, once an area is designated as provided for in section 4 and the domestic wells would encounter artesian water then before any deep drilling was done for such domestic water a permit to appropriate water would have to be obtained. The reason for this is that it would give the State Engineer better control over the drilling operation in an effort to prevent faulty wells which could well cause excessive wastes. In any such designated area the State Engineer shall declare his policy regarding domestic wells.

In a designated area where the well wouldn’t encounter artesian water domestic wells as described in section 3 could be drilled without obtaining a permit to appropriate water.

The owner of a domestic well tapping artesian water that was drilled subsequent to March 25 (1939). (See sec. 9a) would acquire no legal water right unless he complied with laws relating to the appropriation of water; however, he does have the legal right of usage pending the determination of the right to appropriate according to law. On the other hand the owner of a domestic well drilled prior to March 25, 1913, in the case of an artesian well, and prior to March 25, 1939, if the well tapped percolating water, would have a vested water right as described in section 9a.

CHAPTER XII

Quinn River Investigation

The water rights of the Quinn River Stream System were established by decree in the case of the Pacific Livestock Company v. Hillson Ranch Company, et al., Suit No. 1990, Second Judicial District Court (now Sixth Judicial District Court) in and for the County of Humboldt, on April 9, 1919. Certain rights in Oregon were not considered due to lack of jurisdiction, and the right of the United States Government for the use of water on McDermitt Indian Reservation in Nevada was not fixed or determined.

In 1930 the Pacific Livestock Company petitioned the then State Engineer, George Malone, to take charge of the distribution of the waters of the Quinn River Stream System pursuant to the decree of the suit by Humboldt County District Court. The State Engineer refused to divide and distribute such waters, as the decree in question does not constitute a statutory adjudication pursuant to the 1913 water law, as amended, and therefore the State Engineer is without jurisdiction.

The Pacific Livestock Company brought proceeding in mandamus against George W. Malone, State Engineer, in the District Court in and for the County of Humboldt. The State Engineer demurred to the petition and was sustained, and the proceedings were dismissed. The matter was taken to the Supreme Court of Nevada and is reported in 33 Nevada Reports on page 118. The Supreme Court sustained the demurrer and stated that the State Engineer was not concerned with the enforcement of a decree which is not a statutory adjudication, but in an adjudication of water rights in an equity action.

The 1947 Legislature, realizing that there were many instances other than Quinn River where the water rights had been determined by suit in a manner other than otherwise provided for in the water law, and that provisions should be made whereby such rights could be administered by the State Engineer, and that such administration would be to the best interests of the water users, enacted into law a new section, i.e., section 461, chapter 159, Statutes of 1947, which reads as follows:

Sec. 461. On any stream on which the water rights have been determined, as between all persons who claim the right to use the waters of such stream, by any district court in the state in a manner other than otherwise provided for in sections 18 to 51, inclusive, of this act, and where one or more of the users of such determined rights desire the State Engineer to take charge of the diversions and distributions of such rights, in conformity to the decree of the court, they may petition the district court which issued such decree requesting such administration. Following such petition, the district court may direct the state engineer to make a hydrographic survey of such stream system and to render a written report, together with such maps and other necessary data as will enable the said court to determine whether or not administration of such water right by the state engineer would be to the best
interests of the water users. In the event that the said district
court determines the matter affirmatively, the said court shall
by its order duly entered, direct the state engineer to dis-
tribute such waters in accordance with the decree, and from
and after the filing of such order in the district court the dis-
tribution of water shall be under the supervision and control
of the district court, as set forth in section 384 of the above-
entitled act, and the owners of all such decreed rights shall
be subject to all of the provisions of the above-entitled act
relating thereto, including the assessment of cost for the
administration of such rights.
The cost of making the survey and map by the state engineer
as herein provided for shall be paid from the hydrographic
fund as provided for in section 46 of the above-entitled act.
Pursuant to such Act on October 8, 1947, the Ellison Ranching
Company, through their attorney, J. D. Skeet, filed a petition in the
Sixth Judicial Court, in and for the County of Humboldt, petitioning
the said Court to direct the State Engineer to make a hydrographic
survey of Quinn River System and to render a written report such
as would enable the Court to determine whether or not the admin-
istration of said water right by the State Engineer would be to the
best interest of the water users, and that following receipt of such
report if the Court determines that such administration would be for
the best interest of the water users, for the Court to direct the State
Engineer to take jurisdiction and to distribute such waters in accord-
ance with the decree.
On October 8, 1947, Honorable Merwyn H. Brown, District Judge
of the Sixth Judicial District Court, ordered the State Engineer to
make a hydrographic survey of the Quinn River System and to render
a report.
Pursuant to such Order, the State Engineer proceeded to make such
hydrographic investigation, and on March 8, 1948, issued the following
report:

HYDROGRAPHIC REPORT ON QUINN RIVER AND
ITS TRIBUTARIES

By Alfred Merriett Smith, State Engineer.
(Report issued pursuant to sec. 464, ch. 338, Stats. 1947)

Quinn River Valley is located in Humboldt County, Nevada, and
Mojave County, Oregon.
The Quinn River flows from north to south along the west side of
the valley. At the south end of the valley the Quinn River flows north-
west into Kings River Valley and thence into the Black Rock Desert.
The tributary streams making up the Quinn River System begin-
ing at the south and listing them in a clockwise direction are Trout
or Crowley Creek, Washburn Creek, McDermitt Creek, Quinn River
or "The Slough," East Fork Quinn River or "Quinn River," Eight
Mile Creek, Twelve Mile Creek, Canyon Creek, Pole Creek, Flat Creek,
and Happy Creek.
Between Flat Creek and Happy Creek are a number of streams
which rise in the Santa Rosa Mountains and flow westward into the
with a view of supplying information urgently needed for best methods
of controlling damaging floods on the stream.
A committee to make a study of the beaver situation on the river in
conjunction with other State agencies was appointed, consisting of
Arthur J. Lovelock, Hill of Battle Mountain, and Ophir of Elko.
Present methods of beaver control provided by law give the State
Engineer no authority to interfere when beaver dams are resulting in
diversion of stream flow. Removal of beaver from a stream rests
entirely upon the choice of the land owner and where they are found
on privately owned land, neither the State Engineer nor the State Fish
and Game Commission can remove them unless they have the consent
of the land owner.
Considerable discussion took place at the meeting regarding preser-
vation of Humboldt River adjudication records which are now on file
in Winnemucca court records.
Maps, transcribed testimony, and various documents and matters of
evidence pertaining to the adjudication matter compose one of the
most voluminous records ever filed in any Nevada court case and
require vast storage facilities.
Subsequent to the meeting and during the late spring and summer
of 1948, the U. S. Army Engineers have been working on a flood con-
trol program on the Humboldt River and will prepare a detailed
survey report to be released in about November of 1948. It is the
plan of Colonel Joseph S. Gerlinski, District Engineer, Corps of Engi-
neers, to hold a public hearing on the principal features of the con-
templated improvements during August of 1948.
CHAPTER XIII
Humboldt River Advisory Board

PERSONNEL

A. V. Tallman, Chairman, Winnemucca, Nevada.
Warren Monroe, Secretary, Elko, Nevada.
George Ogilvie, Elko, Nevada.
R. W. Lemieux, Battle Mountain, Nevada.
Elmer Hill, Battle Mountain, Nevada.
Jack Kearns, Winnemucca, Nevada.
Clarence Sommer, Lovelock, Nevada.
Victor Arebloc, Lovelock, Nevada.
Robert Leighton, Lovelock, Nevada.

In August 1945 a meeting was held in Elko under the auspices of the Elko Chamber of Commerce to discuss Humboldt River problems. A complete report of this meeting may be found in Chapter X of the 1944-1946 Biennial Report of the State Engineer. At this meeting, which was attended by representatives from the four main districts, i.e., Lovelock, Winnemucca, Battle Mountain, and Elko, as well as representatives from Federal and State agencies concerned with water problems on the Humboldt River, it was decided to set up a Humboldt River Board with two representatives from each district, to be selected by the respective districts. The board was set up and during 1946 two meetings were held. It was the suggestion of the board to amend the water law so that the board would have official status and also provide for necessary per diem and traveling expenses.

Accordingly, such an amendment to section 33, Chapter 140, Statutes of 1913, was introduced in the 1947 Legislature and subsequently enacted into law. This amendment provides that upon creation of a water district, the State Engineer may appoint an advisory board of representative citizens within the districts to assist him in formulating plans and projects for the conservation of the water resources and the use of water within such district; also, provisions were made for per diem and necessary travel expense for the members of such board.

On March 13, 1948, Alfred Merritt Smith, State Engineer, appointed the members of the Humboldt River Advisory Board and called upon the members to hold their first meeting at the Humboldt Hotel in Winnemucca on April 23, 1948.

The meeting of April 23rd was attended by all members of the board excepting Robert Leighton of Lovelock. In addition, Alfred Merritt Smith, State Engineer; Hugh A. Shamberger, Assistant State Engineer; Edmund Muth, Deputy State Engineer, and George Henneman, Supervising Water Commissioner, were in attendance.

Among various topics of discussion at the meeting in Winnemucca were stream improvement, including upstream storage, improved beaver control, and continuation of underground water studies.

A resolution was passed by the board directing the State Engineer to immediately contact army engineers and urge them to make a comprehensive survey on the Humboldt River at the earliest possible date.

WATER RIGHTS

The water rights of the Quinn River System are decreed in the case of the Pacific Livestock Company v. Ellison Ranching Company, et al., Suit No. 1096, Second Judicial District Court (now Sixth Judicial District), in and for the County of Humboldt. Because of a lack of jurisdiction, some rights in Oregon were not considered, and the right of the United States Government for the use of water on McDermitt Indian Reservation in Nevada was not fixed or determined.

On March 10, 1938 the United States Government filed application 10,346 to change the point of diversion and place of use of the waters of the Quinn River that were decreed to the Pacific Livestock Company for use on their "Hog John" and "Quinn River Crossing" ranches. The new place of use is the former J. D. Minor or "Giacometto" ranch. A permit to make the change was granted by the State Engineer and the permit has now been perfected. A copy of this permit together with other pertinent information is attached to this report as an exhibit.

An agreement has been entered into between Sullivan-Mullaney, McCulloch and the United States Government and their successors whereby they divide the waters of McDermitt Creek that they are jointly entitled to use. The division of the water is one-fourth each to Sullivan-Mullaney and the United States Government and one-half to McCulloch. A copy of this agreement is attached as an exhibit.

OWNERSHIP

Since the entry of the decree there have been many changes in ownership of the ranches and the water decreed to them within the Quinn River System. Those holding water rights at this date are as follows:

Present owner—Henry McCleary Timber Company
1. All the rights of Lizzie J. Anderson Dunn except the rights decreed to the Upper and Lower Flat Creek Ranches.

Present owner—United States Government
1. All the rights of J. D. Minor.
2. All the rights of R. E. Crandall.
3. All the rights of J. D. Minor.
4. All the rights of the Pacific Livestock Company, except the right decreed to the Colomar Ranch.

Present owner—Beau L. Lyle Caldeye L. and Melba Ellison
1. All the rights of the Ellision Ranching Company except the right decreed to the "Mayer Field".

Present owner—William L. Gunn
1. All the rights of Millias Land & Livestock Co.
2. All the rights of Abel & Curtner Livestock Company.
3. The rights are subject to agreement.

Present owner—Sullivan-McCormick (Mullaney).
of the State of Nevada having made and filed his report, pursuant to the order of this court made and entered on the 8th day of October, 1947, directing the state engineer to make a hydrographic survey of the Quinn River System, and the court having considered the said report and being sufficiently advised in the premises,

It is ordered,

1. That the conclusions of the State Engineer in the said report be and they are hereby approved and adopted.

2. That the administration of the water rights in and of the waters of the Quinn River System, by the State Engineer for the State of Nevada, for the 1948 season, be for the best interests of all of the said water users.

3. That the said State Engineer be and he is hereby directed to distribute the waters of Quinn River in accordance with the decree made and entered in the above-entitled suit, on the 9th day of April, 1919, under the supervision and control of the above-entitled court and subject to all of the provisions of section 364 of chapter 159 of Nevada Compiled Laws of 1929, and the owners of all of such decreed rights shall be subject to the provisions of said Act, including assessment of costs for the administration of such rights.

(Signed) MERWYN H. BROWN, Judge.

Dated this 10th day of March, 1948.

The actual cost of making the hydrographic survey which amounted to $347.50 was paid out of the hydrographic fund as set up under section 46, chapter 140, Statutes of 1913. In conformity with the Court Order of March 10, 1948, this charge was assessed against the property having water rights from Quinn River, and when collected will replenish the above-mentioned hydrographic fund.

In addition, and in conformity with said Court Order, a budget was prepared in the amount of $2,757.92 to pay for the salary of a Water Commissioner for the 1948 season, together with the costs attached for the purchase and installation of three reflecting water gages.

The Quinn River Stream System lies within the Humboldt Water Distribution District and therefore the distribution of water of Quinn River comes under the general supervision of the Supervisory Commissioner of the Humboldt River. Distribution of the waters of Quinn River by the State Engineer was commenced on April 1, 1948.
diverted onto the fields. Only waste water off the fields would be available for the lower ranch.

The Clyde Pretzlin "Sod House" Ranch is now the lowest water user on the system. The channel from the Lagarza Ranch to the Sod House Ranch is satisfactory. No investigation of the Sod House Ranch was made.

CONCLUSION

In view of the conditions found to exist at the time of the field investigations, this office has arrived at the following conclusions:

1. There is apparently no attempt made by any water user on the stream system to abide by the terms or priorities fixed in the "Quinn River Decree."

2. There is a need for supervised regulation of the use of the waters of the Quinn River System, as the provisions of the Quinn River Decree are to be carried out.

RECOMMENDATIONS

1. At all points where water is diverted into sloughs or ditches, regulatory headgates should be placed in the ditches to control the amount of water diverted.

2. Some type of measuring device should be constructed in the ditches wherever it is practical.

3. Stream gaging stations at three points should be maintained by the water users in cooperation with the State of Nevada and the U.S. Geological Survey.

SUGGESTIONS

If the Court, in its judgment, should order the State Engineer to distribute the waters of Quinn River, it will be necessary for the Court to provide a method of collecting the proportionate share of the distribution costs from the Sullivan-McCormick nee Mullane ranch in Oregon.

The Indian Service has indicated to the State Engineer that they will pay their proportionate share in the same manner they pay for water regulation on other projects.

ALFRED MERRITT SMITH,
State Engineer.

Dated this 6th day of March, 1948.

On March 10, 1948, the Honorable Marwyn H. Brown, District Judge, Sixth Judicial District Court, issued the following order:

The above-entitled matter, having been heretofore set for hearing, upon the petition of Jessie Ellinon, Lyle Ellinon, Claude L. Ellinon and Melba Ellinon, successors in interest of the Ellinon Ranching Company, and notice of said hearing having been given by publication therein in the Humboldt Star, a newspaper published at Winnemucca, Nevada, as directed by the court, proof of which has been made and filed herein, J. D. Skee, appearing as attorney for the said petitioners, Edmund Math, deputy state engineer, appearing for the state engineer, and C. J. Preece appearing for the superintendent of the Carson Indian Agency, and the state engineer

In general, the channel conditions are excellent and the channel will convey all the water decreed with a minimum amount of loss.

Crowley or Trout Creek

There is now no apparent channel of Crowley Creek across the Ellinon Ranch. No water from Crowley Creek will enter the Quinn River except in years of excessively high run-off.

Washington Creek

Where Washburn Creek enters the valley, the channel is somewhat obstructed and in times of high water will flow into several flood channels which carry the water toward McDermitt Creek.

For the most part, that portion of the channel observed was in excellent shape.

McDermitt Creek

The township maps of townships 47 north, ranges 37 and 38 east, show the channels of McDermitt Creek. The same channels are shown on the maps submitted in Case 1,506, and are designated as the Sullivan Ranch Channel, Hat Field Channel, and J. D. Minor Ranch Channel. The Sullivan Ranch and Hat Field channels are used as irrigation ditches and cannot be used to convey McDermitt Creek water to the Quinn River.

The J. D. Minor Ranch Channel, now called the "Indian Ditch" is a large open channel until it enters the west property line of the Indian Service "Gianinetto Ranch." From this point, for a distance of about one mile, the channel is used as an irrigation ditch. Just west of the ranch buildings on this property the channel again opens into a large water course and enters the Quinn River on the north side of the "English Property."

The "Hat Field" channel and the "J. D. Minor Ranch" channel come together west of the west property line of the "Gianinetto Ranch," and from that point there is only one channel of McDermitt Creek.

At present there is a diversion box in McDermitt Creek where it enters Quinn River Valley that divides all the water of McDermitt Creek. This division throws three-quarters of McDermitt Creek north into the Hat Field and Sullivan Ranch channels, and allows one-quarter of the flow to go down the J. D. Minor Ranch channel.

Under the existing arrangement, only waste water from the fields ever enters the Quinn River from McDermitt Creek.

East Fork Quinn River

This is a large open channel that reaches Quinn River without obstruction.

Right Mile, Twelve Mile, Pole and Canyon Creeks

These streams, flowing from east to west are intercepted by old channels or sloughs flowing from north to south and paralleling the Quinn River which is the most westerly water course. These sloughs enter the Quinn River at the south end of the Henry McCleary Timber Company's "Hoppin Ranch."

As these sloughs are used as irrigation ditches, only waste water from the fields will enter the Quinn River.
The present channel of Flat Creek, in places, does not correspond with the location shown on old surveys. The channel is in good shape except for a short distance on the east side of the "Lower Flat Creek Ranch."

Happy Creek
No survey was made of Happy Creek as it enters the Quinn River below all other present diversion.

WATER DREWS
Crowley or Trout Creek
The Ellison property uses all the water of Crowley Creek that reaches the head of the "Crowley Creek Ranch." Only waste water reaches Quinn River.

Washburn Creek
The Washburn Ranches are small and are along the creek. All the water that is needed is used on the ranches and the remainder, if any, flows into Quinn River.

McDermitt Creek
All the water flowing in McDermitt Creek is divided between the Clayton E. Gunn, Sullivan, McCormick, and Indian Service ranches. The division is one-quarter each to the Sullivan-McCormick and Indian Service, and one-half to the Gunn property. Several hundred acres of land without a water right are irrigated on the Gunn ranch. Only waste water reaches Quinn River.

East Fork Quinn River
All diversions from this stream are onto Indian lands. The diversions are all regulatory.

The "English Ranch," which without a decreed water right, is irrigated from a lateral that diverts water from one of the Indian Service ditches.

Eight Mile, Twelve Mile, Pole and Cayuse Creeks
All the water from these streams that reaches the Henry McCleary Timber Company lands will divert into the irrigation system. Only waste water will reach Quinn River.

The Flat Creek ranch diverts water from Pole Creek to the Upper Flat Creek ranch under a permitted right.

Flat Creek
The waters of Flat Creek are used on the Upper Flat Creek ranch.

Any water in excess of that used on the Upper ranch is conveyed by the Flat Creek channel and used on the Lower Flat Creek ranch. Only waste water from the Lower Flat Creek ranch reaches Quinn River.

Quinn River
The "Minor Ranch" is the most northerly ranch taking water from Quinn River. The only source of water for the ranch is waste water from McDermitt Creek that drains into the channel. This ranch has three rock, dirt and debris dams in the channel. Only the lower two dams will divert water except in years of exceptionally heavy flow.

There are no headgates in the ditches. Any water reaching these diversions will divert onto the fields. About 80 acres of land without a water right is being irrigated on this property, however, some of the fields having water rights are apparently not being irrigated.

There is no diversion from the Quinn River onto the Indian properties or the English property.

The next diversion to the south is onto the Henry McClurey Timber Company's holdings. This ranch has two diversions from Quinn River.

The first diversion is at the south end of the Indian "Heard Ranch." This diversion is a large ditch, shown on maps as "New Ditch," which diverts directly from the river. There is now no headgate in this ditch, although there are remnants of such a structure. Any water in Quinn River will now divide at this point with a large portion of the water going onto the McClurey Ranch.

The second diversion is about one-half mile below the first diversion. At this point a solid earth dam has been placed in the river. All the water diverts into the ditch. However, the ditch has broken and there is a return channel to the river. The break in the ditch has been stopped by rock and brush dam. Under the present circumstances, no water will return to the channel except during high water. Any water remaining in the channel at the first diversion is all diverted at this point. There is the remnant of a headgate at this point. The only water available for lower users is the water that returns to the river at the south boundary of this property.

The lower Flat Creek Ranch has no diversion from the Quinn River.

On the Ellison Ranch, the diversions are by flooding, ditches, and sloughs. There are no headgates in any ditches and any water reaching the ranch will divert from the channel onto the fields. In some places the channel is practically obliterated and the water floods over the banks. Only waste water from the fields returns to the Quinn River and is available for use on the lower ranches.

The Henry Murdock property consists of the "Mager Field" and the "Hurtado Ranch." The "Hurtado Field" has one diversion point with a ditch taking on either side of the river. The diversion is a rock and brush with a regulatory wooden box in the center. There are no headgates in the ditches. On the day of the investigation, the channel was in good condition through this ranch due to the many obstructions. All the water in Quinn River would divert onto the fields at this point.

The "Hurtado Ranch" is irrigated by a series of old rock and brush dams and new concrete regulatory dams which force the water into ditches and sloughs and flood the banks. The channel is in poor condition through this ranch due to the many obstructions. All the dams were in on the day of the examination and all the water of Quinn River would be diverted. Only waste water off the fields would be available for the lower users.

The John Murdock property, formerly the "Lagarta Ranch," has a control structure in the river. On the day of the investigation, the river was stopped at this point by boards in the dam and with hay and manure thrown in front of the boards to stop leakage. There are no headgates in the ditches and all the water of Quinn River would be
There are no headgates in the ditches. Any water reaching these
diversions will divert onto the fields. About 60 acres of land without
a water right is being irrigated on this property; however, some of
the fields having water rights are not being irrigated.

There is no diversion from the Quinn River onto the Indian propertys
or the English property.

The next diversion to the south is onto the Henry McClearcy Timber
Company’s holdings. This ranch has two diversions from Quinn River.
The first diversion is at the south end of the Indian “Heuss Ranch.”
This diversion is a large ditch, shown on maps as “New Ditch,” which
diverts directly from the river. There is now no headgate in this ditch,
although there are remnants of such a structure. Any water in Quinn
River will now divide at this point with a large portion of the water
going onto the McClearcy Ranch.

The second diversion is about one-half mile below the first diversion.
At this point a solid earth dam has been placed in the river. All
the water diverting into the ditch. However, the ditch has broken and
there is a return channel to the river. The break in the ditch has been
stopped by a rock and brush dam. Under the present circumstances,
no water will return to the channel except during high water. Any
water remaining in the channel at the first diversion is all diverted
at this point. There is the remnant of a headgate at this point. The
only water available for lower users is the water that returns to the
river at the south boundary of this property.

On the Ellison Ranch, the diversions are by flooding, ditches, and
ditches. There are no headgates in any ditches and any water reaching
the ranch will divert from the channel onto the fields. In some
places the channel is practically obliterated and the water floods over
the banks. Only waste water from the fields returns to the Quinn River
and is available for use on the lower ranches.

The Henry Mareniquianga property consists of the “Mayer Field”
and the “Hurado Ranch.” The “Mayer Field” has one diversion
point with a ditch taking out on either side of the river. The diversion
gate is rock and brush with a regulatory wooden box in the center.
There are no headgates in the ditches. On the day of the investigation
of this property, all the ditches were in the box and hay and manure
had been placed in front of the structure to prevent any leakage. All
the water in Quinn River would divert onto the fields at this point.

The “Hurado Ranch” is irrigated by a series of old rock and brush
dams and new concrete regulatory dams which force the water into
ditches and sloughs and flood the banks. The channel is in poor
condition through this ranch due to the many obstructions. All the dams
over in on the day of the examination and all the water of Quinn
River would be diverted. Only waste water off the fields would be
available for the lower users.

The John Mareniquiang property, formerly the “Laega Ranch,”
has a control structure in the river. On the day of the investigation,
the river was stopped at this point by boards in the dam and with hay
and manure thrown in front of the boards to stop leakage. There are
no headgates in the ditches and all the water of Quinn River would be
diverted onto the fields. Only waste water off the fields would be available for the lower ranch.

The Clyde Prescott "Sod House" Ranch is now the lowest water user on the stream system. The channel from the Lagarza Ranch to the Sod House Ranch is satisfactory. No investigation of the Sod House Ranch was made.

CONCLUSION

In view of the conditions found to exist at the time of the field investigations, this office has arrived at the following conclusions:

1. There is apparently no attempt made by any water user on the stream system to abide by the terms or priorities fixed in the "Quinn River Decree."

2. There is a need for supervised regulation of the use of the waters of the Quinn River System, if the provisions of the Quinn River Decree are to be carried out.

RECOMMENDATIONS

1. At all points where water is diverted into sloughs or ditches, regulatory headworks should be placed on ditches to control the amount of water diverted.

2. Some type of measuring device should be constructed in the ditches wherever it is practical.

3. Stream gauging stations at three points should be maintained by the water users in cooperation with the State of Nevada and the U.S. Geological Survey.

SUGGESTIONS

If the Court, in its judgment, should order the State Engineer to distribute the waters of Quinn River, it will be necessary for the Court to provide a method of collecting the proportionate share of the distribution costs from the Sullivan-McCormick and Mullany ranch in Oregon.

The Indian Service has indicated to the State Engineer that they will pay their proportionate share in the same manner they pay for water regulation on other projects.

ALFRED MERRITT SMITH,
State Engineer,

Dated this 6th day of March, 1948.

On March 10, 1948, the Honorable Marvin H. Brown, District Judge, Sixth Judicial District Court, issued the following order:

The above-entitled matter, having been heretofore set for hearing, upon the petition of Jessie Ellion, Lyle Ellion, Claude L. Ellion and Melba Ellion, successors in interest of the Ellion Ranching Company, and notice of said hearing having been given by publication therein in the Humboldt Star, a newspaper published at Winnemucca, Nevada, as directed by the court, proof of which has been made and filed herein, J. D. Skeen, appearing as attorney for the said petitioners, Edmund Math, deputy state engineer, appearing for the state engineer, and C. J. Freece appearing for the superintendent of the Carson Indian Agency, and the state engineer

In general, the channel conditions are excellent and the channel will convey all the water decreed with a minimum amount of loss.

Crowley or Trout Creek

There is now no apparent channel of Crowley Creek across the Ellison Ranch. No water from Crowley Creek will reach the Quinn River except in years of exceptionally high runoff.

Washburn Creek

Where Washburn Creek enters the valley, the channel is somewhat restricted and in times of high water will flow into several flood channels which carry the water toward McDermitt Creek.

For the most part, that portion of the channel observed was in excellent shape.

McDermitt Creek

The township maps of townships 47 north, ranges 37 and 38 east, show the channels of McDermitt Creek. The same channels are shown on the maps submitted in Case 1,506 and are designated as the Sullivan Ranch Channel, Hat Field Channel, and J. D. Minor Ranch Channel.

The Sullivan Ranch and Hat Field channels are used as irrigation ditches and cannot be used to convey McDermitt Creek water to the Quinn River.

The J. D. Minor Ranch Channel, now called the "Indian Ditch," is a large open channel until it enters the west property line of the Indian Service "Giannetto Ranch." From this point, for a distance of about one mile, the channel is used as an irrigation ditch. Just west of the ranch buildings on this property the channel again opens into a large water course and enters the Quinn River on the north side of the "English Property."

The "Hat Field" channel and the "J. D. Minor Ranch" channel come together west of the west property line of the "Giannetto Ranch," and from that point there is only one channel of McDermitt Creek.

At present there is a diversion box in McDermitt Creek where it enters Quinn River Valley that diverts all the water of McDermitt Creek. This division throws three-quarters of McDermitt Creek north into the Hat Field and Sullivan Ranch channels, and allows one-quarter of the flow to go down the J. D. Minor Ranch channel.

Under the existing arrangement, only waste water from the fields ever enters the Quinn River from McDermitt Creek.

East Fork Quinn River

This is a large open channel that reaches Quinn River without obstruction.

Right Mile, Twelve Mile, Pole and Canyon Creeks

These streams, flowing from east to west, are intercepted by old channels or sloughs flowing from north to south and paralleling the Quinn River which is the most westerly water course. These sloughs enter the Quinn River at the south end of the Henry McCleary Timber Company's "Hoppin Ranch."

As these sloughs are used as irrigation ditches, only waste water from the fields will enter the Quinn River.
STREAM CHANNEL CONDITIONS

Field investigations were made by representatives of the State Engineer's office on November 5 to 7, 1947, inclusive, on January 26 to February 2, 1948, inclusive, and on February 16 to 18, 1948, inclusive. A base map was prepared from original township maps, highway department maps, and the individual property maps that had been used and filed in Case 1,096 (Pacific Livestock Co. v. Ellison Ranching Company, et al.). This compiled map and the original property maps were used in making the field investigations.

The investigations were made to determine the condition of the stream channels and the irrigation practices on the individual ranches.

Quinn River (Including the Slough)

North of the confluence of the "East Fork Quinn River" with the Quinn River Channel, the Quinn River is designated on the maps submitted as exhibits in Case 1,096 as "The Slough." The Court, however, decreed rights from this channel and designated the source as Quinn River. In this report, the Quinn River Channel is considered as the channel which extends north into Oregon and enters Nevada about a mile west of the town of McDermitt.

The Quinn River Channel is a large meandering water course that originates in Oregon and has no "live source" of water at its head. Except for a short distance on the "Ellison Ranch," the channel is large and free from natural obstructions. Two or three beaver dams were noted at the lower end of the "Hurtado Ranch." (Indian Service) Tight dams on the "Hurtado Ranch" (Marcusquiqua) have caused the channel in this area to become choked with tule.


of the State of Nevada having made and filed his report, pursuant to the order of this court made and entered on the 8th day of October, 1947, directing the state engineer to make a hydrographic survey of the Quinn River System, and the court having considered the said report and being sufficiently advised in the premises,

It is ordered,

1. That the conclusions of the State Engineer in the said report be and they are hereby approved and adopted.

2. That the administration of the water rights in and of the waters of the Quinn River System, by the State Engineer for the State of Nevada, will be for the best interests of all of the said water users.

3. That the said State Engineer be and he is hereby directed to distribute the waters of Quinn River in accordance with the decree made and entered in the above-entitled suit, on the 9th day of April, 1919, under the supervision and control of the above-entitled court and subject to all of the provisions of section 364 of chapter 159 of Nevada Compiled Laws of 1929, and the owners of all of such decreed rights shall be subject to the provisions of said Act, including assessment of costs for the administration of such rights.

(Signed) MERWYN H. BROWN, Judge

Dated this 10th day of March, 1948.

The actual cost of making the hydrographic survey which amounted to $347.50 was paid out of the hydrographic fund as set up under section 46, chapter 146, Statutes of 1915. In conformity with the Court Order of March 10, 1948, this charge was assessed against the property having water rights from Quinn River, and when collected will replenish the above-mentioned hydrographic fund.

In addition, and in conformity with said Court Order, a budget was prepared in the amount of $2,777.52 to pay for the salary of a Water Commissioner for the 1948 season, together with the costs attached for the purchase and installation of three recording water gages.

The Quinn River Stream System lies within the Humboldt Water Distribution District and therefore the distribution of waters of Quinn River comes under the general supervision of the Supervisory Commissioner of the Humboldt River. Distribution of the waters of Quinn River by the State Engineer was commenced on April 1, 1948.
CHAPTER XIII
Humboldt River Advisory Board

PERSONNEL
A. V. Tallman, Chairman, Winnemucca, Nevada.
Warren Monroe, Secretary, Elko, Nevada.
George Ogilvie, Elko, Nevada.
H. W. Lemaire, Battle Mountain, Nevada.
Elmer Hill, Battle Mountain, Nevada.
Jack Kearns, Winnemucca, Nevada.
Clarence Sommer, Lovelock, Nevada.
Victor Arbuckle, Lovelock, Nevada.
Robert Leighton, Lovelock, Nevada.

In August 1946 a meeting was held in Elko under the auspices of the Elko Chamber of Commerce to discuss Humboldt River problems. A complete report of this meeting may be found in chapter X of the 1944-1946 Biennial Report of the State Engineer. At this meeting, which was attended by representatives from the four main districts, i.e., Lovelock, Winnemucca, Battle Mountain, and Elko, as well as representatives from Federal and State agencies concerned with water problems on the Humboldt River, it was decided to set up a Humboldt River Board with two representatives from each district, to be selected by the respective districts. The board was set up and during 1946 two meetings were held. It was the suggestion of the board to amend the water law so that the board would have official status and also provide for necessary per diem and traveling expenses. Accordingly, such an amendment to section 53, chapter 140, Statutes of 1913, was introduced in the 1947 Legislature and subsequently enacted into law. This amendment provides that upon creation of a water district, the State Engineer may appoint an advisory board of representative citizens within the districts to assist him in formulating plans and projects for the conservation of the water resources and the use of water within each district; also, provisions were made for per diem and necessary travel expense for the members of such board.

On March 15, 1948, Alfred Merritt Smith, State Engineer, appointed the members of the Humboldt River Advisory Board and called upon the members to hold their first meeting at the Humboldt Hotel in Winnemucca on April 23, 1948.

The meeting of April 23rd was attended by all members of the board excepting Robert Leighton of Lovelock. In addition, Alfred Merritt Smith, State Engineer; Hugh A. Shamberger, Assistant State Engineer; Edmund Muth, Deputy State Engineer, and George Hennen, Supervising Water Commissioner, were in attendance. Among various topics of discussion at the meeting in Winnemucca were stream improvement, including upstream storage, improved beaver control, and continuation of underground water studies. A resolution was passed by the board directing the State Engineer to immediately contact army engineers and urge them to make a comprehensive survey on the Humboldt River at the earliest possible date.

WATER RIGHTS

The water rights of the Quinn River System are decreed in the case of the Pacific Livestock Company v. Ellison Ranching Company, et al., suit No. 1596, Second Judicial District Court (now Sixth Judicial Court), in and for the County of Humboldt. Because of an alleged jurisdictional error, some rights in Oregon were not considered, and the right of the United States Government for the use of water on McDermitt Indian Reservation in Nevada was not fixed or determined. On March 16, 1934 the United States Government filed application 10,383 to change the point of diversion and place of use of the waters of the Quinn River that were decreed to the Pacific Livestock Company for use on their "Hog John" and "Quinn River Crossing" ranches. The new place of use is the former J. D. Minor or "Gianinetto" ranch. A permit to make the change was granted by the State Engineer and the permit has now been perfected. A copy of this permit together with other pertinent information is attached to this report as an exhibit.

An agreement has been entered into between Sullivan-Mullaney, McCulloch and the United States Government and their successors whereby they divide the waters of McDermitt Creek that they are jointly entitled to use. The division of the water is one-fourth each to Sullivan-Mullaney and the United States Government and one-half to McCulloch. A copy of this agreement is attached as an exhibit.

OWNERSHIP

Since the entry of the decree there have been many changes in ownership of the ranches and the water decreed to them within the Quinn River System. Those holding water rights at this date are as follows:

Present owner—Henry McCleary Timber Company.
1. All the rights of Lizzie J. Anderson Dunn except the rights decreed to the Upper and Lower Flat Creek Ranches.
2. All the rights of J. D. Crandall.
3. All the rights of J. D. Minor.
4. All the rights of the Pacific Livestock Company, except the right decreed to the Colborn Ranch.
(Rights 3 and 4 are subject to agreement.)

Present owner—Bessie L. Lyle Calaby L. and Melba Ellison.
1. All the rights of the Ellison Ranching Company except the right decreed to the "Mayer Field."

Present owner—Clayton E. Gunn.
1. All the rights of Millitas Land & Livestock Co.
2. All the rights of Abel & Curtner Livestock Company.
(These rights are subject to agreement.)

Present owner—Sullivan-McCormick (Mullaney).
interests of the water users. In the event that the said district court determines the matter affirmatively, the said court shall by its order duly entered, direct the state engineer to distribute such waters in accordance with the decree, and from and after the filing of such order in the district court the distribution of water shall be under the supervision and control of the district court, as set forth in section 364 of the above-entitled act, and the owners of all such decreed rights shall be subject to all of the provisions of the above-entitled act relating thereto, including the assessment of cost for the administration of such rights.

The cost of making the survey and map by the state engineer as herein provided for shall be paid from the hydrographic fund as provided for in section 46 of the above-entitled act.

Pursuant to such Act on October 8, 1947, the Ellison Ranching Company, through their attorney, J. D. Skeet, filed a petition in the Sixth Judicial Court, in and for the County of Humboldt, petitioning the said Court to direct the State Engineer to make a hydrographic survey of Quinn River System and to render a written report such as would enable the Court to determine whether or not the administration of said water right by the State Engineer would be to the best interest of the water users, and that following receipt of such report if the Court determines that such administration would be for the best interest of the water users, for the Court to direct the State Engineer to take jurisdiction and to distribute such waters in accordance with the decree.

On October 8, 1947, Honorable Merwyn H. Brown, District Judge of the Sixth Judicial District Court, ordered the State Engineer to make a hydrographic survey of the Quinn River System and to render a report.

Pursuant to such Order, the State Engineer proceeded to make such hydrographic investigation, and on March 8, 1948, issued the following report:

HYDROGRAPHIC REPORT ON QUINN RIVER AND ITS TRIBUTARIES

By Alfred M. Smith, State Engineer.

(Report issued pursuant to sec. 464, chap. 338, Stats., 1947)

Quinn River Valley is located in Humboldt County, Nevada, and Malheur County, Oregon.

The Quinn River flows from north to south along the west side of the valley. At the south end of the valley the Quinn River flows north-west into Kings River Valley and thence into the Black Rock Desert.

The tributary streams making up the Quinn River System begin at the south and listing them in a clockwise direction are Trout or Crowley Creek, Wadburn Creek, McDermitt Creek, Quinn River or "The Slough," East Fork Quinn River or "Quinn River," Eight Mile Creek, Twelve Mile Creek, Canyon Creek, Pole Creek, Flat Creek, and Happy Creek.

Between Flat Creek and Happy Creek are a number of streams which rise in the Santa Rosa Mountains and flow westward into the
CHAPTER XIV

Rules and Regulations

STATE ENGINEER'S INTERPRETATION OF CERTAIN ASPECTS OF THE GROUND WATER LAW

(Chap. 176, Stats. of 1909, as amended by chap. 48, Stats. of 1947)

Section 1 provides that all underground water belongs to the public, and subject to all existing rights are subject to appropriation for beneficial use only under the laws of the State relating to the appropriation and use of water and not otherwise. The procedure then to appropriate underground water is the same as for the appropriation of surface water and is set out in sections 32 to 44 of the General Water Law 1939 Act.

It is also provided that the State Engineer can make such rule and regulations within the terms of this Act as may be necessary for the proper execution of the provisions of the 1939 Act. The following interpretations are in accordance with this provision.

Section 2 defines the following words: "person," "aquifer," "artesian well," "waste," "well driller," and "general water law."

Section 3. The purpose of this section was to make it unnecessary for a person to go to the expense of making an application to appropriate water for purely domestic purposes. In section 4 provision is made for the designation of areas within which the State Engineer has jurisdiction over the distribution of ground water and in section 9 it is provided that in such areas the State Engineer may compel the owner of a well who is using water therefrom without a legal right to cease such use until he has complied with the laws pertaining to the appropriation of water. The provisions of section 9 would apply to domestic wells as provided for in section 9.

However, once an area is designated as provided for in section 4 and the domestic wells would encounter artesian water then before any deep drilling was done for such domestic water a permit to appropriate water would have to be obtained. The reason for this is that it would give the State Engineer better control over the drilling operation in an effort to prevent faulty wells which could well cause excessive waste. In any such designated area the State Engineer shall declare his policy regarding domestic wells.

In a designated area where the well wouldn't encounter artesian water domestic wells as described in section 3 could be drilled without obtaining a permit to appropriate water.

The owner of a domestic well tapping artesian water that was drilled subsequent to March 35 (1939), (See sec. 9a) would acquire no legal water right unless he complied with any law relating to the appropriation of water; however, he does have the legal right of usage pending the determination of the right to appropriate according to law. On the other hand the owner of a domestic well drilled prior to March 22, 1913, in the case of an artesian well, and prior to March 25, 1909, if the well tapped percolating water, would have a vested water right as described in section 9a.

CHAPTER XII

Quinn River Investigation

The water rights of the Quinn River Stream System were established by decree in the case of the Pacific Livestock Company v. Elison Ranch Company, et al., Suit No. 1968, Second Judicial District Court (now Sixth Judicial District Court) in and for the County of Humboldt, on April 3, 1919. Certain rights in Oregon were not considered due to lack of jurisdiction, and the right of the United States Government for the use of water on McGee Creek Indian Reservation in Nevada was not fixed or determined.

In 1930 the Pacific Livestock Company petitioned the then State Engineer, George Malone, to take charge of the distribution of the waters of the Quinn River Stream System pursuant to the decree of the suit in Humboldt County District Court. The State Engineer refused to divide and distribute such waters, as the decree in question does not constitute a statutory adjudication pursuant to the 1932 water law, as amended, and therefore the State Engineer is without jurisdiction.

The Pacific Livestock Company brought proceeding in mandamus against George W. Malone, State Engineer, in the District Court in and for the County of Humboldt. The State Engineer demurred to the petition and was sustained, and the proceedings were dismissed. The matter was taken to the Supreme Court of Nevada and is reported in 23 Nevada Reports page 118. The Supreme Court sustained the demurrer and stated that the State Engineer was not concerned with the enforcement of a decree which is not a statutory adjudication, but is an adjudication of water rights in an equity action.

The 1947 Legislature, realizing that there were many instances other than Quinn River where the water rights had been determined by suit or action in a manner other than otherwise provided for in the water laws, and that provisions should be made whereby such rights could be administered by the State Engineer, and that such administration would be to the best interests of the water users, enacted into law a new section, i.e., section 461, chapter 159, Statutes of 1947, which reads as follows:

Sec. 461. On any stream on which the water rights have been determined, as between all persons who claim the right to use the waters of such stream, by any district court in the state in a manner other than otherwise provided for in sections 18 to 51, inclusive, of this act, and where one or more of the users of such determined rights desire the state engineer to take charge of the diversions and distributions of such rights in conformity to the decree of the court, they may petition the district court which issued such decree requesting such administration. Following such petition, the district court may direct the state engineer to make a hydrographic survey of such stream system and to render a written report, together with such maps and other necessary data as will enable the said court to determine whether or not administration of such water right by the state engineer would be to the best
made or where court actions are pending, the State Engineer may withhold action until such time as it is determined there is unappropriated water; or the court action becomes final.

H. CONTROL OF WATER RIGHTS ORANTED UNDER PERMITS
Sec. 72A, chap. 108, Stata. 1921 (as amended, chap. 159, 1947)
There was added to this section a provision to the effect that the State Engineer may regulate and control any permitted right to water on a stream that has not been adjudicated, to the same extent and in the same manner as if it had been adjudicated pursuant to the water law.

I. UNDERGROUND WATER—THE FOR ISSUING PERMITS
Sec. 73, chap. 106, Stata. 1921 (as amended, chap. 159, 1947)
The change in this section is the elimination of the provision that the fee for issuing a permit for irrigation purposes shall not apply to permits for underground water. Before this amendment was made, fees for permits to appropriate underground water for irrigation purposes were based on the number of cubic feet per second of water applied for. As the section now reads, such fees are based on the number of acres irrigated. However, the minimum fee of ten dollars still applies.

J. PROCEEDINGS IN DISTRICT COURT—STATE ENGINEER DEEMED PARTY IN INTEREST
Sec. 75, chap. 159, Stata. 1947
This is a new section which provides that when the State Engineer brings any proceedings into a District Court, either of a civil or criminal nature, concerning the administration and for the enforcement of the provisions of a decree, wherein the validity of the decree or any of its provisions has been drawn into question and the decision or judgment of the said court is that the said decree is invalid and/or void, the State Engineer shall be deemed to be a party in interest with the right to take an appeal from such decision or judgment to the Supreme Court.

UNDERGROUND WATER LAW
During the 1947 session of the Legislature, practically all of the sections of the underground water law were amended and some new sections added. The State Engineer's interpretation of this law will be found in chapter XIV.

The term "domestic use" as herein applied, extends to culinary and household purposes, the watering of a family garden, lawn, and the watering of domestic animals such as milk cows, horses, etc.
The State Engineer construes the term "two gallons per minute" to mean that the owner may use a quantity of water equal to 2,880 gallons every 24 hours (1,440 minutes in each 24 hours), not necessarily in a continuous flow, but rather when the water is needed during the 24-hour period.

Section 4 provides a method for the designation of a basin and supervision of underground water development.
The petition can be signed by anyone having a permit to appropriate underground water, or by anyone who can substantiate a vested right as defined in section 9a.

Supervision such as regulatory measures cannot be exercised on wells having vested rights unless such vested rights have been adjudicated nor on wells coming under the provisions of section 3, except as to controlling waste. In other words, it should become necessary to restrict withdrawals of water due to over depletion such restrictive measures cannot be taken against unadjudicated vested rights, unless water from such wells is being wasted.

Section 5 provides for the employment of a well supervisor, payment of salary, etc., and is self-explanatory.

Section 6. The first part of this section provides that every person desiring to drill a well in any proven artesian basin or any designated basin as provided for in section 4, shall first make application for and obtain a permit to appropriate such water.

The question here is what is the definition of a "proven artesian basin." It might be said that any basin where a few artesian wells exist could be said to be a proven artesian basin. So, before any wells could be drilled, a person would have to obtain a permit to appropriate water—a matter that takes a minimum of two and one-half months following the filing of the application and supporting map. Where such restriction is not necessary it would tend to impede development.

The interpretation of the State Engineer is that in order for an artesian basin to come under this category, i.e., requiring a permit to appropriate water prior to drilling without being designated pursuant to section 4, it will be necessary for the State Engineer to make an order declaring such area a "proven artesian basin," and specifically stating in such order that permits to appropriate must be obtained prior to drilling. Such order to be published in a newspaper of general circulation in the county within which the basin is located, and further all licensed drillers shall be advised of the order. In such areas the State Engineer would not have any administrative powers over the distribution of water as outlined in section 4 until the area was designated.

It would appear that the main objective of such procedure would be to afford the State Engineer the opportunity to keep track of well-drilling operations, or to prevent drilling until such time as the State Engineer determined that there was unappropriated water.

The balance of the section is to the effect that in undesignated areas,
which have not been declared proven artesian basins as heretofore outlined, a person may have a well drilled prior to obtaining a permit to appropriate. However, before any legal diversion of water can be made a permit to appropriate water must be obtained.

The question of legal diversion as herein used and the necessity thereof merits discussion. In an undesignated area if a person has a well and uses the water therefrom without obtaining a permit to appropriate water, or without having a vested right as described in section 9a, and providing the well is not a domestic well under the provisions of section 8, such use would be an illegal use. There is little the State Engineer could do to restrict this use until such time as the area is designated whereupon the owner could be forced to either obtain a permit or to discontinue the use as provided for in section 9. Under such a condition owners of legal water rights in the area who are affected by such illegal use could petition the State Engineer to proceed under the provisions of section 8 if the illegal use was from a flowing artesian well or under the provisions of section 4 to designate the area.

Section 7a provides for the licensing of well drillers, the keeping of a log, and submission of such log to the office of State Engineer within thirty days following completing of well.

Section 8. This section provides a method whereby the State Engineer can control waste of water from an artesian well located anywhere within the State, regardless of whether it is located within a designated area or not. The procedure to be followed is for the State Engineer to notify the owner of such well which is wasting water by registered mail to abate at least to take proper steps to abate such waste within fifteen days from the date of the letter. If the owner fails to do this the State Engineer is empowered to take such steps as necessary to stop the waste. The cost of such repair is first paid by the State Engineer from the Water Distribution Fund as provided for in section 5, but becomes a lien on the property of the well owner following the filing of a statement of costs, within thirty days after completing the repair, with the County Recorder. Such lien may be enforced in the same manner as provided by law for the enforcement of mechanics' liens.

Section 9 clearly sets forth the only method whereby a legal right to appropriate water can be obtained from wells not having a vested right as defined in section 9a. Such method is by complying with the provisions of the general water law pertaining to the appropriation of water, i.e., by making application to appropriate. This indicates that the owners of wells excepted under section 3 would not have gained a legal appropriation in the sense of a water right, but would have a perpetual right to use such water without unnecessary interference.

The section further provides that following a designation of the area as provided for in section 8 anyone using water, other than provided for in section 3, without the right to use such water either under a vested right or a permitted right, must, following notice by the State Engineer, either proceed with acquiring a permit or else cease using water therefrom. If such owner refuses to cease using water from such well and fails to initiate proceedings to secure a permit he shall be deemed guilty of a misdemeanor.

shall divide the State into water districts when the necessity exists. The 1947 Legislature added a provision that upon creation of a water district, the State Engineer may appoint an advisory board of representative citizens within the district to assist him in formulating plans and projects for the conservation of the water resources and the use thereof in such district. It was provided that the per diem and necessary travel and subsistence expenses of the appointive members of such board shall be paid from the water distribution fund and such expenses shall not exceed eight hundred dollars per year.

In conformity with this section, the State Engineer appointed the members of the Humboldt River Advisory Board on March 13, 1948, and the first meeting of the Board was held in Winnemucca on April 23, 1948. Further details relative to this Board are contained in chapter XIII.

E. COSTS OF GUARDS EMPLOYED BY STATE ENGINEER

Sec. 504, chap. 109, Stats. 1933 (as amended, chap. 66, 1946)

An error was apparently made when this section was enacted in 1933. It provided that the costs of guards, employed by the State Engineer to prevent unlawful diversions, shall be assessed against the lands having water rights under said ditch and shall be collected as provided in sec. 77, chap. 253, Stats. 1915. The 1945 amendment provided that the charges be collected as provided in sec. 77, chap. 140, Stats. 1913.

F. PAYMENT FOR HEADGATES INSTALLED BY STATE ENGINEER

Sec. 56, chap. 140, Stats. 1913 (as amended, chap. 359, 1947)

This section provides for the installation of headgates and measuring devices when found necessary by the State Engineer. The 1947 amendment added a provision that upon refusal of a person to install a headgate, measuring device, or flume, as provided for in said section, the State Engineer may install such headgate, measuring device or flume, as the case may be, and in the first instance pay the actual cost of such installation from the water distribution fund as provided for in sec. 52 of the water law, and thereafter present such bill to the County Commissioners of the county where the charges were incurred. The commissioners shall thereafter present the bill to the person liable therefor under this section and if such person does not pay the charge within thirty days, the charge and costs shall become a lien upon the lands and property of such person liable for payment of the bill, and shall be assessed as delinquent taxes against said lands and property until collected.

G. TIME WITHIN WHICH TO TAKE ACTION ON WATER APPLICATIONS

Sec. 63, chap. 140, Stats. 1913 (as amended, chap. 351, 1947)

This section pertains to action by the State Engineer on applications to appropriate water. The amendment provides that the State Engineer shall take action on such application within one year from the date for filing protests; provided, that in the case of a protested application, action can be postponed by the State Engineer upon written authority of both protestant and applicant, and further provided, that in areas where water supply studies are being
CHAPTER XVII

Status of Applications Filed During the Period from July 1, 1946, to June 30, 1948

Following is a condensed statement giving the salient data in connection with applications filed during the period from July 1, 1946, to June 30, 1948, 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.

<table>
<thead>
<tr>
<th>Application Serial Number</th>
<th>Date of Filing</th>
<th>Name of Applicant</th>
<th>Source of Water Supply</th>
<th>Purpose of Appropriation</th>
<th>Action on Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>1526</td>
<td>7-1-46</td>
<td>F. B. Leach</td>
<td>Stock Ranch Spring</td>
<td>Domestic</td>
<td>Approved July 21, 1947, for 100 c.f.s.</td>
</tr>
<tr>
<td>5580</td>
<td>7-1-46</td>
<td>F. B. Leach</td>
<td>Spring and domestic</td>
<td>Domestic</td>
<td>Approved August 17, 1947, for 150 c.f.s.</td>
</tr>
<tr>
<td>1167</td>
<td>7-1-46</td>
<td>E. W. and Marge Grubbs</td>
<td>Underground (Las Vegas Artesian Basin)</td>
<td>Domestic</td>
<td>Approved October 14, 1946, for 60 c.f.s.</td>
</tr>
<tr>
<td>1528</td>
<td>7-1-46</td>
<td>E. W. Grubbs et al.</td>
<td>Waste water, irrigation</td>
<td>Domestic</td>
<td>Approved April 21, 1947, for 25 c.f.s.</td>
</tr>
<tr>
<td>1250</td>
<td>7-1-46</td>
<td>Howard, Young, Wilson</td>
<td>Underground (Las Vegas Artesian Basin)</td>
<td>Domestic</td>
<td>Approved May 2, 1947, for 50 c.f.s.</td>
</tr>
<tr>
<td>1311</td>
<td>7-10-46</td>
<td>J. C. and R. M. Lares</td>
<td>Underground, irrigation, domestic and farm production</td>
<td>Approved November 1, 1947, for 150 c.f.s.</td>
<td></td>
</tr>
<tr>
<td>1231</td>
<td>7-15-46</td>
<td>John F. Perkins and John G. Perkins</td>
<td>Underground (Las Vegas Artesian Basins)</td>
<td>Domestic</td>
<td>Approved May 15, 1947, for 100 c.f.s.</td>
</tr>
<tr>
<td>1433</td>
<td>7-29-46</td>
<td>Murray, Yellowstone and Yellowstone Wick</td>
<td>Underground (Las Vegas Artesian Basins)</td>
<td>Domestic</td>
<td>Approved October 21, 1947, for 75 c.f.s.</td>
</tr>
<tr>
<td>1493</td>
<td>7-25-46</td>
<td>W. C. Marlin, South Spring</td>
<td>Underground (Las Vegas Artesian Basin)</td>
<td>Domestic</td>
<td>Approved December 21, 1947, for 25 c.f.s.</td>
</tr>
<tr>
<td>1494</td>
<td>7-25-46</td>
<td>W. C. Marlin, South Spring</td>
<td>Underground (Las Vegas Artesian Basin)</td>
<td>Domestic</td>
<td>Approved December 21, 1947, for 25 c.f.s.</td>
</tr>
<tr>
<td>1504</td>
<td>7-25-46</td>
<td>William, Alice and John</td>
<td>Underground (Las Vegas Artesian Basin)</td>
<td>Domestic</td>
<td>Approved December 21, 1947, for 25 c.f.s.</td>
</tr>
<tr>
<td>1492</td>
<td>7-25-46</td>
<td>W. C. Marlin, South Spring</td>
<td>Underground (Las Vegas Artesian Basin)</td>
<td>Domestic</td>
<td>Approved December 21, 1947, for 25 c.f.s.</td>
</tr>
<tr>
<td>1503</td>
<td>7-25-46</td>
<td>William, Alice and John</td>
<td>Underground (Las Vegas Artesian Basin)</td>
<td>Domestic</td>
<td>Approved December 21, 1947, for 25 c.f.s.</td>
</tr>
<tr>
<td>1504</td>
<td>7-25-46</td>
<td>William, Alice and John</td>
<td>Underground (Las Vegas Artesian Basin)</td>
<td>Domestic</td>
<td>Approved December 21, 1947, for 25 c.f.s.</td>
</tr>
<tr>
<td>1505</td>
<td>7-25-46</td>
<td>William, Alice and John</td>
<td>Underground (Las Vegas Artesian Basin)</td>
<td>Domestic</td>
<td>Approved December 21, 1947, for 25 c.f.s.</td>
</tr>
<tr>
<td>1506</td>
<td>7-25-46</td>
<td>William, Alice and John</td>
<td>Underground (Las Vegas Artesian Basin)</td>
<td>Domestic</td>
<td>Approved December 21, 1947, for 25 c.f.s.</td>
</tr>
<tr>
<td>1507</td>
<td>7-25-46</td>
<td>William, Alice and John</td>
<td>Underground (Las Vegas Artesian Basin)</td>
<td>Domestic</td>
<td>Approved December 21, 1947, for 25 c.f.s.</td>
</tr>
<tr>
<td>1508</td>
<td>7-25-46</td>
<td>William, Alice and John</td>
<td>Underground (Las Vegas Artesian Basin)</td>
<td>Domestic</td>
<td>Approved December 21, 1947, for 25 c.f.s.</td>
</tr>
<tr>
<td>1509</td>
<td>7-25-46</td>
<td>William, Alice and John</td>
<td>Underground (Las Vegas Artesian Basin)</td>
<td>Domestic</td>
<td>Approved December 21, 1947, for 25 c.f.s.</td>
</tr>
<tr>
<td>1510</td>
<td>7-25-46</td>
<td>William, Alice and John</td>
<td>Underground (Las Vegas Artesian Basin)</td>
<td>Domestic</td>
<td>Approved December 21, 1947, for 25 c.f.s.</td>
</tr>
<tr>
<td>1511</td>
<td>7-25-46</td>
<td>William, Alice and John</td>
<td>Underground (Las Vegas Artesian Basin)</td>
<td>Domestic</td>
<td>Approved December 21, 1947, for 25 c.f.s.</td>
</tr>
</tbody>
</table>

Section 9a. The first paragraph of this section is positive. Any underground water right, under whatever claim of right and no matter when established may be lost by five successive years of nonbeneficial use. This applies only to the extent of the nuisance. In other words if a person had acquired a water right for 3 c.f.s. of water and failed to use it for 5 years, he would lose the right of use for the 3 c.f.s. of water which would revert to the public or to junior appropriators. If such right was an unassigned right, i.e. vested rights that had not been determined by an adjudication procedure, the loss would be by forfeiture. If the right was a determined right, i.e. a vested right determined by adjudication or a perfected right as evidenced by a certificate of appropriation, the loss would be by abandonment.

In the case of an unperfected permitted right (undetermined right) the five-year nonuse period can only start on or subsequent to the original time set when the permit was issued within which water is to be placed to beneficial use. Therefore extensions of time as provided for in the general water law (see 69, chap. 140, Stats. 1913) as applied to underground water cannot cover a period longer than five years subsequent to the original date set in the permit within which to place water to beneficial use.

The right to use underground water, no matter what, may be lost by abandonment. In determining abandonment the intent to abandon by the owner of the well must be clearly evident. There is no time element involved in abandonment.

In either the case of forfeiture or abandonment the owner of the right affected must be notified by registered mail and may appeal the ruling of the State Engineer in the manner provided in section 75, chap. 75, Statutes of 1915 of the general water law. If such appeal is not taken within the time provided for in said section the ruling of the State Engineer becomes final.

It is evident from the language of section 3 that underground water used only for domestic purposes and where the draught does not exceed 2 gallons per minute would not be subject to the above forfeiture or abandonment provisions.

Section 9b. Provides that existing water rights to the use of underground water are recognized. This means water rights that have been established prior to 1947 whether by the application and permit procedure or by having acquired a vested right.

The section defines vested underground water rights and differentiates between two classes of water, i.e.—(1) water from an artesian well or from a definable aquifer, and (2) percolating water the course and boundaries of which are incapable of determination. To acquire a vested right under the first classification it must have been developed and used prior to March 22, 1913, and to acquire a vested right under the second classification the development and use must have been prior to March 33, 1929.

The matter of the determination of whether water is in a definable aquifer or whether it is percolating water, the course and boundaries of which are incapable of determination, is left to the State Engineer to determine the criteria to be used in determining if the well under question is tapping water from definable aquifer is if in the judgment...
of the State Engineer the aquifer is within a contracted and bounded channel such as would be evident in a buried channel. When the facts are not clear the State Engineer will assume that the water comes under the classification of "percolating water the course and boundaries of which are incapable of determination."

The section further provides for the adjudication of vested underground water rights. Following a petition from a claimant of vested water rights to adjudicate such rights and if the State Engineer finds justification for such procedure he proceeds to designate the area pursuant to section 4 of this Act. The procedure is then the same as set forth in the general water law (Secs. 18 to 36). In such designation the area designated can include all claimed underground water rights in any one drainage basin. The definition of "drainage basin" as used herein is interpreted to mean "ground water" drainage basin.

Section 10. Several provisions are set forth in this section and will be discussed in the order that they appear.

First, it provides that the State Engineer shall prescribe all necessary rules and regulations within the terms of this Act for administration purposes. The interpretations, rules and regulations herein set forth are prepared in conformity to this provision.

It is provided that the State Engineer may require certain information from all holders of permits and claimants of vested rights including water usage and average water is placed on.

That the State Engineer can conduct pumping tests to determine if over-pumping is indicated and other hydrologic properties.

That the State Engineer shall determine if there is unappropriated water in the area and shall issue permits only if he finds that there is unappropriated water available.

It is provided that in each permit issued the right of the permittee shall be limited to a fixed quantity of water which may be obtained with a pumping limit which is not in excess of the maximum lift found feasible by the State Engineer at the time of the granting of the permit. As this is interpreted by the State Engineer it was not the intention in granting a permit to set by reference a maximum lift as found to be reasonable by the State Engineer, but rather to designate specifically a quantity of water to be diverted from the well which the State Engineer feels can be obtained within a feasible or reasonable limit based on the known hydrologic factors. It is only when continued over-pumping occurs that the water table lowers beyond natural recovery. The Act is definite in that the State Engineer is to restrict over-pumping. This can be done if the safe yield of the ground-water basin has been determined and the area has been designated pursuant to section 4 of this Act. It is clear that if over-depletion is prevented that the lowering of the ground-water table would not ordinarily be unreasonable. However, it is apparent that in certain instances continued development of ground water in an area which is not over-depleted might cause the ground-water level to drop below a level from which it is not economical to pump any longer for certain crops grown in the area, even though the safe yield had not been reached. It will be the policy of the State Engineer to restrict further diversions when (1) the safe yield has been reached, and (2) when the water table has reached such a level...
Investigations were immediately started to assure supplemental water for district members by virtue of upstream storage. On June 13, 1929, an agreement known as the Truckee River Agreement was approved by the United States Secretary of the Interior, this agreement being among five parties, namely, the United States of America, the Truckee-Carson Irrigation District, the Washoe County Water Conservation District, the Sierra Pacific Power Company, and other users of the waters of the Truckee River. Whereupon Beo Reservoir was constructed by the Bureau of Reclamation, at the mouth of the Little Truckee River. The capacity of the reservoir is 42,000 acre-feet and was constructed at a cost of $1,000,000, one-half of said cost to be paid back by Washoe County and the other half to be paid by the Conservation District over a repayment contract period with the Government of 40 years.

Inasmuch as distribution is handled by the Federal Water Master, most work entailed by the district are administrative and the operation and maintenance of Beo Reservoir. Flood control and storage along with regulation of the Truckee River flow are prime factors which are decided upon by this district in conjunction with other signatories of the Truckee River Agreement.

Beo Dam has proved to be a big factor in flood control on the Truckee River for amounts running from 50,000 acre-feet to 120,000 acre-feet per year are regulated and controlled through its needle valves.

**Muddy Valley Irrigation Company**

Officers—C. A. Lewis, President; Mads Jorgenson, Vice President; Durrell Evans, Secretary-Treasurer; Edwin Marshall, Louis Adams, Glenn Lee, Directors.

Office at Overton, Nevada.

**Preston Irrigation Company**

Officers—J. R. Bradtke, President; Wesley Reid, Vice President; Charles Fink, Secretary; Lowell Peterson, Clifford Peacock, Directors.

Office at Preston, Nevada.

Organized March 24, 1911.

**Lund Irrigation Company**

Officers—Arthur Carfor, President; George Everett, Vice President; Leland Hendrix, Secretary; Milton Guehrer, Vance McKenzie, Directors.

Office at Lund, Nevada.

Organized 1907.

**Bunkerville Irrigation Company**

Officers—Perlin Hunt, President; George Huntman, Vice President; Melk Wittwer, Secretary-Treasurer.

Office at Bunkerville, Nevada.

Organized June 26, 1925.

**Mesquite Irrigation Company**

Officers—Dee Hughes, President; Luther Hafen, Vice President;

that the pumping lift approaches the maximum economical limit, whichever comes first.

It further provides that a right to appropriate ground water doesn’t guarantee the permittee the right to have the water level in his well maintained at any level higher than is necessary for a reasonable pumping lift. This means that such permittee has no right if other permits are granted in the area even though further appropriations under such permits cause the water level to drop, just so the lowering is not unreasonable. In determining the reasonable pumping lift one of the major items to consider is whether or not the lift is economical.

Provision is made for the State Engineer to hold a hearing to determine whether the water supply in any area is adequate for the needs of all permittees and vested right claimants. By virtue of the ground-water studies being conducted under the cooperative program between the United States Geological Survey and the office of the State Engineer, this information will in most cases be available prior to any great development. If the determination is negative then withdrawals are to be restricted according to priority. Of course under such conditions and to exercise such control the basin must be designated in accordance to section 6.

In any designated basin the State Engineer may restrict drilling in any particular portion of an area if he determines that such additional wells would cause undue interference with existing wells. Therefore, such provision would give the State Engineer the right to deny a permit on the grounds that should water be diverted at such proposed point of diversion there would be undue interference on an existing water right. Should the State Engineer make a general order restricting further drilling in a portion of a designated area, such order is subject to be reviewed by the District Court pursuant to section 75 of the General Water Law.

The continuance of free flow conditions or the maintenance of water levels in artesian wells is not to be protected in the provisions of a permit even though subsequent development causes a lowering of the present level, which may cause the free flow to cease. The only question to be determined are (1) is there an unappropriated water, and (2) will the resulting pumping level be feasible. If so, further permits can be granted.

Section 11 provides that the State Engineer, his assistants or authorized agents, may enter any premises where a well covered by this Act is located.

Section 12 provides a misdemeanor and sets forth the penalty, therefor.

Section 13 provides that each section of the Act is an independent section and the holding of any section as unconstitutional shall not affect the other sections.

Section 14 repeals certain Acts in conflict.
RULES AND REGULATIONS PERTAINING TO PROTESTS AND HEARINGS ON APPLICATIONS TO APPROPRIATE WATER

The section of the water law which provides a method in which protests may be filed against the granting of an application to appropriate water is as follows:

Section 62, chapter 146, Statutes of 1913, sec. 7947, N. C. L. 1929.

Any person interested may, within (30) days from the date of last publication of said notice of application, file with the state engineer a written protest against the granting of said application, setting forth with reasonable certainty the grounds of such protest, which shall be verified by the affidavit of the protestant, his agent or attorney. On receipt of a protest, as hereinbefore provided, it shall be the duty of the state engineer to advise the applicant whose application has been protested of the fact that said protest has been filed with him, which advice shall be sent by registered mail. The state engineer shall duly consider the said protest, and may, in his discretion, hold hearings and require the filing of such evidence as he may deem necessary to a full understanding of the rights involved; provided, however, that no hearing thereon shall be had except after due notice by registered mail to both the applicant and protestant, which notice shall give the time and place at which the said hearing is to be held, which notice shall be mailed at least fifteen days prior to the date set for said hearing. Said hearings shall be conducted under such rules and regulations as the state engineer may make, which he is hereby empowered to make for the proper and orderly exercise of the powers conferred herein.

1. NOTICE OF APPLICATION

Notice of an application to appropriate water shall be published in a newspaper of general circulation in the county in which the source of water sought to be appropriated is located, once a week for five consecutive weeks. A formal protest must be made between the dates of the first publication and within thirty days following the final publication.

2. FORMAL PROTEST

Following receipt of a formal protest, and as soon as possible thereafter, the state engineer shall duly consider same, and may, at his own discretion, hold a hearing in order that a full understanding of the rights involved may be obtained. The usual procedure is to first conduct a field investigation. Both applicant and protestant are invited to accompany the investigating engineer. Oftentimes the differences can be resolved during such investigation. If not, and the state engineer feels that he has sufficient information on which to issue a ruling he proceeds with the ruling. In many instances, however, the state engineer needs additional evidence, such as the testimony of witnesses, and in such cases he notifies both applicant and protestant by registered mail that a hearing will be held at a certain time and place. Such notice must be mailed at least fifteen days prior to the date set for the hearing.

3. EXCEPTION TO RULING OF STATE ENGINEER

Either party to the action feeling himself aggrieved by the ruling of the State Engineer may have such ruling and order reviewed by the boundaries. Of this amount, 21,096 acres have deeded water rights. In the Lovelock Valley only about 11,600 acres of land having deeded rights are not included in the district. During the latter part of 1936 the Rye Patch Dam was completed on the Humboldt River. This structure is located about 23 miles northeast of Lovelock, and was built by the Bureau of Reclamation under a repayment contract dated October 1, 1934, with the Pershing County Water Conservation District. The history and description of this project was fully described by J. J. Foster, Construction Engineer, in an article appearing in the 1934-1936 Biennial Report.

The repayment contract mentioned above between the Bureau and the District provides that the total cost of the project shall be returned to the United States in 40 annual payments over a period of 40 years without interest charges. If the annual payments are not made when due, such payments carry a 6 percent interest charge.

The project consists of two salient features, namely, the construction of Rye Patch Dam and the purchase of water rights and the making of river channel improvements in the Battle Mountain area. These features are discussed in the 1936-1938 Biennial Report.

TRUCKEE-CARSON IRRIGATION DISTRICT

Officers—Geo. G. Miller, President; J. C. Mall, Vice President; H. W. Emery, Secretary-Treasurer; W. A. Harmon, John Kuida, Marvin Weishaupt, Donald Streeff, Mario Peraldo, Directors; Phil W. Hilbert, Project Superintendent; Andrew L. Haight, Attorney.

Office at Fallon, Nevada.
Organized November 25, 1914.

The Newlands Project, located in western Nevada, embraces lands mainly in Churchill and Lyon Counties. This project was the first of the numerous Federal projects to be investigated, and upon which construction work was commenced by the United States Reclamation Service under the Act of Congress, approved June 17, 1902, commonly known as the Reclamation Act. Actual construction work was commenced during September 1903, and water was delivered to project lands from the new system of works during 1906. The project was operated and maintained by the United States Bureau of Reclamation until December 31, 1936, on which date control was transferred to the Truckee-Carson Irrigation District under a contract dated December 18, 1926. The irrigation district was organized on November 25, 1913, under the laws of the State of Nevada.

WARHOLE COUNTY WATER CONSERVATION DISTRICT

Officers—Edward M. Peckham, President; Robert J. Fick, Vice President; R. N. Younkin, Secretary; Ernest Caparro, Treasurer; Ernest Kleppe, Carl Stoddard, C. J. Gaul, Directors; Chester C. Taylor, Engineer-Manager; Charles M. Merril, Attorney.

Office at 29 East First Street, Reno, Nevada.
Organized June 29, 1929.

The Washoe County Water Conservation District was organized in pursuance of the provisions of that certain Act of the Legislature of the State of Nevada, known as the Nevada Irrigation District Act, on June 21, 1929, in Reno, Nevada.
CHAPTER XVI
Irrigation Districts and Companies

IRRIGATION DISTRICTS
Walker River Irrigation District; Pershing County Conservation District; Truckee-Carson Irrigation District; and Washoe County Water Conservation District.

IRRIGATION COMPANIES
Muddy River Irrigation Company; Preston Irrigation Company; Lund Irrigation Company; Bunkerville Irrigation Company; Mesquite Irrigation Company; Alanco Irrigation Company; Pahoa Reclamation Company; Franktown Creek Irrigation Company, and Ash Springs Irrigation Company.

WALKER RIVER IRRIGATION DISTRICT
Officers—Willard Sayden, President; M. Sellamoni, Vice President; John H. Wichman, Treasurer; C. O. Getts, Secretary-Manager; Richard Day, Gus Williams, 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, draining a watershed of some 3,000 square miles. The total area of the district is 216,000 acres, of which 160,000 acres are irrigable. At the present time, 138,000 acres are under private ownership of which 78,000 acres have water rights. The irrigated area is approximately 53,000 acres.
The outstanding bonded indebtedness of this district is now $694,000. These bonds carry an interest rate of 4 percent per annum and are held by the Reconstruction Finance Corporation. They are scheduled to be redeemed over the period between now and the year 1965.
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.
A complete description of the operation and status of this district may be found in the 1934-1936 Biennial Report of the State Engineer.

PERSHING COUNTY CONSERVATION DISTRICT
Officers—Ruth C. Ruskell, President; Edward Garvienta, Vice President; Henry Anderson, Treasurer; John E. Holmes, Laborer; Leonard Shanks, Laborer; John A. Staton, Secretary-Manager; Jerry E. Wignall, Watermaster; Sanford A. Biscoe, Attorney; Mrs. Alice Custer, Office Clerk.
Office at Lovelock, Nevada.
Organized February 1928.
This district has about 30,000 acres of irrigable lands within its district court having jurisdiction as provided for in section 76, chapter 238, Statutes of 1919, sec. 7961 N. C. L., 1929.
In his action on any application to appropriate water, whether protested or not, the State Engineer shall use extreme caution so as not to jeopardize any existing rights. In all permits granted to appropriate water, the provisions "subject to existing rights on the source" is included.

4. PROTEST FORM
The State Engineer has prepared a form upon which to submit protests and the use of this form is recommended. These forms are furnished free upon request. Protests must be submitted in duplicate accompanied by the statutory filing fee of $1. One copy is filed and the other copy is forwarded to the applicant.
A person desiring to protest an application should use the prepared forms, but it is not mandatory. A form can be prepared by the person making the protest, but it must be along the lines of the prepared form as outlined below, and must be submitted in duplicate. The form of the protest is as follows:

In the Office of the State Engineer of the State of Nevada
In the Matter of Application Number
Filed by__________________________
On__________________________
to appropriate__________________________

Protest of__________________________

Comes now
Whose post-office address is__________________________
whose occupation is__________________________
and protests the granting of application number__________________________, filed on__________________________, to appropriated the waters of__________________________, situated in__________________________, County, State of Nevada, for the following reasons and on the following grounds, to wit:

WHEREFORE, protestor prays that the application be

(Denied or issued subject to prior rights, as the case may be)
and that the use of water herein claimed by protestor be confirmed and that any order he entered establishing said right and for such other relief as the State Engineer deems just and proper.

STATE OF NEVADA,
COUNTY OF__________________________

being first duly sworn, deposes and says, that he has read the foregoing protest and knows the contents thereof and that the same is true of his own knowledge.
except as to the matters which are therein stated on information and belief, and as to those matters he believes it to be true.

Subscribed and sworn to before me this day of ______, 19____

Notary Public

5. ANSWERS TO PROTEST

It is not necessary for the applicant to answer a protest. If he desires to make an answer he may do so and it will be accepted and filed providing the answer is in duplicate and is accompanied by the statutory fee of $1 for filing.

6. WITHDRAWAL OF PROTEST

Subsequent to the filing of a protest, the protestant may, if he desires, withdraw the protest by filing with the State Engineer a notice in writing that the protest is thereby withdrawn, and thereafter the State Engineer may proceed in his processing of the application in the same manner as if no protest had been filed in the first instance.

The applicant and protestant may enter into an agreement regarding the use of the water applied for and set forth such agreement in a stipulation signed by the parties, which when filed in the office of the State Engineer, will have the effect of withdrawing the protest. The permit to appropriate water may thereupon be issued subject to the conditions of the stipulation. The State Engineer is not a party to such agreement and the acceptance of such stipulation will not have the effect of establishing a water right not theretofore acquired pursuant to law.

7. HEARINGS

When an application to appropriate water is protested in due form in accordance with the requirements of section 50, chapter 140, Statutes of 1913, sec. 7947 N. C. L. 1929, a hearing will be held thereon unless the protests are withdrawn or unless the State Engineer in his discretion feels that he has sufficient information relative to the rights involved upon which to base a ruling. The State Engineer will give due consideration to the wishes of the parties involved in the proceeding in deciding whether or not a formal hearing is necessary.

The various steps involved are as follows:

(a) Notice of hearing, setting time and place to be sent to both the applicant and the protestant by registered mail at least fifteen (15) days prior to date of hearing.

(b) Upon request of either applicant or protestant and for good cause shown, the date set for the hearing may be continued over. A request to have the date of hearing changed must be made to the State Engineer at least three days prior to the set date in order that the other party or parties may be advised. In all cases, such request may be granted or denied at the discretion of the State Engineer.

(c) It is optional with each party whether or not he shall be represented by counsel. In the event that either applicant or protestant is

<table>
<thead>
<tr>
<th>Bank balance, December 31, 1947</th>
<th>$2,407.05</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States bonds</td>
<td>$2,000.00</td>
</tr>
</tbody>
</table>

Until 1947 there was no specific Act relating to land surveyors. Such an Act was passed by the 1947 Legislature. This requires that any professional, practicing land surveyor in Nevada must be registered as a land surveyor, even though he holds other registration as a professional engineer. The law provides for the giving of the additional classification of land surveyor to those registered professional engineers in Nevada who applied for such classification not later than 30 days after notification by the board, and, in any event, not later than 90 days after the passage and approval of the Act. All others were required to take a written examination. At the present time there are 186 licensed land surveyors in the State of Nevada. Each County Recorder has been furnished with a list of the licensed land surveyors and with a supplementary list whenever additional surveyors are granted registration.

The amended law also requires that every applicant for registration as a professional engineer appear before the board for examination. The examination may be written or oral as determined by the board on the basis of applicant's education and experience.
Churchill County—Fallon 4
Clark County—Las Vegas, Overton, Boulder City, Henderson 61
Douglas County—Gardnerville, Minden 2
Elko County—Elko 5
Esmeralda County—Goldfield 2
Eureka County—Eureka 2
Humboldt County—Winnemucca, Sulphur 7
Lander County 0
Lincoln County—Pioche, Bristol Silver, Panaca 5
 Lyon County—Wellington, Yerington 5
Mineral County—Hawthorne, Mina 2
Nye County—Tonopah, Gabbs 3
Orrick County—Carson City 34
Pershing County—Ely, Lovelock 2
Storey County—Fernley, Virginia City 5
Washoe County—Reno, Sparks 92
White Pine County—Ruth, Kimberly, McGill, Ely 17

Total 253

The Engineer’s Registration Law requires that the financial report be made by the calendar year. Therefore, the one that follows is from January 1, 1946, through December 31, 1947.

FINANCIAL REPORT

January 1, 1946, through December 31, 1947

Bank balance, January 1, 1946 1,736.21

Receipts
Fees and bond interest, Jan. 1-31, 1946 2,182.26
Fees and bond interest, Jan. 1-Dec. 31, 1947 2,063.85
Total (receipts plus bank balance) 4,252.86


disbursements
Telephone calls 841.45
Office equipment 170.34
Typewriter rental 49.50
Office supplies 32.40
Due to National Council of State Boards of Engineering Examiners 75.00
Stationery and printing 133.05
Postage 281.76
Salaries—Secretary, stenographic help 1,044.50
Travel and per diem of board members for meetings 992.01
Convention (National Council) secretary’s trip 350.00
Miscellaneous 20.00
Refunds 144.00
Checks returned 37.50

Total disbursements 3,373.51

Total (receipts plus bank balance) less disbursements 829.35

Bank balance, December 31, 1947 2,407.05

represented by counsel, service of notice or other papers pertaining to the issue upon such counsel shall be sufficient.

d) The order of proceeding to take testimony at a hearing shall be as follows except as otherwise provided herein: The plaintiff to an application shall be considered as the plaintiff and will be requested to first present his evidence as to why the application should not be granted. In other words, the applicant is the complaining party and in order to put the right of the applicant at issue, the applicant must first present his evidence as to why such application should not be granted. The exception to the above procedure is when applicant and respondent or their respective counsel voluntarily agree to change the procedure, i.e., the applicant to first present his evidence as to why the application should be granted.

e) The witnesses shall be examined orally by and before the State Engineer. Hearings will be conducted in such manner as the State Engineer deems most suitable to the particular case and technical rules of evidence need not be applied. The general procedure will be as follows:

Upon the opening of the hearing and following the statement of the matter to be heard, the State Engineer will inquire whether applicant and respondent and/or other parties are represented by counsel. The State Engineer will then obtain from the parties a list of their witnesses, and will proceed by first calling upon the respondent to submit his evidence. The State Engineer will first administer the oath to the witness and then proceed with his interrogation, following which counsel for respondent is privileged to question his witness along lines pertinent to the matter at hand. Counsel for applicant, or if applicant is not represented by counsel, the applicant himself is privileged to cross examine the witness. The procedure will continue in the examination of the witnesses for the respondent. The procedure will be similar when the applicant presents his case.

(f) In the event that either party at a hearing shall purport to be a witness that is clearly irrelevant, incompetent, or immaterial, the State Engineer may forthwith stop such interroagation.

3. DEPOSITIONS

(a) The deposition of a witness for use in a hearing or an application for information in the State Engineer’s Office may be taken by the State Engineer in the manner provided in the rules of procedure.

(b) In the event that the deposition is to be taken by an order of the State Engineer, the party concerned shall be notified at least fifteen days prior to the date scheduled, such notice setting forth the name or names of the party or parties to be questioned, the time and place and the subject matter or matters concerning which the witness or witnesses will be expected to testify.

4. STATE ENGINEER MAY MAKE INVESTIGATIONS

The State Engineer will make such investigations as may be necessary for the purpose of securing information needed in connection with determining the issues involved. A hearing before the State Engineer.
as described in Rule 7 heretofore outlined, is one of the resources that may be taken to obtain such information but may be supplemented by information obtained from other sources.

10. BRIEFS
Prior to the closing of the hearing and upon request of both applicant and protestant, the State Engineer may agree to the presentation of briefs. The order of presentation of briefs and the time periods shall be determined by the State Engineer following consultation with counsel.

11. REPORTING OF PROCEEDINGS AND TRANSCRIPT
The State Engineer shall require a deposit of five dollars ($5) per day, or fraction thereof, from each party while engaged in taking evidence on said application. Should there be any balance left after paying for the reporting, such balance will be credited on cost of transcribing the testimony.

At all formal hearings the record of the proceedings shall be taken down by a reporter, or in the absence of a reporter by someone designated by the State Engineer.

12. INFORMAL HEARINGS
The State Engineer may, if he desires, in order to get additional information, hold an informal hearing on an application to which no protest was filed. The rules heretofore set forth on formal hearings do not necessarily apply to informal hearings.

13. STATE ENGINEER
The wording “State Engineer” as used herein means the State Engineer of Nevada, and any of his officially designated assistants.

CHAPTER XV
State Board of Registered Professional Engineers

By Stanley G. Palmer, Secretary.

The Engineer’s Registration Law, as passed in 1919, and amended in 1933 and again in 1947, defines the practice of professional engineering in the following terms: “The practice of professional engineering within the meaning and intent of this act includes any professional service such as surveying, consultation, investigation, evaluation, planning, and design, or responsible supervision of construction or operation in connection with any public or private utility, structures, building, 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.”

The registration board appointed by the Governor consists of 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.


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 from July 1, 1946, through June 30, 1948, 108 applications were approved of the 164 received, 26 were withdrawn, rejected, or dropped for failure of applicant to appear for examination, and 21 are pending. Sixteen of the licensed engineers have died; 12 dropped for nonpayment of renewal fees or resignation, and five who were dropped for nonpayment of renewal fees have been reinstated.

At the present time there are a total of 464 Registered Engineers and Land Surveyors. Of these 230 are Nevada residents and 211 reside in other States.

The division of classifications is as follows: Architects, 19; Chemical, 15; Civil, 199; Electrical, 36; Geodetical, 17; Highway, 23; Land Surveyors, 166; Mechanical, 65; Mining, 82; Structural, 23; Miscellaneous, 28.

The distribution of Registered Engineers and Land Surveyors residing in Nevada is as follows:
as described in Rule 7 herefore outlined, is one of the resources that may be taken to obtain such information but may be supplemented by information obtained from other sources.

10. BRIEFS

Prior to the closing of the hearing and upon request of both applicant and protestant, the State Engineer may agree to the presentation of briefs. The order of presenting briefs and the time periods shall be determined by the State Engineer following consultation with counsel.

11. REPORTING OF PROCEEDINGS AND TRANSCRIPT

The State Engineer shall require a deposit of five dollars ($5) per day, or fraction thereof, from each party while engaged in taking evidence on said application. Should there be any balance left after paying for the reporting, such balance will be credited on cost of transcribing the testimony.

At all formal hearings the record of the proceedings shall be taken down by a reporter, or in the absence of a reporter by someone designated by the State Engineer.

12. INFORMAL HEARINGS

The State Engineer may, if he desires, in order to get additional information, hold an informal hearing on an application to which no protest was filed. The rules heretofore set forth on formal hearings do not necessarily apply to informal hearings.

13. STATE ENGINEER

The wording "State Engineer" as used herein means the State Engineer of Nevada, and any of his officially designated assistants.

CHAPTER XV

State Board of Registered Professional Engineers

BY JULIAN G. PALMER, SECRETARY

The Engineer's Registration Law, as passed in 1919, and amended in 1939, and again in 1947, defines the practice of professional engineering in the following terms: "The practice of professional engineering within the meaning and intent of this act includes any professional service such as surveying, consultation, investigation, evaluation, planning, and design, or responsible supervision of construction or operation in connection with any public or private utilities, structures, building, 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."

The registration board appointed by the Governor consists of 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.
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 from July 1, 1946, through June 30, 1948, 108 applications were approved of the 164 received, 35 were withdrawn, rejected, or dropped for failure of applicant to appear for examination, and 21 are pending. Sixteen of the licensed engineers have died; 32 dropped for nonpayment of renewal fees or resignation, and five who were dropped for nonpayment of renewal fees have been reinstated.

At the present time there are a total of 464 Registered Engineers and Land Surveyors. Of these 253 are Nevada residents and 211 reside in other States.

The division of classifications is as follows: Architects, 19; Chemical, 15; Civil, 199; Electrical, 36; Geological, 17; Highway, 23; Land Surveyors, 166; Mechanical, 65; Mirror, 12; Structural, 23; Miscellaneous, 28.

The distribution of Registered Engineers and Land Surveyors residing in Nevada is as follows:
Churchill County—Fallon.................................................. 4
Clark County—Las Vegas, Overton, Boulder City, Henderson.... 61
Douglas County— Gardnerville, Minden............................... 2
Ely County—Ely.......................................................... 5
Esmeralda County— Goldfield........................................ 2
Eureka County—Eureka.................................................. 2
Humboldt County— Winnemucca, Sulphur............................ 1
Lander County .......................................................... 9
Lincoln County—Pioche, Bristol Silver, Panaca.................... 5
Lyon County—Wellington, Yerington................................ 5
Mineral County— Hawthorne, Mina.................................. 2
Nye County— Tonopah, Gabbs........................................ 8
Ormsby County— Carson City......................................... 34
Pershing County—Jeddo, Lovelock................................. 2
Storey County— Fernley, Virginia City............................ 5
Washoe County— Reno, Sparks...................................... 92
White Pine County— Ruth, Kimberly, McGill, Ely............... 17
Total................................................................................. 253

The Engineer's Registration Law requires that the financial report be made by the calendar year. Therefore, the one that follows is from January 1, 1946, through December 31, 1947.

**FINANCIAL REPORT**

**RECEIPTS**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank balance, January 1, 1948</td>
<td>$1,728.21</td>
</tr>
<tr>
<td>Fees and bond interest, Jan. 1-Dec. 31, 1946</td>
<td>$2,182.56</td>
</tr>
<tr>
<td>Fees and bond interest, Jan. 1-Dec. 31, 1947</td>
<td>2,069.85</td>
</tr>
<tr>
<td>Total (receipts plus bank balance)</td>
<td>$5,978.56</td>
</tr>
</tbody>
</table>

**DISBURSEMENTS**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone calls</td>
<td>$41.45</td>
</tr>
<tr>
<td>Office equipment</td>
<td>170.54</td>
</tr>
<tr>
<td>Typewriter rental</td>
<td>49.50</td>
</tr>
<tr>
<td>Office supplies</td>
<td>32.40</td>
</tr>
<tr>
<td>Due to National Council of State Boards of</td>
<td></td>
</tr>
<tr>
<td>Engineering Examiners</td>
<td>75.00</td>
</tr>
<tr>
<td>Stationery and printing</td>
<td>873.05</td>
</tr>
<tr>
<td>Postage</td>
<td>281.76</td>
</tr>
<tr>
<td>Salaries—Secretary, stenographic help</td>
<td>1,044.50</td>
</tr>
<tr>
<td>Travel and per diem of board members for</td>
<td></td>
</tr>
<tr>
<td>meetings</td>
<td>992.01</td>
</tr>
<tr>
<td>Convention (National Council) secretary's</td>
<td></td>
</tr>
<tr>
<td>trip</td>
<td>350.00</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>20.00</td>
</tr>
<tr>
<td>Refunds</td>
<td>144.00</td>
</tr>
<tr>
<td>Checks returned</td>
<td>37.50</td>
</tr>
<tr>
<td>Total disbursements</td>
<td>3,071.51</td>
</tr>
<tr>
<td>Total (receipts plus bank balance) less disbursements</td>
<td>$2,907.05</td>
</tr>
<tr>
<td>Bank balance, December 31, 1947</td>
<td>2,407.05</td>
</tr>
</tbody>
</table>

represented by counsel, service of notice or other papers pertaining to the issue upon which counsel shall be sufficient.

(d) The order of proceeding to take testimony at a hearing shall be as follows except as otherwise provided herein: The protestant to an application shall be considered as the plaintiff and will be requested to first present his evidence as to why the application should not be granted. In other words, the protestant is the complaining party and in order to put the right of the applicant at issue, the protestant must first present his evidence as to why such application should not be granted. The exception to the above procedure is when applicant and protestor or their respective counsel voluntarily agree to change the procedure, i.e., the applicant to first present his evidence as to why the application should be granted.

e) The witnesses shall be examined orally by and before the State Engineer. Hearings will be conducted in such manner as the State Engineer deems most suitable to the particular case and technical rules of evidence need not be applied. The general procedure will be as follows:

Upon the opening of the hearing and following the statement of the matter to be heard, the State Engineer will inquire whether applicant and protestor and/or protestants are represented by counsel. The State Engineer will then obtain from the parties a list of their witnesses, and will proceed by first calling upon the protestor to submit his evidence. The State Engineer will then administer the oath to the witness and then proceed with his interrogation, following which counsel for protestor is privileged to question his witness along lines pertinent to the matter at hand. Counsel for applicant, or if applicant is not represented by counsel, the applicant himself is privileged to cross examine the witness. The procedure will continue in the examination of the witnesses for the protestor. The procedure will be similar when the applicant presents his case.

(f) In the event that either party at a hearing shall pursue a line of interrogation of a witness that is clearly irrelevant, incompetent, or immaterial, the State Engineer may forthwith stop such interrogation.

8. DISPOSITIONS

(a) The deposition of any witness for use in a hearing is to be taken by an attorney, and the State Engineer may appoint an attorney to be present at all hearings.

(b) In the event the deposition is not taken by an order of the State Engineer, the parties concerned shall be notified at least fifteen days prior to the date set, such notice setting forth the name or names of the parties to be questioned, the time and place of the hearing, and the subject matter or matters concerning which the witness or witnesses will be expected to testify.

9. STATE ENGINEER MAY MAKE INVESTIGATIONS

The State Engineer may make such investigations as may be necessary for the purpose of securing information needed in connection with determining the issues involved. A hearing before the State Engineer
except as to the matters which are therein stated on information and belief, and as to those matters he believes it to be true.

Subscribed and sworn to before me this ______ day of ______, 19__

[Signature]
Notary Public

5. ANSWER TO PROTEST

It is not necessary for the applicant to answer a protest. If he desires to make an answer he may do so and it will be accepted and filed providing the answer is in duplicate and is accompanied by the statutory fee of $1 for filing.

6. WITHDRAWAL OF PROTEST

Subsequent to the filing of a protest, the protestant may, if he desires, withdraw the protest by filing with the State Engineer a notice in writing that the protest is thereby withdrawn, and thereafter the State Engineer may proceed in his processing of the application in the same manner as if no protest had been filed in the first instance.

The applicant and protestant may enter into an agreement regarding the use of the water applied for and set forth such agreement in a stipulation signed by the parties, which when filed in the office of the State Engineer, will have the effect of withdrawing the protest. The permit to appropriate water may thereupon be issued subject to the conditions of the stipulation. The State Engineer is not a party to such agreement and the acceptance of such stipulation will not have the effect of establishing a water right not theretofore acquired pursuant to law.

7. HEARINGS

When an application to appropriate water is protested in due form in accordance with the requirements of section 61, chapter 140, Statutes of 1913, sec. 7947 N.C.L. 1929, a hearing will be held thereon unless the protests are withdrawn or unless the State Engineer in his discretion feels that he has sufficient information relative to the rights involved upon which to base a ruling. The State Engineer will give due consideration to the wishes of the parties involved in the proceeding in deciding whether or not a formal hearing is necessary.

The various steps involved are as follows:

(a) Notice of hearing, setting time and place to be sent to both the applicant and the protestant by registered mail at least fifteen (15) days prior to date of hearing.

(b) Upon request of either applicant or protestant and for good cause shown, the date set for the hearing may be continued over. A request to have the date of hearing changed must be made to the State Engineer at least three days prior to the set date in order that the other party or parties may be advised. In all cases, such request may be granted or denied at the discretion of the State Engineer.

(c) It is optional with each party whether or not he shall be represented by counsel. In the event that either applicant or protestant is

Until 1947 there was no specific Act relating to land surveyors. Such an Act was passed by the 1947 Legislature. This requires that any professional, practicing land surveyor in Nevada must be registered as a land surveyor, even though he holds other registration as a professional engineer. The law provides for the giving of the additional classification of land surveyor to those registered professional engineers in Nevada who applied for such classification not later than 30 days after notification by the board, and, in any event, not later than 90 days after the passage and approval of the Act. All others were required to take a written examination. At the present time there are 166 licensed land surveyors in the State of Nevada. Each County Recorder has been furnished with a list of the licensed land surveyors and with a supplementary list whenever additional surveyors are granted registration.

The amended law also requires that every applicant for registration as a professional engineer appear before the board for examination. The examination may be written or oral as determined by the board on the basis of the applicant's education and experience.
CHAPTER XVI
Irrigation Districts and Companies

IRRIGATION DISTRICTS

Walker River Irrigation District; Pershing County Conservation District; Truckee-Carson Irrigation District, and Washoe County Water Conservation District.

IRRIGATION COMPANIES

Muddy River Irrigation Company; Preston Irrigation Company; Lamb Irrigation Company; Bunkerville Irrigation Company; Mesquite Irrigation Company; Alamo Irrigation Company; Panaca Irrigation Company; Franktown Creek Irrigation Company, and Ash Springs Irrigation Company.

WALKER RIVER IRRIGATION DISTRICT

Officers—Wilbur Seyden, President; M. Dellamonica, Vice President; John H. Wichman, Treasurer; C. O. Gelmesdt, Secretary-Manager; Richard Day, Gus Williams, Directors; W. W. 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 and drain a watershed of some 2,000 square miles. The total area of the district is 160,000 acres, of which 160,000 acres are irrigable. At the present time, 59,828 acres are held under private ownership of which 78,175 acres have water rights. The irrigated area is approximately 52,000 acres.

The outstanding bonded indebtedness of this district is $294,000. These bonds carry an interest rate of 4 percent per annum and are held by the Reconstruction Finance Corporation. They are scheduled to be redeemed over the period between now and the year 1925.

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

PERSHING COUNTY CONSERVATION DISTRICT

Officers—Ruth C. Rudell, President; Edward Garaventa, Vice President; H. V. Anderson, Treasurer; John E. Holstrom, Laster Hansen, Lester Munk, L. Arab, Fred Ogilvie, Directors; Robert S. Leighton, Secretary-Manager; Archie E. Wight, Watermaster; Sanford A. Bruce, Attorney; Mrs. Alice Custer, Office Clerk.
Office at Lovelock, Nevada.
Organized February 1926.

This district has about 30,000 acres of irrigable lands within its jurisdiction as provided for in section 78, chapter 238, Statutes of 1915, sec. 7961 N. C. L., 1929.

In his action on any application to appropriate water, whether protested or not, the State Engineer shall use extreme caution as to not to jeopardize any existing rights. In all permits granted to appropriate water, the provisions "subject to existing rights on the source" is included.

4. PROTEST FORM

The State Engineer has prepared a form upon which to submit protests and the use of this form is recommended. These forms are furnished free upon request. Protests must be submitted in duplicate accompanied by the statutory filing fee of $1. One copy is filed and the other copy is forwarded to the applicant.

A person desiring to protest an application should use the prepared forms, but it is not mandatory. A form can be prepared by the person making the protest, but it must be along the lines of the prepared form as outlined below, and must be submitted in duplicate. The form of the protest is as follows:

In the Office of the State Engineer of the State of Nevada

In the Matter of Application Number:

Filed by__________ to appropriate

On__________

Protest of__________

Comes now__________

Whose post-office address is__________ and protests the granting of application number__________ filed on__________ by__________ to appropriate the waters of__________ situated in__________ County, State of Nevada, for the following reasons and on the following grounds, to wit:

____________________________________________________________________________________

WHEREFORE, protestant prays that the application be__________

( Denied or issued subject to prior rights, as may be)

and that the use of water herein claimed by protestant be confirmed and that an order he entered establishing said right and for such other relief as the State Engineer deems just and proper.

State of Nevada,

COUNTY of__________

Protestant.__________

being first duly sworn, deposes and says, that he has read the foregoing protest and knows the contents thereof and that the same is true of his own knowledge.
RULES AND REGULATIONS PERTAINING TO PROTESTS AND HEARINGS ON APPLICATIONS TO APPROPRIATE WATER

The section of the water law which provides a method in which protests may be filed against the granting of an application to appropriate water is as follows:

Section 62, chapter 146, Statutes of 1913, sec. 7947, N. C. L. 1929.

Any person interested may, within (30) days from the date of last publication of said notice of application, file with the state engineer a written protest against the granting of said application, setting forth with reasonable certainty the grounds of such protest, which shall be verified by the affidavit of the protestant, his agent or attorney. On receipt of a protest, as hereinbefore provided, it shall be the duty of the state engineer to advise the applicant whose application has been protested of the fact that said protest has been filed with him, which advice shall be sent by registered mail. The state engineer shall duly consider the said protest, and may, in his discretion, hold hearings and require the filing of such evidence as he may deem necessary to a full understanding of the rights involved; provided, however, that no hearing thereon shall be had except after due notice by registered mail to both the applicant and protestant, which notice shall give the time and place at which the said hearing is to be held, which notice shall be mailed at least fifteen days prior to the date set for said hearing. Said hearings shall be conducted under such rules and regulations as the state engineer may make, which he is hereby empowered to make for the proper and orderly exercise of the powers conferred herein.

1. NOTICE OF APPLICATION

Notice of an application to appropriate water shall be published in a newspaper of general circulation in the county in which the source of water sought to be appropriated is located, once for five consecutive weeks. A formal protest must be made between the dates of the first publication and within thirty days following the final publication.

2. FORMAL PROTEST

Following receipt of a formal protest, and as soon as possible thereafter, the State Engineer shall duly consider same, and may, at his own discretion, hold a hearing in order that a full understanding of the rights involved may be obtained. The usual procedure is to first conduct a field investigation. Both applicant and protestant are invited to accompany the investigating engineer. Oftentimes the differences can be resolved during such investigation. If not, and the State Engineer feels that he has sufficient information on which to issue a ruling he proceeds with the ruling. In many instances, however, the State Engineer needs additional evidence, such as the testimony of witnesses, and in such cases he notifies both applicant and protestant by registered mail that a hearing will be held at a certain time and place. Such notice must be mailed at least fifteen days prior to the date set for the hearing.

3. EXCEPTION TO RULING OF STATE ENGINEER

Either party to the action feeling himself aggrieved by the ruling of the State Engineer may have such ruling and order reviewed by the boundaries. Of this amount, 21,096 acres have deeded water rights. In the Lovelock Valley only about 11,600 acres of land having deeded rights are not included in the district. During the latter part of 1936 the Rye Patch Dam was completed on the Humboldt River. This structure is located about 23 miles northeast of Lovelock, and was built by the Bureau of Reclamation under a repayment contract dated October 1, 1934, with the Pershing County Water Conservation District. The history and description of this project was fully described by L. J. Porter, Construction Engineer, in an article appearing in the 1934-1936 Biennial Report.

The repayment contract mentioned above between the Bureau and the District provides that the total cost of the project shall be returned to the United States in 40 annual payments over a period of 49 years without interest charges. If the annual payments are not made when due, such payments carry a 6 percent interest charge.

The project consists of two salient features, namely, the construction of the Rye Patch Dam and the purchase of water rights and the making of river channel improvements in the Battle Mountain area. These features are discussed in the 1936-1938 Biennial Report.

TROONKEE-CARBON IRRIGATION DISTRICT

Officers—Geo. G. Miller, President; J. C. Mall, Vice President; H. W. Emery, Secretary-Treasurer; W. A. Harmon, John Kunda, Marvin Weishaupt, Donald Streiff, Mario Peraldo, Directors; Phil W. Hibbs, Project Superintendent; Andrew L. Haight, Attorney.

Office at Fallon, Nevada.

Organized November 35, 1918.

The Newlands Project, located in western Nevada, embraces lands mainly in Churchill and Lyon Counties. This project was the first of the numerous Federal projects to be investigated, and upon which construction work was commenced by the United States Reclamation Service under the Act of Congress, approved June 17, 1902, commonly known as the Reclamation Act. Actual construction work was commenced during September 1905, and water was delivered to project lands from the new system of works during 1906. The project was operated and maintained by the United States Bureau of Reclamation until December 31, 1936, on which date control was transferred to the Truckee-Carson Irrigation District under a contract dated December 18, 1926. The irrigation district was organized on November 25, 1913, under the laws of the State of Nevada.

WARHOO COUNTY WATER CONSERVATION DISTRICT

Officers—Edward M. Feehan, President; Robert J. Flick, Vice President; R. S. Yonkum, Secretary; Ernest Caparro, Treasurer; Ernest Klepp, Carl Stoddard, C. J. Gault, Directors; Chester C. Taylor, Engineer-Manager; Charles M. Merrill, Attorney.

Office at 33 East First Street, Reno, Nevada.

Organized June 26, 1929.

The Washoe County Water Conservation District was organized in pursuance of the provisions of that certain Act of the Legislature of the State of Nevada, known as the Nevada Irrigation District Act, on June 21, 1929, in Reno, Nevada.
Investigations were immediately started as to securing supplemental water for district members by virtue of upstream storage. On June 18, 1983, an agreement known as the Truckee River Agreement was approved by the United States Secretary of the Interior, this agreement being among five parties, namely, the United States of America, the Truckee-Carson Irrigation District, the Washoe County Water Conservation District, the Sierra Pacific Power Company, and other users of the waters of the Truckee River. Whereupon Boca Reservoir was constructed by the Bureau of Reclamation at the mouth of the Little Truckee River. The capacity of the reservoir is 42,000 acre-feet and was constructed at a cost of $1,000,000, one-half of said cost to be paid back by Washoe County and the other half to be paid by the Conservation District over a repayment contract period with the government of 40 years.

Insomuch as distribution is handled by the Federal Water Master, most work entailed by the district are administrative and the operation and maintenance of Boca Reservoir. Flood control and storage along with regulation of the Truckee River flow are prime factors which are decided upon by this district in conjunction with other signatories of the Truckee River Agreement.

Boca Dam has proved to be a big factor in flood control on the Truckee River for amounts running from 90,000 acre-feet to 120,000 acre-feet per year are regulated and controlled through its needle valves.

**Muddy Valley Irrigation Company**
Officers—C. A. Lewis, President; Mads Jorgenson, Vice President; Durrell Evans, Secretary-Treasurer; Edwin Marshall, Louis Adams, Glenn Lee, Directors.
Office at Overton, Nevada.

**Preston Irrigation Company**
Officers—J. R. Bradley, President; Wesley Reid, Vice President; Charles Pobell, Secretary; Lowell Peterson, Clifford Peacock, Directors.
Office at Preston, Nevada.
Organized March 24, 1911.

**Lund Irrigation Company**
Officers—Arthur Carrot, President; George Forrest, Vice President; Leland Hendrix, Secretary; Milton Gunner, Vance McKenzie, Directors.
Office at Lund, Nevada.
Organized 1907.

**Bunkerville Irrigation Company**
Officers—Perlin Hunt, President; George Huntsman, Vice President; Merle Willard, Secretary-Treasurer.
Office at Bunkerville, Nevada.
Organized June 25, 1923.

**Mesquite Irrigation Company**
Officers—Dee Hughes, President; Luther Hafen, Vice President;
of the State Engineer the aquifer is within a contracted and bounded channel such as would be evident in a buried channel. When the facts are not clear the State Engineer will assume that the water comes under the classification of "percolating water the course and boundaries of which are incapable of determination."

The section further provides for the adjudication of vested underground water rights. Following a petition from a claimant of vested water rights to adjudicate such rights and if the State Engineer finds justification for such procedure he proceeds to designate the area pursuant to section 4 of this Act. The procedure is then the same as set forth in the general water law (Secs. 18 to 36). In such designation the area designated can include all claimed underground water rights in any one drainage basin. The definition of "drainage basin" as used herein is interpreted to mean "ground water" drainage basin.

Section 10. Several provisions are set forth in this section and will be discussed in the order that they appear.

First, it provides that the State Engineer shall prescribe all necessary rules and regulations within the terms of this Act for administration purposes. The interpretations, rules and regulations herein set forth are prepared in conformity to this provision.

It is provided that the State Engineer may require certain information from all holders of permits and claimants of vested rights including water usage and average water is placed on.

That the State Engineer can conduct pumping tests to determine if over-pumping is infeasible or other hydrologic properties.

That the State Engineer shall determine if there is unappropriated water in the area and shall issue permits only if he finds that there is unappropriated water available.

It is provided that in each permit issued the right of the permittee shall be limited to a fixed quantity of water which may be obtained with a pumping limit which is not in excess of the maximum lift found feasible by the State Engineer at the time of the granting of the permit.

As this is interpreted by the State Engineer it was not the intention in granting a permit to set by reference a maximum lift as found to be reasonable by the State Engineer, but rather to designate specifically a quantity of water to be diverted from the well which the State Engineer feels can be obtained within a feasible or reasonable lift based on the known hydrologic factors. It is only when continued over-pumping occurs that the water table lowers beyond natural recovery. The Act is definite in that the State Engineer is to restrict over-pumping. This can be done if the safe yield of the ground-water basin has been determined and the area has been designated pursuant to section 4 of this Act. It is clear that if over-depletion is prevented that the lowering of the ground-water table would not ordinarily be unreasonable. However, it is apparent that in certain instances continued development of ground water in an area which is not over-depleted would cause the ground-water level to drop below a level from which it is not economical to pump any longer for certain crops grown in the area, even though the safe yield had not been reached. It will be the policy of the State Engineer to restrict further diversions when (1) the safe yield has been reached, and (2) when the water table has reached such a level...
CHAPTER XVII
Status of Applications Filed During the Period from July 1, 1946, to June 30, 1948

Following is a condensed statement giving the salient data in connection with applications filed during the period from July 1, 1946, to June 30, 1948, 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.


1948... 7-1-48...[...] 3. R. and Marion Smith: Underground (Las Vegas, Atacama District); Domestic; Approved October 14, 1944, for 0.2 c.f.s.
1948... 7-1-48...[...]
1948... 7-1-48...[...] 4. G. Graham et al.: Waste water; Irrigation; Approved April 26, 1947, for 0.2 c.f.s.
1948... 7-1-48...[...]
1948... 7-1-48...[...] 5. P. Barton: Underground (Las Vegas, Atacama District); Domestic; Approved April 26, 1947, for 0.2 c.f.s.
1948... 7-1-48...[...]
1948... 7-1-48...[...] 6. O. G. and R. M. LeBaron: Underground (Las Vegas, Atacama District); Domestic; Approved November 15, 1948, for 0.2 c.f.s.
1948... 7-1-48...[...]
1948... 7-1-48...[...] 7. H. S. and B. K. Johnson: Underground (Las Vegas, Atacama District); Domestic; Approved December 31, 1947, for 0.2 c.f.s.
1948... 7-1-48...[...]
1948... 7-1-48...[...] 8. R. M. and H. B. M. Johnson: Underground (Las Vegas, Atacama District); Domestic; Approved December 31, 1947, for 0.2 c.f.s.
1948... 7-1-48...[...]
1948... 7-1-48...[...] 9. A. S. and J. E. Smith: Underground (Las Vegas, Atacama District); Domestic; Approved December 31, 1947, for 0.2 c.f.s.
1948... 7-1-48...[...]
1948... 7-1-48...[...] 10. H. S. and B. K. Johnson: Underground (Las Vegas, Atacama District); Domestic; Approved December 31, 1947, for 0.2 c.f.s.
1948... 7-1-48...[...]
1948... 7-1-48...[...] 11. J. W. and S. B. Smith: Underground (Las Vegas, Atacama District); Domestic; Approved December 31, 1947, for 0.2 c.f.s.
1948... 7-1-48...[...]
1948... 7-1-48...[...] 12. H. S. and B. K. Johnson: Underground (Las Vegas, Atacama District); Domestic; Approved December 31, 1947, for 0.2 c.f.s.
1948... 7-1-48...[...]
1948... 7-1-48...[...] 13. H. S. and B. K. Johnson: Underground (Las Vegas, Atacama District); Domestic; Approved December 31, 1947, for 0.2 c.f.s.
1948... 7-1-48...[...]
1948... 7-1-48...[...] 14. H. S. and B. K. Johnson: Underground (Las Vegas, Atacama District); Domestic; Approved December 31, 1947, for 0.2 c.f.s.
1948... 7-1-48...[...]
1948... 7-1-48...[...] 15. H. S. and B. K. Johnson: Underground (Las Vegas, Atacama District); Domestic; Approved December 31, 1947, for 0.2 c.f.s.
1948... 7-1-48...[...]
1948... 7-1-48...[...] 16. H. S. and B. K. Johnson: Underground (Las Vegas, Atacama District); Domestic; Approved December 31, 1947, for 0.2 c.f.s.
1948... 7-1-48...[...]
1948... 7-1-48...[...] 17. H. S. and B. K. Johnson: Underground (Las Vegas, Atacama District); Domestic; Approved December 31, 1947, for 0.2 c.f.s.
1948... 7-1-48...[...]
1948... 7-1-48...[...] 18. H. S. and B. K. Johnson: Underground (Las Vegas, Atacama District); Domestic; Approved December 31, 1947, for 0.2 c.f.s.
1948... 7-1-48...[...]
1948... 7-1-48...[...] 19. H. S. and B. K. Johnson: Underground (Las Vegas, Atacama District); Domestic; Approved December 31, 1947, for 0.2 c.f.s.
1948... 7-1-48...[...]
1948... 7-1-48...[...] 20. H. S. and B. K. Johnson: Underground (Las Vegas, Atacama District); Domestic; Approved December 31, 1947, for 0.2 c.f.s.
1948... 7-1-48...[...]
1948... 7-1-48...[...] 21. H. S. and B. K. Johnson: Underground (Las Vegas, Atacama District); Domestic; Approved December 31, 1947, for 0.2 c.f.s.
1948... 7-1-48...[...]
1948... 7-1-48...[...] 22. H. S. and B. K. Johnson: Underground (Las Vegas, Atacama District); Domestic; Approved December 31, 1947, for 0.2 c.f.s.
1948... 7-1-48...[...]
1948... 7-1-48...[...] 23. H. S. and B. K. Johnson: Underground (Las Vegas, Atacama District); Domestic; Approved December 31, 1947, for 0.2 c.f.s.
1948... 7-1-48...[...]
1948... 7-1-48...[...] 24. H. S. and B. K. Johnson: Underground (Las Vegas, Atacama District); Domestic; Approved December 31, 1947, for 0.2 c.f.s.
1948... 7-1-48...[...]
1948... 7-1-48...[...] 25. H. S. and B. K. Johnson: Underground (Las Vegas, Atacama District); Domestic; Approved December 31, 1947, for 0.2 c.f.s.
1948... 7-1-48...[...]
1948... 7-1-48...[...] 26. H. S. and B. K. Johnson: Underground (Las Vegas, Atacama District); Domestic; Approved December 31, 1947, for 0.2 c.f.s.
1948... 7-1-48...[...]
1948... 7-1-48...[...] 27. H. S. and B. K. Johnson: Underground (Las Vegas, Atacama District); Domestic; Approved December 31, 1947, for 0.2 c.f.s.
1948... 7-1-48...[...]
1948... 7-1-48...[...] 28. H. S. and B. K. Johnson: Underground (Las Vegas, Atacama District); Domestic; Approved December 31, 1947, for 0.2 c.f.s.
1948... 7-1-48...[...]
1948... 7-1-48...[...] 29. H. S. and B. K. Johnson: Underground (Las Vegas, Atacama District); Domestic; Approved December 31, 1947, for 0.2 c.f.s.
1948... 7-1-48...[...]
1948... 7-1-48...[...] 30. H. S. and B. K. Johnson: Underground (Las Vegas, Atacama District); Domestic; Approved December 31, 1947, for 0.2 c.f.s.

*Unrelated application. D. R. Good standing.
11741. 8-29-46. Wool, R. Weaver: Natural Spring; Stockwatering and domestic; Approved February 26, 1947, for 2.5 c.f.s. O. R. Q. G. B.

11742. 8-30-46. D. E. Barfield: Natural Spring; Stockwatering and domestic; Approved November 14, 1947, for 0.93 c.f.s. O. R. Q. G. B.

11743. 9-1-46. J. A. Hall and M. A. Hall: Natural Spring; Stockwatering and domestic; Withdrawn by applicant April 29, 1947.

11744. 9-4-46. J. B. Martin and M. A. Martin: Natural Spring; Stockwatering and domestic; Application withdrawn, refused, and domestic; Denied June 15, 1947, because of failure to file corrected application within statutory time.

11745. 9-5-46. John J. Fadden: Groundwater and domestic; Quasi-municipal; Application withdrawn; No action.

11746. 9-11-46. Albert Olsson and J. E. Bar: Livestock; Power for mining and milling; Application withdrawn; No action.

11747. 9-13-46. D. V. Galen: Stockwatering and domestic; Approved March 14, 1947, for 0.48 c.f.s. G. B. Q. R.

11748. 9-16-46. R. H. Humphrey, E. J. Hymon, and Stanley Chisholm: Underground; Stockwatering; Application withdrawn.

11749. 9-16-46. R. H. Humphrey, E. J. Hymon, and Stanley Chisholm: Underground; Stockwatering; Application withdrawn.

11750. 9-16-46. Robert W. Harris and Millard H. Peterson: Tonto Sarp; Domestic; Application withdrawn; Approved August 14, 1947, for 2.00 c.f.s. G. B.

11751. 9-17-46. One Bivona Bar Castile Co.: Dry Channel; Stockwatering; Application withdrawn; No action.

11752. 9-17-46. One Bivona Bar Castile Co.: Dry Channel and Drainage; Stockwatering; Application withdrawn; Approved March 18, 1947, for 4.00 c.f.s. O. R. Q. G. B.

11753. 9-17-46. One Elwood Bar Castile Co.: Underground; Stockwatering; Application withdrawn; Approved March 18, 1947, for 0.00 c.f.s. O. R. Q. G. B.

11754. 9-17-46. One Elwood Bar Castile Co.: Underground; Stockwatering; Application withdrawn; Approved March 18, 1947, for 0.00 c.f.s. O. R. Q. G. B.

11755. 9-19-46. Jesse B. and Alexandre Bird: Underground (Las Vegas Artesian Basin); Irrigation and domestic; Application withdrawn; Approved April 11, 1947, for 1.0 c.f.s. O. R. Q. G. B.

11756. 9-26-46. Pete Meade: Trunk Canyon Creek and tributaries; Irrigation and domestic; Application withdrawn; No action.

11757. 9-27-46. Howard D. and G. W. Smith: Panaca Creek; Irrigation; Application withdrawn; Approved February 10, 1947, for 1.5 c.f.s. O. R. Q. G. B.

11758. 10-4-46. Beroline Arsenault: Underground; Stockwatering; Application withdrawn; No action.

11759. 10-4-46. Robert B. and Doris Arsenault: Underground; Stockwatering; Application withdrawn; No action.

11760. 10-4-46. Robert B. and Doris Arsenault: Underground; Stockwatering; Application withdrawn; No action.

11761. 10-4-46. Robert B. and Doris Arsenault: Underground; Irrigation; Application withdrawn; No action.

11762. 10-4-46. Y. V. Greenwell: Thunder Mountain Spring; Stockwatering; Application withdrawn; Approved November 11, 1947, for 4.00 c.f.s. O. R. Q. G. B.

11763. 10-4-46. Y. V. Greenwell: Thunder Mountain Spring; Stockwatering; Application withdrawn; Approved September 17, 1947, for 4.00 c.f.s. O. R. Q. G. B.

11764. 10-4-46. D. H. Hinckley and W. R. Goodwin: Groundwater (Tunnel No. 9); To change point of diversion and place of use; Application withdrawn; Approved February 17, 1947, for 0.00 c.f.s. O. R. Q. G. B.

11765. 10-10-46. Retha A. John F. and William G. Gilmore: Underground (Las Vegas Artesian Basin); Irrigation and domestic; Application withdrawn; Approved February 17, 1947, for 2.00 c.f.s. G. B. Q. R.

11766. 10-10-46. Retha A. John F. and William G. Gilmore: Underground (Las Vegas Artesian Basin); Irrigation and domestic; Application withdrawn; Approved February 17, 1947, for 2.00 c.f.s. G. B. Q. R.

11767. 10-14-46. R. J. Cole: Underground; Application withdrawn; Approved March 11, 1947; for 2.00 c.f.s. O. R. Q. G. B.

11768. 10-15-46. J. C. Harrison: Underground (Las Vegas Artesian Basin); Irrigation; Application withdrawn; G. B. Q. R.

11769. 10-24-46. R. J. Cole: Underground (Las Vegas Artesian Basin); Quasi-municipal; Approved February 14, 1947, for 2.5 c.f.s. O. R. Q. G. B.

11770. 10-24-46. R. J. Cole: Underground; Stockwatering; Approved Sept. 12, 1947, for 0.5 c.f.s. O. R. Q. G. B.

11771. 10-29-46. W. L. Peterson: Upper Valley Valley Spring; Irrigation; Application withdrawn; Approved June 15, 1947, for 0.93 c.f.s. O. R. Q. G. B.

11772. 10-30-46. Colorado River Irrigation District: Underground (Las Vegas Artesian Basin); Irrigation and domestic; Application withdrawn; No action. Approved February 14, 1947, for 2.5 c.f.s. O. R. Q. G. B.

*Protested application. G. S. Good standing.
REPORT OF STATE ENGINEER

11543. 7-1-47. Gordon G. Hair: Underground: To change the point of diversion; irrigation and domestic: No action.

11544. 7-1-47. Reorganized Silver King Mining Co.: Underground: To change the point of diversion; irrigation and domestic: Approved June 1, 1947, for 0.1 cfs.

11545. 7-2-47. Sierra Pacific Power Company: Trucks River: To change the point of diversion; irrigation and domestic: Approved June 1, 1947, for 0.1 cfs.

11546. 7-8-47. C. B. Mannerson: Hilltop Creek: To change the point of diversion; and place of use: Irrigation: Approved February 18, 1947, for 0.05 cfs.

11547. 7-10-47. C. B. Mannerson: Hilltop Creek: To change the point of diversion; irrigation and domestic: Approved June 1, 1947, for 0.05 cfs.

11548. 7-10-47. H. M. Baugh: Lake Tahoe: Domestic: No action.


11550. 7-18-47. G. W. D. Gurney: Underground (Las Vegas Artesian Basin): Irrigation and domestic: Approved November 18, 1947, for 0.5 cfs.

11551. 7-18-47. V. W. Jones: Underground (Las Vegas Artesian Basin): Irrigation and domestic: Approved December 9, 1947, for 0.1 cfs.


11553. 7-17-47. Paul Parenti: West N. 1/4, E. 1/4, Block 25, Section 18: Approved December 9, 1947, for 0.5 cfs.

11554. 7-17-47. F. J. B. Willey Co., Inc.: Gunnell Spring: Mining, milling, and domestic: Approved January 1, 1948, because of failure to file affidavit.

11555. 7-18-47. Town of Gardnerville: Underground: Municipal and domestic: Approved March 16, 1948, for 0.5 cfs.

11556. 7-18-47. C. B. Mannerson: Hilltop Creek: Stockwatering; Cornfield, Kern and the Incline; irrigation and domestic: No action.


11558. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11559. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11560. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11561. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11562. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11563. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11564. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11565. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11566. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11567. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11568. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11569. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11570. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11571. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11572. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11573. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11574. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11575. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11576. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11577. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11578. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11579. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11580. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11581. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11582. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11583. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11584. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11585. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11586. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11587. 7-30-47. H. F. Reiss: Willow Spring: Stockwatering; Cornfield, Kern, and the Incline; irrigation and domestic: No action.

11588. 7-30-47. Albert H. Agra: Dry Creek: Irrigation: No action.

11589. 7-30-47. Albert H. Agra: Dry Creek: Irrigation: No action.

11590. 7-30-47. Albert H. Agra: Dry Creek: Irrigation: No action.

11591. 7-30-47. Albert H. Agra: Dry Creek: Irrigation: No action.

11592. 7-30-47. Albert H. Agra: Dry Creek: Irrigation: No action.

11593. 7-30-47. Albert H. Agra: Dry Creek: Irrigation: No action.

11594. 7-30-47. Albert H. Agra: Dry Creek: Irrigation: No action.

11595. 7-30-47. Albert H. Agra: Dry Creek: Irrigation: No action.

11596. 7-30-47. Albert H. Agra: Dry Creek: Irrigation: No action.

11597. 7-30-47. Albert H. Agra: Dry Creek: Irrigation: No action.

11598. 7-30-47. Albert H. Agra: Dry Creek: Irrigation: No action.

11599. 7-30-47. Albert H. Agra: Dry Creek: Irrigation: No action.

11600. 7-30-47. Albert H. Agra: Dry Creek: Irrigation: No action.

11601. 7-30-47. Albert H. Agra: Dry Creek: Irrigation: No action.

11602. 7-30-47. Albert H. Agra: Dry Creek: Irrigation: No action.

11603. 7-30-47. Albert H. Agra: Dry Creek: Irrigation: No action.

11604. 7-30-47. Albert H. Agra: Dry Creek: Irrigation: No action.
Forgot to add application information.
11034. 5-30-47. Hay Van Horne; Underground; Irrigation; No action.
11035. 5-31-47. Lawrence P. Warrick and Lephatha Warrick; Underground; (Las Vegas Artesian Basin); Irrigation and domestic; Approved February 14, 1944, for 1 A.C. G. S.

11036. 5-31-47. Paul Allman; Underground; (Las Vegas Artesian Basin); Irrigation and domestic; Approved February 14, 1944, for 1 A.C. G. S.
11037. 5-31-47. Paul Allman; Underground; (Las Vegas Artesian Basin); Irrigation and domestic; Approved February 14, 1944, for 1 A.C. G. S.
11038. 5-31-47. Paul Allman; Underground; (Las Vegas Artesian Basin); Irrigation and domestic; Approved February 14, 1944, for 1 A.C. G. S.
11039. 5-31-47. Paul Allman; Underground; (Las Vegas Artesian Basin); Irrigation and domestic; Approved February 14, 1944, for 1 A.C. G. S.
11040. 5-31-47. Paul Allman; Underground; (Las Vegas Artesian Basin); Irrigation and domestic; Approved February 14, 1944, for 1 A.C. G. S.
11041. 5-31-47. Paul Allman; Underground; (Las Vegas Artesian Basin); Irrigation and domestic; Approved February 14, 1944, for 1 A.C. G. S.
11042. 5-31-47. Paul Allman; Underground; (Las Vegas Artesian Basin); Irrigation and domestic; Approved February 14, 1944, for 1 A.C. G. S.
11043. 5-31-47. Paul Allman; Underground; (Las Vegas Artesian Basin); Irrigation and domestic; Approved February 14, 1944, for 1 A.C. G. S.
11044. 5-31-47. Paul Allman; Underground; (Las Vegas Artesian Basin); Irrigation and domestic; Approved February 14, 1944, for 1 A.C. G. S.
11045. 5-31-47. Paul Allman; Underground; (Las Vegas Artesian Basin); Irrigation and domestic; Approved February 14, 1944, for 1 A.C. G. S.
11046. 5-31-47. Paul Allman; Underground; (Las Vegas Artesian Basin); Irrigation and domestic; Approved February 14, 1944, for 1 A.C. G. S.
11047. 5-31-47. Paul Allman; Underground; (Las Vegas Artesian Basin); Irrigation and domestic; Approved February 14, 1944, for 1 A.C. G. S.
11048. 5-31-47. Paul Allman; Underground; (Las Vegas Artesian Basin); Irrigation and domestic; Approved February 14, 1944, for 1 A.C. G. S.
11049. 5-31-47. Paul Allman; Underground; (Las Vegas Artesian Basin); Irrigation and domestic; Approved February 14, 1944, for 1 A.C. G. S.
11050. 5-31-47. Paul Allman; Underground; (Las Vegas Artesian Basin); Irrigation and domestic; Approved February 14, 1944, for 1 A.C. G. S.
11051. 5-31-47. Paul Allman; Underground; (Las Vegas Artesian Basin); Irrigation and domestic; Approved February 14, 1944, for 1 A.C. G. S.
11052. 5-31-47. Paul Allman; Underground; (Las Vegas Artesian Basin); Irrigation and domestic; Approved February 14, 1944, for 1 A.C. G. S.
11053. 5-31-47. Paul Allman; Underground; (Las Vegas Artesian Basin); Irrigation and domestic; Approved February 14, 1944, for 1 A.C. G. S.
11054. 5-31-47. Paul Allman; Underground; (Las Vegas Artesian Basin); Irrigation and domestic; Approved February 14, 1944, for 1 A.C. G. S.
11055. 5-31-47. Paul Allman; Underground; (Las Vegas Artesian Basin); Irrigation and domestic; Approved February 14, 1944, for 1 A.C. G. S.
11056. 5-31-47. Paul Allman; Underground; (Las Vegas Artesian Basin); Irrigation and domestic; Approved February 14, 1944, for 1 A.C. G. S.
11057. 5-31-47. Paul Allman; Underground; (Las Vegas Artesian Basin); Irrigation and domestic; Approved February 14, 1944, for 1 A.C. G. S.

11058. 5-31-47. Van Horn and Sturtevant; Underground; Irrigation; No action.
11059. 5-31-47. Van Horn and Sturtevant; Underground; Irrigation; No action.
11060. 5-31-47. Van Horn and Sturtevant; Underground; Irrigation; No action.
11061. 5-31-47. Van Horn and Sturtevant; Underground; Irrigation; No action.
11062. 5-31-47. Van Horn and Sturtevant; Underground; Irrigation; No action.

*Protested application. G. S. Good standing.
<table>
<thead>
<tr>
<th>Date</th>
<th>Place</th>
<th>Water Use</th>
<th>Quantity (Acre Feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.15.23</td>
<td>...</td>
<td>Underground</td>
<td>3.25</td>
</tr>
<tr>
<td>11.16.23</td>
<td>...</td>
<td>Underground</td>
<td>3.25</td>
</tr>
</tbody>
</table>

*Protected application. G. B. Good standing.
11710. 11-10-44. Emil Haines, Wild Horse Spring; Irrigation and domestic; Approved March 12, 1941, for 4.00 a.c.a.

11711. 11-11-44. Mertie L. Crossman; Six Mile Spring; Stockwatering and domestic; Approved Aug. 11, 1941, for 1.00 a.c.a.

11712. 11-12-44. W. A. Wooten; Big Spring Lick; Underground; Irrigation and domestic; Approved April 11, 1941, for 6.00 a.c.a.

11713. 11-13-44. E. A. S. Little; Black Creek; Underground; Stockwatering and domestic; Approved March 12, 1941, for 1.00 a.c.a.

11714. 11-14-44. Floy C. Cash; Underground; Stockwatering and domestic; Approved March 12, 1941, for 1.00 a.c.a.

11715. 11-15-44. Fred J. Sneed; Underground; Stockwatering and domestic; Approved March 12, 1941, for 1.00 a.c.a.

11716. 11-16-44. John J. Wooten; Underground; Stockwatering and domestic; Approved March 12, 1941, for 1.00 a.c.a.

11717. 11-17-44. I. C. H. Meeker; Waterway; Blackwatering; Approved March 12, 1941, for 1.00 a.c.a.

11718. 11-18-44. C. S. D. C. Goodson; Underground; Irrigation and domestic; Approved April 11, 1941, for 0.25 a.c.a.

11719. 11-19-44. E. E. Haines; Underground; Irrigation and domestic; Approved March 12, 1941, for 1.00 a.c.a.

11720. 11-20-44. J. T. Williams; Underground; Irrigation and domestic; Approved March 12, 1941, for 1.00 a.c.a.

11721. 11-21-44. H. E. H. McCracken; Underground; Irrigation and domestic; Approved March 12, 1941, for 1.00 a.c.a.

11722. 11-22-44. P. F. B. McCracken; Underground; Irrigation and domestic; Approved March 12, 1941, for 1.00 a.c.a.

11723. 11-23-44. F. H. McCracken; Underground; Irrigation and domestic; Approved March 12, 1941, for 1.00 a.c.a.

11724. 11-24-44. T. A. McCracken; Underground; Irrigation and domestic; Approved March 12, 1941, for 1.00 a.c.a.

11725. 11-25-44. H. H. H. McCracken; Underground; Irrigation and domestic; Approved March 12, 1941, for 1.00 a.c.a.

11726. 11-26-44. A. E. McCracken; Underground; Irrigation and domestic; Approved March 12, 1941, for 1.00 a.c.a.

11727. 11-27-44. H. H. McCracken; Underground; Irrigation and domestic; Approved March 12, 1941, for 1.00 a.c.a.

11728. 11-28-44. J. W. McCracken; Underground; Irrigation and domestic; Approved March 12, 1941, for 1.00 a.c.a.

11729. 11-29-44. T. T. McCracken; Underground; Irrigation and domestic; Approved March 12, 1941, for 1.00 a.c.a.

11730. 11-30-44. E. B. McCracken; Underground; Irrigation and domestic; Approved March 12, 1941, for 1.00 a.c.a.

11731. 11-31-44. J. H. and D. A. Undersand; Underground; Irrigation and domestic; Approved March 12, 1941, for 1.00 a.c.a.

11732. 12-01-44. C. S. Goodson; Underground; Irrigation and domestic; Approved March 12, 1941, for 1.00 a.c.a.

11733. 12-02-44. J. D. C. Goodson; Underground; Irrigation and domestic; Approved March 12, 1941, for 1.00 a.c.a.

11734. 12-03-44. E. C. Goodson; Underground; Irrigation and domestic; Approved March 12, 1941, for 1.00 a.c.a.

11735. 12-04-44. C. S. Goodson; Underground; Irrigation and domestic; Approved March 12, 1941, for 1.00 a.c.a.

11736. 12-05-44. J. D. C. Goodson; Underground; Irrigation and domestic; Approved March 12, 1941, for 1.00 a.c.a.

11737. 12-06-44. E. C. Goodson; Underground; Irrigation and domestic; Approved March 12, 1941, for 1.00 a.c.a.
1234. 3-15-48. Mrs. C. A. McVear: Underground; Stockwatering and domestic; No action.
1235. 3-19-48. S. A. Brown: Underground; Stockwatering and domestic; No action.
1236. 3-19-48. Perley C. Supple: Underground; Stockwatering and domestic; No action.
1240. 3-15-48. L. B. Smith: Underground; Stockwatering and domestic; No action.
1104 - 9-31-45... James E. Denton; Singlet Creek; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1105 - 9-31-45... James E. Denton; Kilnery Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1106 - 9-31-45... James E. Denton; Kilnery Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1107 - 9-31-45... James E. Denton; Kirkley Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1108 - 9-31-45... James E. Denton; Kirkley Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1109 - 9-31-45... James E. Denton; Kirkley Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1110 - 9-31-45... James E. Denton; Kirkley Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1111 - 9-31-45... James E. Denton; Kirkley Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1112 - 9-31-45... James E. Denton; Kirkley Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1113 - 9-31-45... James E. Denton; Kirkley Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1114 - 9-31-45... James E. Denton; Kirkley Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1115 - 9-31-45... James E. Denton; Kirkley Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1116 - 9-31-45... James E. Denton; Kirkley Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1117 - 9-31-45... James E. Denton; Kirkley Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1118 - 9-31-45... James E. Denton; Kirkley Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1119 - 9-31-45... James E. Denton; Kirkley Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1120 - 9-31-45... James E. Denton; Kirkley Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1121 - 9-31-45... James E. Denton; Kirkley Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1122 - 9-31-45... James E. Denton; Kirkley Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1123 - 9-31-45... James E. Denton; Kirkley Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1124 - 9-31-45... James E. Denton; Kirkley Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1125 - 9-31-45... James E. Denton; Kirkley Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1126 - 9-31-45... James E. Denton; Kirkley Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1127 - 9-31-45... James E. Denton; Kirkley Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1128 - 9-31-45... James E. Denton; Kirkley Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1129 - 9-31-45... James E. Denton; Kirkley Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1130 - 9-31-45... James E. Denton; Kirkley Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1131 - 9-31-45... James E. Denton; Kirkley Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1132 - 9-31-45... James E. Denton; Kirkley Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.

1133 - 9-31-45... James E. Denton; Kirkley Spring; No; 1; Stockwatering; Denied April 3, 1946, on the grounds that the approved Order would be detrimental to existing rights.
13011. 2-3-41. Molskeben Products Co.; Underground Mining, crushing, milling and domestic. Granted September 18, 1917, because of failure of applicant to comply with provisions of permit.

13012. 2-6-43. J.G. Smith Co.; Underground Mining, milling and domestic. Granted March 27, 1944, because of failure of applicant to comply with provisions of permit.

13017. 2-10-44. Harry W. Smith; Undergrond Logging, milling and domestic. Granted April 14, 1944, on the ground that the grant of this application would be detrimental to public interest.

13018. 2-14-44. J.J. Smith; Undergrond Logging, milling and domestic. Granted April 14, 1944, on the ground that the grant of this application would be detrimental to public interest.

13019. 2-14-44. Harry W. Smith; Undergrond Logging, milling and domestic. Granted April 14, 1944, on the ground that the grant of this application would be detrimental to public interest.

*Omitted in previous Biennial Reports.*
CHAPTER XVIII

Status of Applications Filed Prior to July 1, 1946

Following is a condensed statement giving the salient data in connection with applications filed prior to July 1, 1946, upon which action has been taken during 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.

1946...

...1-11. Archie B. Chambers, Farmers Creek: Irrigation and domestic: Denied June 1, 1946, on the ground that there is no unappropriated water in the reach.
...1-11. Archie B. Chambers, Farmers Creek: Irrigation and domestic: Denied June 1, 1946, on the ground that there is no unappropriated water in the reach.
...1-11. Archie B. Chambers, Farmers Creek: Irrigation and domestic: Denied June 1, 1946, on the ground that there is no unappropriated water in the reach.
...5-19-12. J. E. Atkins and Martin Atkins, Upland spring: Irrigation and domestic: Denied May 19, 1911, because of failure of applicant to comply with provisions of permit.
...5-19-12. J. E. Atkins and Martin Atkins, Upland spring: Irrigation and domestic: Denied May 19, 1911, because of failure of applicant to comply with provisions of permit.
...5-19-12. J. E. Atkins and Martin Atkins, Upland spring: Irrigation and domestic: Denied May 19, 1911, because of failure of applicant to comply with provisions of permit.
...3-5-13. C. W. Chandler, Sheridan Creek: Irrigation and domestic: Cancelled August 15, 1946, because of failure of applicant to comply with provisions of permit.
...3-5-13. C. W. Chandler, Sheridan Creek: Irrigation and domestic: Cancelled August 15, 1946, because of failure of applicant to comply with provisions of permit.
...3-5-13. C. W. Chandler, Sheridan Creek: Irrigation and domestic: Cancelled August 15, 1946, because of failure of applicant to comply with provisions of permit.
...10-14-10. Alva B. Johnson, White River Dam: Domestic and stockwatering: Denied June 1, 1946, on the ground that there is no unappropriated water in the reach.
...10-14-10. Alva B. Johnson, White River Dam: Domestic and stockwatering: Denied June 1, 1946, on the ground that there is no unappropriated water in the reach.
...10-14-10. Alva B. Johnson, White River Dam: Domestic and stockwatering: Denied June 1, 1946, on the ground that there is no unappropriated water in the reach.
...10-14-10. Alva B. Johnson, White River Dam: Domestic and stockwatering: Denied June 1, 1946, on the ground that there is no unappropriated water in the reach.
...8-8-10. B. M. Tupper, Ramona Dam: Domestic and stockwatering: Denied June 1, 1946, on the ground that there is no unappropriated water in the reach.
...8-8-10. B. M. Tupper, Ramona Dam: Domestic and stockwatering: Denied June 1, 1946, on the ground that there is no unappropriated water in the reach.
...8-8-10. B. M. Tupper, Ramona Dam: Domestic and stockwatering: Denied June 1, 1946, on the ground that there is no unappropriated water in the reach.
...8-8-10. B. M. Tupper, Ramona Dam: Domestic and stockwatering: Denied June 1, 1946, on the ground that there is no unappropriated water in the reach.
...8-8-10. B. M. Tupper, Ramona Dam: Domestic and stockwatering: Denied June 1, 1946, on the ground that there is no unappropriated water in the reach.
...8-8-10. B. M. Tupper, Ramona Dam: Domestic and stockwatering: Denied June 1, 1946, on the ground that there is no unappropriated water in the reach.
...8-8-10. B. M. Tupper, Ramona Dam: Domestic and stockwatering: Denied June 1, 1946, on the ground that there is no unappropriated water in the reach.
...8-8-10. B. M. Tupper, Ramona Dam: Domestic and stockwatering: Denied June 1, 1946, on the ground that there is no unappropriated water in the reach.
...8-8-10. B. M. Tupper, Ramona Dam: Domestic and stockwatering: Denied June 1, 1946, on the ground that there is no unappropriated water in the reach.
...8-8-10. B. M. Tupper, Ramona Dam: Domestic and stockwatering: Denied June 1, 1946, on the ground that there is no unappropriated water in the reach.
...8-8-10. B. M. Tupper, Ramona Dam: Domestic and stockwatering: Denied June 1, 1946, on the ground that there is no unappropriated water in the reach.
...8-8-10. B. M. Tupper, Ramona Dam: Domestic and stockwatering: Denied June 1, 1946, on the ground that there is no unappropriated water in the reach.

"Omitted in previous Biennial Reports."
104

EXTRACTION OF STATE ENGINEER

4567. 5-13-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4568. 5-14-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4569. 5-15-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4570. 5-16-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4571. 5-17-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4572. 5-18-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4573. 5-19-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4574. 5-20-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4575. 5-21-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4576. 5-22-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4577. 5-23-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4578. 5-24-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4579. 5-25-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4580. 5-26-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4581. 5-27-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4582. 5-28-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4583. 5-29-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4584. 5-30-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4585. 6-1-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4586. 6-2-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4587. 6-3-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4588. 6-4-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4589. 6-5-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4590. 6-6-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4591. 6-7-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4592. 6-8-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4593. 6-9-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4594. 6-10-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4595. 6-11-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4596. 6-12-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4597. 6-13-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4598. 6-14-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.

4599. 6-15-17. John E. Proctor, Red River; Irrigation and domestic; Denied June 1, 1948, on the grounds that there is no unappropriated water in the source.
REPORT OF STATE ENGINEER

2588.  5-18-18—Miguel River and Miguel Ditch: Las Vegas Creek; Irrigation and domestic: Denied June 1, 1916, on the grounds that there is no unappropriated water in the source.

2618.  7-10-18—Oasis Ditch: Virgin River; Irrigation; Denied December 16, 1908, on the grounds that there is no unappropriated water in the source.

2619.  7-10-18—A. S. Burcham: Dry Creek; Irrigation; Denied December 16, 1908, on the grounds that there is no unappropriated water in the source.

2620.  7-10-18—B. E. Beal, assigned to Blanche Hardy: Unassigned; Irrigation and domestic; Denied January 1, 1912, because of failure of applicant to comply with provisions of permit.

2621.  7-10-18—Blanche Hardy: Unassigned; Irrigation and domestic; Denied January 1, 1912, because of failure of applicant to comply with provisions of permit.

2622.  7-10-18—J. L. Pfeifer: Humboldt River; Irrigation and domestic; Denied January 1, 1912, on the grounds that there is no unappropriated water in the source.

2623.  7-10-18—Louis H. Hamer: Las Vegas Creek; Irrigation and domestic; Denied January 1, 1912, on the grounds that there is no unappropriated water in the source.

2624.  7-10-18—J. W. Smiley: Humboldt River; Irrigation, and domestic; Denied January 1, 1912, on the grounds that there is no unappropriated water in the source.

2625.  7-10-18—J. W. Smiley: Humboldt River; Irrigation, and domestic; Denied January 1, 1912, on the grounds that there is no unappropriated water in the source.

*Omitted in previous Biennial Reports.
CHAPTER XVIII

Status of Applications Filed Prior to July 1, 1946

Following is a condensed statement giving the salient data in connection with applications filed prior to July 1, 1946, upon which action has been taken during 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.


1927...10...1-11. Archie S. Chappell; Pecos River: Irrigation and domestic. Denied June 1, 1946, on the grounds that there is no unappropriated water in the stream.

1928...10...1-11. Archie S. Chappell: Pecos River: Irrigation and domestic. Denied June 1, 1946, on the grounds that there is no unappropriated water in the stream.


1936...12-30-12. Diana Murphy Mill: North Fork of Humboldt River: Domestic and irrigation. Denied December 19, 1946, on the grounds that there is no unappropriated water during the irrigation season.

1946...12-29-12. Diana Murphy Mill: North Fork of Humboldt River: Domestic and irrigation. Denied December 18, 1946, on the grounds that there is no unappropriated water during the irrigation season.

1951...10-20-12. Diana Murphy Mill: Pahropam Creek: Domestic and irrigation. Denied December 16, 1946, on the grounds that there is no unappropriated water during the irrigation season.

1956...10-20-12. Diana Murphy Mill: Pahropam Creek: Domestic and irrigation. Denied December 16, 1946, on the grounds that there is no unappropriated water during the irrigation season.

1960...3-19-12. Diana Murphy Mill: South Fork of Humboldt River: Domestic and irrigation. Denied December 16, 1946, on the grounds that there is no unappropriated water for irrigation purposes.

1961...3-19-12. Diana Murphy Mill: South Fork of Humboldt River: Domestic and irrigation. Denied December 16, 1946, on the grounds that there is no unappropriated water for irrigation purposes.

1962...3-19-12. Diana Murphy Mill: Main Pahropam Creek: Irrigation and domestic. Denied December 16, 1946, on the grounds that there is no unappropriated water for irrigation purposes.

1965...5-1-12. Diana Murphy Mill: Blyde Creek: Irrigation and domestic. Denied December 16, 1946, on the grounds that there is no unappropriated water for irrigation purposes.

1969...5-1-12. Diana Murphy Mill: Blyde Creek: Irrigation and domestic. Denied December 16, 1946, on the grounds that there is no unappropriated water for irrigation purposes.

1971...5-1-12. D. D. Corbett: Kirtzes Creek: Irrigation and domestic. Denied January 6, 1946, on the grounds that there is no unappropriated water for irrigation purposes.

1981...5-1-12. Elko Water & Light Corporation: Kirtzes Creek or Oparo and Humboldt River: Domestic and town supply purposes. Denied June 1, 1946, on the grounds that there is no unappropriated water in the Upper Humboldt River.

1972...5-1-12. C. H. White: White Creek: Irrigation and domestic. Denied January 6, 1946, on the grounds that there is no unappropriated water for irrigation purposes.


1985...3-14-11. Neil S. George: Mitchell Creek: Irrigation and domestic. Denied June 1, 1946, on the grounds that there is no unappropriated water in the Upper Humboldt River.

*Omitted in previous Biennial Reports.
1158. 8-11-45...James E. DuPre; Singel Creek; Stockwatering; Denied April 3, 1948, by the county, the proceeds to the area. Decision of the county. The approval thereof would be unlawful and the proceeds thereof would be injurious to existing rights.

1159. 8-11-45...James E. DuPre; Kilroy Spring; 1 d. Stockwatering; Denied by the county. The approval thereof would be unlawful.

1160. 8-11-45...James E. DuPre; Kilroy Spring; 1 d. Stockwatering; Denied by the county. The approval thereof would be unlawful.

1161. 8-11-45...James E. DuPre; Singel Creek; Stockwatering; Approved September 8, 1948, for 2,928 c.f.s. G.R.

1162. 8-11-45...James E. DuPre; Singel Creek; Stockwatering; Approved September 8, 1948, for 2,928 c.f.s. G.R.

1163. 8-11-45...James E. DuPre; Singel Creek; Stockwatering; Approved September 8, 1948, for 2,928 c.f.s. G.R.

1164. 8-11-45...James E. DuPre; Singel Creek; Stockwatering; Approved September 8, 1948, for 2,928 c.f.s. G.R.

1165. 8-11-45...James E. DuPre; Singel Creek; Stockwatering; Approved September 8, 1948, for 2,928 c.f.s. G.R.

1166. 8-11-45...James E. DuPre; Singel Creek; Stockwatering; Approved September 8, 1948, for 2,928 c.f.s. G.R.

1167. 8-11-45...James E. DuPre; Singel Creek; Stockwatering; Approved September 8, 1948, for 2,928 c.f.s. G.R.

1168. 8-11-45...James E. DuPre; Singel Creek; Stockwatering; Approved September 8, 1948, for 2,928 c.f.s. G.R.

1169. 8-11-45...James E. DuPre; Singel Creek; Stockwatering; Approved September 8, 1948, for 2,928 c.f.s. G.R.

1170. 8-11-45...James E. DuPre; Singel Creek; Stockwatering; Approved September 8, 1948, for 2,928 c.f.s. G.R.

1171. 8-11-45...James E. DuPre; Singel Creek; Stockwatering; Approved September 8, 1948, for 2,928 c.f.s. G.R.

1172. 8-11-45...James E. DuPre; Singel Creek; Stockwatering; Approved September 8, 1948, for 2,928 c.f.s. G.R.

G.S. Good standing.
REPORT OF STATE ENGINEER

Mrs. C. A. McVay: Underground; Stockwatering and domestic; No action.

S. N. Bobbin: Underground; Stockwatering and domestic; No action.

E. H. Remley: Underground; Stockwatering; No action.

J. H. Jones: Underground; Stockwatering; No action.

M. E. Farmer: Underground; Stockwatering; No action.

R. H. Rains: Underground; Stockwatering; No action.

C. E. Baker: Underground; Stockwatering; No action.

G. E. Day: Underground; Promised; No action.

M. E. Farmer: Underground; Promised; No action.

J. H. Jones: Underground; Promised; No action.

J. H. Jones: Underground; Information; No action.

R. H. Rains: Underground; Information; No action.

S. N. Bobbin: Underground; Information; No action.

M. E. Farmer: Underground; Information; No action.

R. H. Rains: Underground; Information; No action.

J. H. Jones: Underground; Information; No action.

M. E. Farmer: Underground; Information; No action.

R. H. Rains: Underground; Information; No action.

J. H. Jones: Underground; Information; No action.

G. E. Day: Underground; Information; No action.

The Roman Catholic Bishop of Rock; Underground; Irrigation, domestic, and fire protection; No action.

Central Marianites; Underground; Domestic and commercial; No action.

A. A. Brown: Underground; Irrigation; No action.

Frank L. Mann: Underground; Stockwatering and domestic; No action.

H. R. Kolkmeier: Underground; Irrigation and domestic; No action.

Walter B. Kolkmeier: Underground; Stockwatering and domestic; No action.

Andrew Sturtevant: Underground; Stockwatering and domestic; No action.

Andrew C. Burt: Underground; Stockwatering; No action.

John H. Whisman: Underground; Stockwatering and domestic; No action.

W. H. Kolkmeier: Underground; Domestic and commercial; No action.

W. F. Keen: Underground; No action.

Warren Kimbrough: Underground; Stockwatering; No action.

G. E. Day: Underground; Stockwatering; No action.

W. E. D. Allgood: Underground; Stockwatering; No action.

J. W. Williams: Underground; Stockwatering; No action.

George E. Day: Underground; Stockwatering; No action.

C. J. Day: Underground; Irrigation and domestic; No action.

C. J. Day: Underground; Irrigation and domestic; No action.

W. E. D. Allgood: Underground; Stockwatering; No action.

B. B. Mular: Underground; Stockwatering and domestic; No action.

J. D. Clark, Allen H. Clark, William Evers, Clark and John Clarks: Underground; Irrigation and domestic; No action.

E. R. Price: Unmaned; Stockwatering and domestic; No action.

*Protracted application. G.R. Good standing.
<table>
<thead>
<tr>
<th>Month and Year</th>
<th>Rainwater Administration</th>
<th>Total</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 1915</td>
<td>$225.00</td>
<td>$27.00</td>
<td>$252.00</td>
</tr>
<tr>
<td>August</td>
<td>$200.00</td>
<td>$15.00</td>
<td>$215.00</td>
</tr>
<tr>
<td>September</td>
<td>$230.00</td>
<td>$15.00</td>
<td>$245.00</td>
</tr>
<tr>
<td>October</td>
<td>$200.00</td>
<td>$20.00</td>
<td>$220.00</td>
</tr>
<tr>
<td>November</td>
<td>$215.00</td>
<td>$30.00</td>
<td>$245.00</td>
</tr>
<tr>
<td>December</td>
<td>$150.00</td>
<td>$30.00</td>
<td>$180.00</td>
</tr>
<tr>
<td><strong>Balance January 1, 1916</strong></td>
<td><strong>$850.00</strong></td>
<td><strong>$107.25</strong></td>
<td><strong>$957.25</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Month and Year</th>
<th>Rainwater Administration</th>
<th>Total</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>$225.00</td>
<td>$20.00</td>
<td>$245.00</td>
</tr>
<tr>
<td>February</td>
<td>$150.00</td>
<td>$20.00</td>
<td>$170.00</td>
</tr>
<tr>
<td>March</td>
<td>$200.00</td>
<td>$30.00</td>
<td>$230.00</td>
</tr>
<tr>
<td>April</td>
<td>$200.00</td>
<td>$20.00</td>
<td>$220.00</td>
</tr>
<tr>
<td>May</td>
<td>$230.00</td>
<td>$40.00</td>
<td>$270.00</td>
</tr>
<tr>
<td>June</td>
<td>$225.00</td>
<td>$30.00</td>
<td>$255.00</td>
</tr>
<tr>
<td>July</td>
<td>$215.00</td>
<td>$25.00</td>
<td>$240.00</td>
</tr>
<tr>
<td>August</td>
<td>$200.00</td>
<td>$35.00</td>
<td>$235.00</td>
</tr>
<tr>
<td>September</td>
<td>$200.00</td>
<td>$40.00</td>
<td>$240.00</td>
</tr>
<tr>
<td>October</td>
<td>$220.00</td>
<td>$35.00</td>
<td>$255.00</td>
</tr>
<tr>
<td>November</td>
<td>$150.00</td>
<td>$50.00</td>
<td>$200.00</td>
</tr>
<tr>
<td>December</td>
<td>$150.00</td>
<td>$40.00</td>
<td>$190.00</td>
</tr>
<tr>
<td><strong>Balance January 1, 1917</strong></td>
<td><strong>$850.00</strong></td>
<td><strong>$127.50</strong></td>
<td><strong>$977.50</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Month and Year</th>
<th>Rainwater Administration</th>
<th>Total</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>$225.00</td>
<td>$30.00</td>
<td>$255.00</td>
</tr>
<tr>
<td>February</td>
<td>$150.00</td>
<td>$50.00</td>
<td>$200.00</td>
</tr>
<tr>
<td>March</td>
<td>$200.00</td>
<td>$40.00</td>
<td>$240.00</td>
</tr>
<tr>
<td>April</td>
<td>$200.00</td>
<td>$50.00</td>
<td>$250.00</td>
</tr>
<tr>
<td>May</td>
<td>$230.00</td>
<td>$60.00</td>
<td>$290.00</td>
</tr>
<tr>
<td>June</td>
<td>$225.00</td>
<td>$50.00</td>
<td>$275.00</td>
</tr>
<tr>
<td>July</td>
<td>$215.00</td>
<td>$65.00</td>
<td>$280.00</td>
</tr>
<tr>
<td>August</td>
<td>$200.00</td>
<td>$70.00</td>
<td>$270.00</td>
</tr>
<tr>
<td>September</td>
<td>$200.00</td>
<td>$80.00</td>
<td>$280.00</td>
</tr>
<tr>
<td>October</td>
<td>$220.00</td>
<td>$85.00</td>
<td>$290.00</td>
</tr>
<tr>
<td>November</td>
<td>$150.00</td>
<td>$100.00</td>
<td>$250.00</td>
</tr>
<tr>
<td>December</td>
<td>$150.00</td>
<td>$90.00</td>
<td>$240.00</td>
</tr>
<tr>
<td><strong>Balance January 1, 1918</strong></td>
<td><strong>$850.00</strong></td>
<td><strong>$132.50</strong></td>
<td><strong>$982.50</strong></td>
</tr>
</tbody>
</table>
### Humboldt Water District

#### Statement of Receipts and Disbursements from July 1, 1946, to June 30, 1947

<table>
<thead>
<tr>
<th>Month and Year</th>
<th>Administration</th>
<th>Total</th>
<th>Receipts</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 1947</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balance</td>
<td></td>
<td></td>
<td>$4,040.50</td>
</tr>
<tr>
<td>July</td>
<td></td>
<td></td>
<td>$2,377.58</td>
</tr>
<tr>
<td>August</td>
<td></td>
<td></td>
<td>$1,663.05</td>
</tr>
<tr>
<td>October</td>
<td></td>
<td></td>
<td>$1,250.00</td>
</tr>
<tr>
<td>November</td>
<td></td>
<td></td>
<td>$1,500.00</td>
</tr>
<tr>
<td>December</td>
<td></td>
<td></td>
<td>$1,750.00</td>
</tr>
<tr>
<td>Balance</td>
<td></td>
<td></td>
<td>$13,727.59</td>
</tr>
</tbody>
</table>

#### January 1947

<table>
<thead>
<tr>
<th>Month</th>
<th>Administration</th>
<th>Total</th>
<th>Receipts</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td></td>
<td></td>
<td>$5,355.75</td>
</tr>
<tr>
<td>February</td>
<td></td>
<td></td>
<td>$5,700.99</td>
</tr>
<tr>
<td>March</td>
<td></td>
<td></td>
<td>$129,456.69</td>
</tr>
<tr>
<td>April</td>
<td></td>
<td></td>
<td>$154,456.69</td>
</tr>
<tr>
<td>May</td>
<td></td>
<td></td>
<td>$200,456.69</td>
</tr>
<tr>
<td>June</td>
<td></td>
<td></td>
<td>$200,456.69</td>
</tr>
<tr>
<td>July</td>
<td></td>
<td></td>
<td>$200,456.69</td>
</tr>
<tr>
<td>August</td>
<td></td>
<td></td>
<td>$200,456.69</td>
</tr>
<tr>
<td>September</td>
<td></td>
<td></td>
<td>$200,456.69</td>
</tr>
<tr>
<td>October</td>
<td></td>
<td></td>
<td>$200,456.69</td>
</tr>
<tr>
<td>November</td>
<td></td>
<td></td>
<td>$200,456.69</td>
</tr>
<tr>
<td>December</td>
<td></td>
<td></td>
<td>$200,456.69</td>
</tr>
<tr>
<td>Balance</td>
<td></td>
<td></td>
<td>$1,425,685.92</td>
</tr>
</tbody>
</table>

Note: The Humboldt Water District includes the Humboldt River, Little Humboldt River, Jolly Creek, Six Mile Creek, and Quinn River.
CHAPTER XIX
Certificates Issued Under Permits, 1946-1948

Following is a condensed statement giving the salient data in connection with Certificates Issued Under Permits during the biennium for the period July 1, 1946, to June 30, 1948, in the order of:

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.

2941. 5 11510. J. H. Casanova and O. B. Casanova (Alumni, 12356 S. Shafter St., Los Angeles). Under- ground water is Pumped from a Well No. 4: 31. Underground water is under ground water is: 12.345. 7-23-44
2942. 5 13091. E. U. Johnson and Lina Johnson (Alumni, 12356 S. Shafter St., Los Angeles). Under- ground water is Pumped from a Well No. 4: 31. Underground water is: 12.345. 7-23-44
2943. 5 13092. V. H. Greenwald. Sear Spring; Stock- watering: 3.892. 7-23-44
2947. 5 13102. J. H. Casanova and O. B. Casanova (Alumni, 12356 S. Shafter St., Los Angeles). Under- ground water is Pumped from a Well No. 4: 31. Underground water is: 12.345. 7-23-44
<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Location</th>
<th>Water Use</th>
<th>Source</th>
<th>Diversion Method</th>
<th>Total Water Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>1969-9-16</td>
<td>L. J. Leman, Land &amp; Livestock Company: 2000 acres near ( \frac{1}{4} ) mile</td>
<td>Hays County, TX</td>
<td>3,000 ft.</td>
<td>Groundwater</td>
<td>Groundwater</td>
<td>500 cfs</td>
</tr>
<tr>
<td>1970-9-17</td>
<td>H. F. Danyo, Land &amp; Livestock Company: 3,000 ft. near ( \frac{1}{4} ) mile</td>
<td>Llano County, TX</td>
<td>3,000 ft.</td>
<td>Groundwater</td>
<td>Groundwater</td>
<td>500 cfs</td>
</tr>
<tr>
<td>1971-9-18</td>
<td>R. E. Porter, Land &amp; Livestock Company: 2,000 ft. near ( \frac{1}{4} ) mile</td>
<td>Gillespie County, TX</td>
<td>3,000 ft.</td>
<td>Groundwater</td>
<td>Groundwater</td>
<td>500 cfs</td>
</tr>
<tr>
<td>1972-9-19</td>
<td>W. J. Ryan, Land &amp; Livestock Company: 1,500 ft. near ( \frac{1}{4} ) mile</td>
<td>Bandera County, TX</td>
<td>3,000 ft.</td>
<td>Groundwater</td>
<td>Groundwater</td>
<td>500 cfs</td>
</tr>
<tr>
<td>1973-9-20</td>
<td>J. D. Martinez, Land &amp; Livestock Company: 1,000 ft. near ( \frac{1}{4} ) mile</td>
<td>Comal County, TX</td>
<td>3,000 ft.</td>
<td>Groundwater</td>
<td>Groundwater</td>
<td>500 cfs</td>
</tr>
<tr>
<td>1974-9-21</td>
<td>G. L. Johnson, Land &amp; Livestock Company: 500 ft. near ( \frac{1}{4} ) mile</td>
<td>Guadalupe County, TX</td>
<td>3,000 ft.</td>
<td>Groundwater</td>
<td>Groundwater</td>
<td>500 cfs</td>
</tr>
</tbody>
</table>

Note: The table above represents a summary of water usage by various land and livestock companies in different counties, with the water sources being mainly groundwater. The water use is measured in cubic feet per second (cfs) for the purpose of irrigation. The total water use for each company is 500 cfs, indicating a consistent water diversion method of ground-based resources.

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>Use/Disease</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Doe</td>
<td>Los Angeles Valley</td>
<td>Irrigation</td>
<td>0.56</td>
</tr>
<tr>
<td>Jane Smith</td>
<td>Las Vegas</td>
<td>Domestic</td>
<td>0.34</td>
</tr>
<tr>
<td>Michael Brown</td>
<td>Palm Springs</td>
<td>Irrigation</td>
<td>0.87</td>
</tr>
<tr>
<td>Emily Johnson</td>
<td>Boulder</td>
<td>Domestic</td>
<td>0.23</td>
</tr>
<tr>
<td>Sarah Davis</td>
<td>Reno</td>
<td>Irrigation</td>
<td>0.76</td>
</tr>
<tr>
<td>David Wilson</td>
<td>Las Vegas Strip</td>
<td>Domestic</td>
<td>0.45</td>
</tr>
<tr>
<td>Olivia Lopez</td>
<td>Carson</td>
<td>Irrigation</td>
<td>0.39</td>
</tr>
<tr>
<td>Matthew Thompson</td>
<td>Sparks</td>
<td>Domestic</td>
<td>0.68</td>
</tr>
<tr>
<td>Samantha Green</td>
<td>Great Basin</td>
<td>Irrigation</td>
<td>0.54</td>
</tr>
<tr>
<td>Ethan Black</td>
<td>Las Vegas</td>
<td>Domestic</td>
<td>0.28</td>
</tr>
<tr>
<td>Sophia White</td>
<td>Reno</td>
<td>Irrigation</td>
<td>0.47</td>
</tr>
<tr>
<td>Alexander Martinez</td>
<td>Las Vegas Valley</td>
<td>Domestic</td>
<td>0.32</td>
</tr>
<tr>
<td>Date</td>
<td>Name</td>
<td>Location</td>
<td>Type</td>
</tr>
<tr>
<td>-----------</td>
<td>---------------------------</td>
<td>---------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>1941-11-01</td>
<td>John D. Brown</td>
<td>Pecos River</td>
<td>Surface water</td>
</tr>
<tr>
<td>1941-11-02</td>
<td>William J. Miller</td>
<td>Pecos River</td>
<td>Surface water</td>
</tr>
<tr>
<td>1941-11-03</td>
<td>Robert E. Anderson</td>
<td>Pecos River</td>
<td>Surface water</td>
</tr>
<tr>
<td>1941-11-04</td>
<td>James W. Smith</td>
<td>Pecos River</td>
<td>Surface water</td>
</tr>
</tbody>
</table>

**Note:** The table continues with similar entries for other dates and names.
<table>
<thead>
<tr>
<th>Date</th>
<th>124 REPORT OF STATE ENGINEER</th>
</tr>
</thead>
<tbody>
<tr>
<td>2949.</td>
<td>5-1517. H. F. Davenport, Land &amp; Livestock Company; Ball Davenport, Well No. 4; H. F. Davenport, Well No. 2; Upper Davenport, Well No. 23; Davenport, Well No. 28.</td>
</tr>
<tr>
<td>2950.</td>
<td>5-1517. H. F. Davenport, Land &amp; Livestock Company; Ball Davenport, Well No. 4; H. F. Davenport, Well No. 2; Upper Davenport, Well No. 23; Davenport, Well No. 28.</td>
</tr>
<tr>
<td>2951.</td>
<td>5-1517. H. F. Davenport, Land &amp; Livestock Company; Ball Davenport, Well No. 4; H. F. Davenport, Well No. 2; Upper Davenport, Well No. 23; Davenport, Well No. 28.</td>
</tr>
<tr>
<td>2952.</td>
<td>5-1517. H. F. Davenport, Land &amp; Livestock Company; Ball Davenport, Well No. 4; H. F. Davenport, Well No. 2; Upper Davenport, Well No. 23; Davenport, Well No. 28.</td>
</tr>
</tbody>
</table>

**Table: State of the Deluge**

<table>
<thead>
<tr>
<th>State</th>
<th>County</th>
<th>Township</th>
<th>Range</th>
<th>District</th>
<th>Grade</th>
<th>Description</th>
<th>Max Precipitation (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arkansas</td>
<td>Washington</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>Rainfall</td>
<td>3.5</td>
</tr>
<tr>
<td>California</td>
<td>Kern</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>Snowfall</td>
<td>2.5</td>
</tr>
<tr>
<td>Colorado</td>
<td>Montrose</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>Hailfall</td>
<td>1.5</td>
</tr>
<tr>
<td>Connecticut</td>
<td>New Haven</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>Floodfall</td>
<td>4.5</td>
</tr>
<tr>
<td>Delaware</td>
<td>Sussex</td>
<td>16</td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>Lightning</td>
<td>3.0</td>
</tr>
<tr>
<td>Florida</td>
<td>Pinellas</td>
<td>20</td>
<td>21</td>
<td>22</td>
<td>23</td>
<td>Tsunami</td>
<td>5.0</td>
</tr>
<tr>
<td>Georgia</td>
<td>DeKalb</td>
<td>24</td>
<td>25</td>
<td>26</td>
<td>27</td>
<td>Earthquake</td>
<td>2.5</td>
</tr>
<tr>
<td>Hawaii</td>
<td>Maui</td>
<td>28</td>
<td>29</td>
<td>30</td>
<td>31</td>
<td>Volcano</td>
<td>4.0</td>
</tr>
<tr>
<td>Idaho</td>
<td>Ada</td>
<td>32</td>
<td>33</td>
<td>34</td>
<td>35</td>
<td>Eruption</td>
<td>3.5</td>
</tr>
<tr>
<td>Illinois</td>
<td>Cook</td>
<td>36</td>
<td>37</td>
<td>38</td>
<td>39</td>
<td>Soil Erosion</td>
<td>2.0</td>
</tr>
<tr>
<td>Indiana</td>
<td>Vermilion</td>
<td>40</td>
<td>41</td>
<td>42</td>
<td>43</td>
<td>Drought</td>
<td>1.5</td>
</tr>
<tr>
<td>Iowa</td>
<td>Scott</td>
<td>44</td>
<td>45</td>
<td>46</td>
<td>47</td>
<td>Flooding</td>
<td>3.0</td>
</tr>
<tr>
<td>Kansas</td>
<td>Butler</td>
<td>48</td>
<td>49</td>
<td>50</td>
<td>51</td>
<td>Drought</td>
<td>2.5</td>
</tr>
<tr>
<td>Kentucky</td>
<td>Fayette</td>
<td>52</td>
<td>53</td>
<td>54</td>
<td>55</td>
<td>Flood</td>
<td>4.5</td>
</tr>
<tr>
<td>Louisiana</td>
<td>Calcasieu</td>
<td>56</td>
<td>57</td>
<td>58</td>
<td>59</td>
<td>Earthquake</td>
<td>3.0</td>
</tr>
<tr>
<td>Maine</td>
<td>Aroostook</td>
<td>60</td>
<td>61</td>
<td>62</td>
<td>63</td>
<td>Tsunami</td>
<td>5.0</td>
</tr>
<tr>
<td>Maryland</td>
<td>Anne Arundel</td>
<td>64</td>
<td>65</td>
<td>66</td>
<td>67</td>
<td>Volcano</td>
<td>4.0</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>Worcester</td>
<td>68</td>
<td>69</td>
<td>70</td>
<td>71</td>
<td>Earthquake</td>
<td>3.5</td>
</tr>
<tr>
<td>Michigan</td>
<td>Washtenaw</td>
<td>72</td>
<td>73</td>
<td>74</td>
<td>75</td>
<td>Drought</td>
<td>2.0</td>
</tr>
<tr>
<td>Minnesota</td>
<td>Anoka</td>
<td>76</td>
<td>77</td>
<td>78</td>
<td>79</td>
<td>Flooding</td>
<td>3.5</td>
</tr>
<tr>
<td>Mississippi</td>
<td>Hinds</td>
<td>80</td>
<td>81</td>
<td>82</td>
<td>83</td>
<td>Volcano</td>
<td>4.0</td>
</tr>
<tr>
<td>Missouri</td>
<td>Callaway</td>
<td>84</td>
<td>85</td>
<td>86</td>
<td>87</td>
<td>Earthquake</td>
<td>3.0</td>
</tr>
<tr>
<td>Montana</td>
<td>Flathead</td>
<td>88</td>
<td>89</td>
<td>90</td>
<td>91</td>
<td>Erosion</td>
<td>2.5</td>
</tr>
<tr>
<td>Nebraska</td>
<td>Lincoln</td>
<td>92</td>
<td>93</td>
<td>94</td>
<td>95</td>
<td>Flooding</td>
<td>3.0</td>
</tr>
<tr>
<td>Nevada</td>
<td>El Dorado</td>
<td>96</td>
<td>97</td>
<td>98</td>
<td>99</td>
<td>Volcano</td>
<td>4.0</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>Belknap</td>
<td>100</td>
<td>101</td>
<td>102</td>
<td>103</td>
<td>Earthquake</td>
<td>3.5</td>
</tr>
<tr>
<td>New Mexico</td>
<td>Doña Ana</td>
<td>104</td>
<td>105</td>
<td>106</td>
<td>107</td>
<td>Drought</td>
<td>2.0</td>
</tr>
<tr>
<td>New York</td>
<td>Schoharie</td>
<td>108</td>
<td>109</td>
<td>110</td>
<td>111</td>
<td>Flooding</td>
<td>3.5</td>
</tr>
<tr>
<td>North Carolina</td>
<td>Craven</td>
<td>112</td>
<td>113</td>
<td>114</td>
<td>115</td>
<td>Volcano</td>
<td>4.0</td>
</tr>
<tr>
<td>North Dakota</td>
<td>Mountrail</td>
<td>116</td>
<td>117</td>
<td>118</td>
<td>119</td>
<td>Erosion</td>
<td>2.5</td>
</tr>
<tr>
<td>Ohio</td>
<td>Montgomery</td>
<td>120</td>
<td>121</td>
<td>122</td>
<td>123</td>
<td>Flooding</td>
<td>3.0</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>Grady</td>
<td>124</td>
<td>125</td>
<td>126</td>
<td>127</td>
<td>Earthquake</td>
<td>3.5</td>
</tr>
<tr>
<td>Oregon</td>
<td>Multnomah</td>
<td>128</td>
<td>129</td>
<td>130</td>
<td>131</td>
<td>Drought</td>
<td>2.0</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>Dauphin</td>
<td>132</td>
<td>133</td>
<td>134</td>
<td>135</td>
<td>Flooding</td>
<td>3.5</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>Providence</td>
<td>136</td>
<td>137</td>
<td>138</td>
<td>139</td>
<td>Earthquake</td>
<td>3.5</td>
</tr>
<tr>
<td>South Carolina</td>
<td>York</td>
<td>140</td>
<td>141</td>
<td>142</td>
<td>143</td>
<td>Drought</td>
<td>2.0</td>
</tr>
<tr>
<td>South Dakota</td>
<td>Pennington</td>
<td>144</td>
<td>145</td>
<td>146</td>
<td>147</td>
<td>Erosion</td>
<td>2.5</td>
</tr>
<tr>
<td>Tennessee</td>
<td>Davidson</td>
<td>148</td>
<td>149</td>
<td>150</td>
<td>151</td>
<td>Flooding</td>
<td>3.5</td>
</tr>
<tr>
<td>Texas</td>
<td>Harris</td>
<td>152</td>
<td>153</td>
<td>154</td>
<td>155</td>
<td>Earthquake</td>
<td>3.5</td>
</tr>
<tr>
<td>Utah</td>
<td>Utah</td>
<td>156</td>
<td>157</td>
<td>158</td>
<td>159</td>
<td>Drought</td>
<td>2.0</td>
</tr>
<tr>
<td>Vermont</td>
<td>Orleans</td>
<td>160</td>
<td>161</td>
<td>162</td>
<td>163</td>
<td>Flooding</td>
<td>3.5</td>
</tr>
<tr>
<td>Virginia</td>
<td>Prince George</td>
<td>164</td>
<td>165</td>
<td>166</td>
<td>167</td>
<td>Earthquake</td>
<td>3.5</td>
</tr>
<tr>
<td>Washington</td>
<td>King</td>
<td>168</td>
<td>169</td>
<td>170</td>
<td>171</td>
<td>Drought</td>
<td>2.0</td>
</tr>
<tr>
<td>West Virginia</td>
<td>Holley</td>
<td>172</td>
<td>173</td>
<td>174</td>
<td>175</td>
<td>Flooding</td>
<td>3.5</td>
</tr>
</tbody>
</table>

**Notes:**

- **Max Precipitation (in):** This column displays the maximum precipitation recorded during the state of the deluge, measured in inches.
CHAPTER XIX
Certificates Issued Under Permits, 1946-1948

Following is a condensed statement giving the salient data in connection with Certificates Issued Under Permits during the biennium for the period July 1, 1946, to June 30, 1948, in the order of:

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.

1946-1948

<table>
<thead>
<tr>
<th>Month and year</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
<th>November</th>
<th>December</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance July 1, 1947</td>
<td>$2,924.00</td>
<td>$3,262.00</td>
<td>$3,275.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
</tr>
<tr>
<td>January</td>
<td>$2,924.00</td>
<td>$3,262.00</td>
<td>$3,275.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
</tr>
<tr>
<td>February</td>
<td>$3,262.00</td>
<td>$3,275.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
</tr>
<tr>
<td>March</td>
<td>$3,275.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
</tr>
<tr>
<td>April</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
</tr>
<tr>
<td>May</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
</tr>
<tr>
<td>June</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
</tr>
<tr>
<td>July</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
</tr>
<tr>
<td>August</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
</tr>
<tr>
<td>September</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
</tr>
<tr>
<td>October</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
</tr>
<tr>
<td>November</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
</tr>
<tr>
<td>December</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
<td>$3,285.00</td>
</tr>
</tbody>
</table>

**HUMBOLDT WATER DISTRIBUTION DISTRICT**

Statement of Receipts and Disbursements from July 1, 1946, to June 30, 1948

<table>
<thead>
<tr>
<th>Month</th>
<th>Balance</th>
<th>Disbursements</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 1, 1946</td>
<td></td>
<td></td>
<td>$5,402.58</td>
</tr>
<tr>
<td>July</td>
<td>$3,264.00</td>
<td></td>
<td>$3,264.00</td>
</tr>
<tr>
<td>August</td>
<td>$3,264.00</td>
<td></td>
<td>$3,264.00</td>
</tr>
<tr>
<td>September</td>
<td>$3,264.00</td>
<td></td>
<td>$3,264.00</td>
</tr>
<tr>
<td>October</td>
<td>$2,548.00</td>
<td></td>
<td>$2,548.00</td>
</tr>
<tr>
<td>November</td>
<td></td>
<td></td>
<td>$2,548.00</td>
</tr>
<tr>
<td>December</td>
<td></td>
<td></td>
<td>$2,548.00</td>
</tr>
<tr>
<td>Total</td>
<td>$8,358.58</td>
<td></td>
<td>$8,358.58</td>
</tr>
</tbody>
</table>

**Balance July 1, 1948**

- **Cash:**
  - $33,840.51
  - $5,499.95

**Balance:**
- Current Balance: $33,840.51
- National Bank of Los Angeles: $5,499.95

**Revolving Fund:**
- $6,418.23
- $2,485.00

**Total:**
- $46,756.22
Statement of Receipts and Disbursements from July 1, 1946, to June 30, 1947

**MUDY RIVER DISTRIBUTION**

<table>
<thead>
<tr>
<th>Month</th>
<th>Sales</th>
<th>Disbursements</th>
<th>Total</th>
<th>Receipts</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 1946</td>
<td>$100.00</td>
<td>$50.00</td>
<td>$150.00</td>
<td>$1,265.00</td>
</tr>
<tr>
<td>August</td>
<td>$100.00</td>
<td>$50.00</td>
<td>$150.00</td>
<td>$1,265.00</td>
</tr>
<tr>
<td>September</td>
<td>$100.00</td>
<td>$50.00</td>
<td>$150.00</td>
<td>$1,265.00</td>
</tr>
<tr>
<td>October</td>
<td>$100.00</td>
<td>$50.00</td>
<td>$150.00</td>
<td>$1,265.00</td>
</tr>
<tr>
<td>November</td>
<td>$100.00</td>
<td>$50.00</td>
<td>$150.00</td>
<td>$1,265.00</td>
</tr>
<tr>
<td>December</td>
<td>$100.00</td>
<td>$50.00</td>
<td>$150.00</td>
<td>$1,265.00</td>
</tr>
</tbody>
</table>

**PABSANAGAT LAKE DISTRIBUTION**

<table>
<thead>
<tr>
<th>Month</th>
<th>Sales</th>
<th>Disbursements</th>
<th>Total</th>
<th>Receipts</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 1946</td>
<td>$100.00</td>
<td>$50.00</td>
<td>$150.00</td>
<td>$1,265.00</td>
</tr>
<tr>
<td>August</td>
<td>$100.00</td>
<td>$50.00</td>
<td>$150.00</td>
<td>$1,265.00</td>
</tr>
<tr>
<td>September</td>
<td>$100.00</td>
<td>$50.00</td>
<td>$150.00</td>
<td>$1,265.00</td>
</tr>
<tr>
<td>October</td>
<td>$100.00</td>
<td>$50.00</td>
<td>$150.00</td>
<td>$1,265.00</td>
</tr>
<tr>
<td>November</td>
<td>$100.00</td>
<td>$50.00</td>
<td>$150.00</td>
<td>$1,265.00</td>
</tr>
<tr>
<td>December</td>
<td>$100.00</td>
<td>$50.00</td>
<td>$150.00</td>
<td>$1,265.00</td>
</tr>
</tbody>
</table>

G. S. Good standing.
### CURRENT AND DOWNSIZED DISTRIBUTION

**Statement of Receipts and Disbursements from July 1, 1946, to June 30, 1948**

<table>
<thead>
<tr>
<th>Month and Year</th>
<th>Balance</th>
<th>Administration</th>
<th>Total Receipts</th>
<th>Total Disbursements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>July 1946</strong></td>
<td>$325.00</td>
<td>$70.00</td>
<td>$395.00</td>
<td>$385.40</td>
</tr>
<tr>
<td><strong>August 1946</strong></td>
<td>$345.00</td>
<td>$72.00</td>
<td>$417.00</td>
<td>$408.40</td>
</tr>
<tr>
<td><strong>September 1946</strong></td>
<td>$365.00</td>
<td>$74.00</td>
<td>$439.00</td>
<td>$430.40</td>
</tr>
<tr>
<td><strong>October 1946</strong></td>
<td>$385.00</td>
<td>$76.00</td>
<td>$461.00</td>
<td>$452.40</td>
</tr>
<tr>
<td><strong>November 1946</strong></td>
<td>$405.00</td>
<td>$78.00</td>
<td>$483.00</td>
<td>$474.40</td>
</tr>
<tr>
<td><strong>December 1946</strong></td>
<td>$425.00</td>
<td>$80.00</td>
<td>$505.00</td>
<td>$506.40</td>
</tr>
</tbody>
</table>

**Balance January 1, 1947**

<table>
<thead>
<tr>
<th>Month and Year</th>
<th>Balance</th>
<th>Administration</th>
<th>Total Receipts</th>
<th>Total Disbursements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>January 1947</strong></td>
<td>$440.00</td>
<td>$80.00</td>
<td>$520.00</td>
<td>$510.20</td>
</tr>
<tr>
<td><strong>February 1947</strong></td>
<td>$460.00</td>
<td>$80.00</td>
<td>$540.00</td>
<td>$530.40</td>
</tr>
<tr>
<td><strong>March 1947</strong></td>
<td>$480.00</td>
<td>$80.00</td>
<td>$560.00</td>
<td>$550.20</td>
</tr>
<tr>
<td><strong>April 1947</strong></td>
<td>$500.00</td>
<td>$80.00</td>
<td>$580.00</td>
<td>$570.40</td>
</tr>
<tr>
<td><strong>May 1947</strong></td>
<td>$520.00</td>
<td>$80.00</td>
<td>$600.00</td>
<td>$590.40</td>
</tr>
<tr>
<td><strong>June 1947</strong></td>
<td>$540.00</td>
<td>$80.00</td>
<td>$620.00</td>
<td>$610.40</td>
</tr>
<tr>
<td><strong>July 1947</strong></td>
<td>$560.00</td>
<td>$80.00</td>
<td>$640.00</td>
<td>$630.40</td>
</tr>
<tr>
<td><strong>August 1947</strong></td>
<td>$580.00</td>
<td>$80.00</td>
<td>$660.00</td>
<td>$650.20</td>
</tr>
<tr>
<td><strong>September 1947</strong></td>
<td>$600.00</td>
<td>$80.00</td>
<td>$680.00</td>
<td>$670.40</td>
</tr>
<tr>
<td><strong>October 1947</strong></td>
<td>$620.00</td>
<td>$80.00</td>
<td>$640.00</td>
<td>$630.40</td>
</tr>
<tr>
<td><strong>November 1947</strong></td>
<td>$640.00</td>
<td>$80.00</td>
<td>$660.00</td>
<td>$650.40</td>
</tr>
<tr>
<td><strong>December 1947</strong></td>
<td>$660.00</td>
<td>$80.00</td>
<td>$680.00</td>
<td>$670.40</td>
</tr>
</tbody>
</table>

**Balance January 1, 1948**

<table>
<thead>
<tr>
<th>Month and Year</th>
<th>Balance</th>
<th>Administration</th>
<th>Total Receipts</th>
<th>Total Disbursements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>January 1948</strong></td>
<td>$680.00</td>
<td>$80.00</td>
<td>$760.00</td>
<td>$750.20</td>
</tr>
<tr>
<td><strong>February 1948</strong></td>
<td>$700.00</td>
<td>$80.00</td>
<td>$780.00</td>
<td>$770.40</td>
</tr>
<tr>
<td><strong>March 1948</strong></td>
<td>$720.00</td>
<td>$80.00</td>
<td>$800.00</td>
<td>$790.40</td>
</tr>
<tr>
<td><strong>April 1948</strong></td>
<td>$740.00</td>
<td>$80.00</td>
<td>$820.00</td>
<td>$810.40</td>
</tr>
<tr>
<td><strong>May 1948</strong></td>
<td>$760.00</td>
<td>$80.00</td>
<td>$840.00</td>
<td>$830.40</td>
</tr>
<tr>
<td><strong>June 1948</strong></td>
<td>$780.00</td>
<td>$80.00</td>
<td>$860.00</td>
<td>$850.40</td>
</tr>
</tbody>
</table>

### BAKER AND LEHMAN DISTRIBUTION

**Statement of Receipts and Disbursements from July 1, 1946, to June 30, 1948**

<table>
<thead>
<tr>
<th>Month and Year</th>
<th>Balance</th>
<th>Administration</th>
<th>Total Receipts</th>
<th>Total Disbursements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>July 1946</strong></td>
<td>$72.00</td>
<td>$12.00</td>
<td>$84.00</td>
<td>$75.40</td>
</tr>
<tr>
<td><strong>August 1946</strong></td>
<td>$92.00</td>
<td>$12.00</td>
<td>$104.00</td>
<td>$95.40</td>
</tr>
<tr>
<td><strong>September 1946</strong></td>
<td>$112.00</td>
<td>$12.00</td>
<td>$124.00</td>
<td>$115.40</td>
</tr>
<tr>
<td><strong>October 1946</strong></td>
<td>$132.00</td>
<td>$12.00</td>
<td>$144.00</td>
<td>$135.40</td>
</tr>
<tr>
<td><strong>November 1946</strong></td>
<td>$152.00</td>
<td>$12.00</td>
<td>$164.00</td>
<td>$155.40</td>
</tr>
<tr>
<td><strong>December 1946</strong></td>
<td>$172.00</td>
<td>$12.00</td>
<td>$184.00</td>
<td>$175.40</td>
</tr>
</tbody>
</table>

**Balance January 1, 1947**

<table>
<thead>
<tr>
<th>Month and Year</th>
<th>Balance</th>
<th>Administration</th>
<th>Total Receipts</th>
<th>Total Disbursements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>January 1947</strong></td>
<td>$192.00</td>
<td>$12.00</td>
<td>$204.00</td>
<td>$195.40</td>
</tr>
<tr>
<td><strong>February 1947</strong></td>
<td>$212.00</td>
<td>$12.00</td>
<td>$224.00</td>
<td>$215.40</td>
</tr>
<tr>
<td><strong>March 1947</strong></td>
<td>$232.00</td>
<td>$12.00</td>
<td>$244.00</td>
<td>$235.40</td>
</tr>
<tr>
<td><strong>April 1947</strong></td>
<td>$252.00</td>
<td>$12.00</td>
<td>$264.00</td>
<td>$255.40</td>
</tr>
<tr>
<td><strong>May 1947</strong></td>
<td>$272.00</td>
<td>$12.00</td>
<td>$284.00</td>
<td>$275.40</td>
</tr>
<tr>
<td><strong>June 1947</strong></td>
<td>$292.00</td>
<td>$12.00</td>
<td>$304.00</td>
<td>$295.40</td>
</tr>
</tbody>
</table>

**Balance January 1, 1948**

<table>
<thead>
<tr>
<th>Month and Year</th>
<th>Balance</th>
<th>Administration</th>
<th>Total Receipts</th>
<th>Total Disbursements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>January 1948</strong></td>
<td>$312.00</td>
<td>$12.00</td>
<td>$324.00</td>
<td>$315.40</td>
</tr>
<tr>
<td><strong>February 1948</strong></td>
<td>$332.00</td>
<td>$12.00</td>
<td>$344.00</td>
<td>$335.40</td>
</tr>
<tr>
<td><strong>March 1948</strong></td>
<td>$352.00</td>
<td>$12.00</td>
<td>$364.00</td>
<td>$355.40</td>
</tr>
<tr>
<td><strong>April 1948</strong></td>
<td>$372.00</td>
<td>$12.00</td>
<td>$384.00</td>
<td>$375.40</td>
</tr>
<tr>
<td><strong>May 1948</strong></td>
<td>$392.00</td>
<td>$12.00</td>
<td>$404.00</td>
<td>$395.40</td>
</tr>
<tr>
<td><strong>June 1948</strong></td>
<td>$412.00</td>
<td>$12.00</td>
<td>$424.00</td>
<td>$415.40</td>
</tr>
</tbody>
</table>

**Balance July 1, 1948**

$432.00
We know the water is there, too. The natives in the State will say that.

Mr. Mead: Yes.

Mr. Maxey: What we are trying to explain is that if we locate the water, its development can be taken up there by some other agency in cases where private enterprise cannot cope in and develop it profitably at the present time. I believe I have knowledge of two or three areas, in my experience in this State, where such projects may be feasible.

Mr. Mead: That point is a good point. The Bureau now needs to know the probable ground water yield before it can report on a ground water project. We can do better with very large projects than we can with very small projects, because our overhead is a smaller percentage of the large project cost. We have to submit our reports to various States for criticism, and we have to make our reports meet certain prescribed criteria; we have several kinds of specialists on staff investigations; on very small projects the overhead is too large a percentage of the cost of investigation.

But the point you make is good. We are certainly glad to know what our underground yield is, or for that matter, the water supply of any prospective project.

Mr. Shambaugh: In that connection, I might mention that I understand that there is a great deal of agitation throughout the West to have the Bureau of Reclamation operate a small projects division designed in such a way as not to have this great overhead you speak of.

Mr. Mead: I have not heard of it, but I am glad to hear of it. That would avoid one defect of our present system.

Mr. Shambaugh: I am going to call upon another representative of the Bureau of Reclamation. As you probably know, Region 4, which has its headquarters in Salt Lake City, covers perhaps the major portion of the State, and Region 3, with headquarters at Boulder City, and the region Mr. Mead is from is the southern part of the State.

It is a pleasure to see that William Slattery, Engineer, Bureau of Reclamation, Region 4, is here today. Bill, will you say a few words.

Mr. Slattery: Mr. Shambaeger, Gentlemen: I am not one of those fortunate or unfortunate Irishmen who have kissed the Blarney Stone, but I have a few written statements here that I will attempt to read to you if you will bear with me.

First, I want to say that Regional Director E. O. Larsen, who is Director of this region, was called down into Southern Colorado over the weekend. He was at Lovelock earlier in the week and represented very much he had to return to Colorado, so the job of presenting his talk here, or representing the Bureau, fell upon me, and I didn't have any information upon it until yesterday about three o'clock in the afternoon. I will try to read some of the statements, and probably add something to them.

Now, as I understand, Mr. Smith wants a report on what activities the Bureau has been engaged in during the past year and what they have in mind during this current year.
### PAYRUMP VALLEY ABERCROMBIE BASIN

**Statement of Receipts and Disbursements from July 1, 1946, to June 30, 1948**

<table>
<thead>
<tr>
<th>Month and Year</th>
<th>Total Receipts</th>
<th>Administrative</th>
<th>Balance July 1, 1946</th>
</tr>
</thead>
<tbody>
<tr>
<td>July, 1946</td>
<td>$1,053.37</td>
<td>$283.41</td>
<td>$770.26</td>
</tr>
<tr>
<td>August, 1946</td>
<td>$727.48</td>
<td>$272.78</td>
<td>$430.88</td>
</tr>
<tr>
<td>September, 1946</td>
<td>$845.79</td>
<td>$309.41</td>
<td>$536.46</td>
</tr>
<tr>
<td>October, 1946</td>
<td>$512.79</td>
<td>$231.57</td>
<td>$281.22</td>
</tr>
<tr>
<td>November, 1946</td>
<td>$508.40</td>
<td>$308.08</td>
<td>$200.32</td>
</tr>
<tr>
<td>December, 1946</td>
<td>$600.00</td>
<td>$300.00</td>
<td>$300.00</td>
</tr>
<tr>
<td>Totals, 1946</td>
<td>$3,465.52</td>
<td>$1,663.41</td>
<td>$1,802.11</td>
</tr>
<tr>
<td>Balance January 1, 1947</td>
<td>$1,802.11</td>
<td>$1,802.11</td>
<td>$1,802.11</td>
</tr>
</tbody>
</table>

#### UNDERGROUND WATER INVESTIGATION

**Statement of Receipts and Disbursements from July 1, 1946, to June 30, 1948**

<table>
<thead>
<tr>
<th>Month and Year</th>
<th>Total Receipts</th>
<th>Administrative</th>
<th>Balance July 1, 1946</th>
</tr>
</thead>
<tbody>
<tr>
<td>July, 1946</td>
<td>$1,435.70</td>
<td>$1,435.70</td>
<td>$11,139.60</td>
</tr>
<tr>
<td>August, 1946</td>
<td>$2,495.88</td>
<td>$2,495.88</td>
<td>$11,625.36</td>
</tr>
<tr>
<td>September, 1946</td>
<td>$2,495.88</td>
<td>$2,495.88</td>
<td>$11,625.36</td>
</tr>
<tr>
<td>October, 1946</td>
<td>$2,495.88</td>
<td>$2,495.88</td>
<td>$11,625.36</td>
</tr>
<tr>
<td>November, 1946</td>
<td>$2,495.88</td>
<td>$2,495.88</td>
<td>$11,625.36</td>
</tr>
<tr>
<td>December, 1946</td>
<td>$2,495.88</td>
<td>$2,495.88</td>
<td>$11,625.36</td>
</tr>
<tr>
<td>Totals, 1946</td>
<td>$11,625.36</td>
<td>$11,625.36</td>
<td>$11,625.36</td>
</tr>
<tr>
<td>Balance January 1, 1947</td>
<td>$11,625.36</td>
<td>$11,625.36</td>
<td>$11,625.36</td>
</tr>
</tbody>
</table>

Mr. Maxey: Assuming the safety of such an operation was proven.

Mr. Mead: Just speaking as an individual, I think the Bureau is interested in any development that will furnish water; and the point of proving a safe yield of water is very important because the Bureau would be terribly handicapped in going into a project where the yield is uncertain because we could not fix up a farm repayment contract not knowing how much water could be developed.

Mr. Petersen: I think there would be some work of the Geological Survey to investigate that—to make such an investigation.

Mr. Mead: That is one place where the Bureau and the Geological Survey could be working together.

Mr. Clarence Byrd: Does that apply also to surface water dams to conserve and hold back water for development of land in these small valleys?

Mr. Mead: The Bureau, of course.

Mr. Byrd: (Interrupting). You are talking, primarily, about underground water; I am wondering about something that’s a regular grayer blowing itself off every spring.

Mr. Mead: The Bureau of Reclamation would be one agency to carry the development on from where we leave off with the fact-finding function. And, I, more or less, think it is a matter of importance to bring out, at this meeting, an understanding of what, or how far we could go, because we are constantly asked the question, “What good are you doing us?”
GOVERNOR PITTMAN: Why do you say specialty crops will be of such short duration? What do you mean it would not be feasible? Specialty crops for a short time?

MR. MEAD: They will be satisfactory at first, but it is a precarious matter to count on them indefinitely.

I had heard of a Frenchman who had come into Nevada and grown flowers for perfume and had done very well indeed. When I cited this to Mr. Way, who is one of our economists, he said, "That is very well, but the same pests that this man had in France may, in the course of time, come here to Nevada." Now that may or may not be true. One trouble with specialty crops is although they may not be beaten by pests to start with in Nevada, you never tell when the pests will be introduced, and it is not particularly safe to count on extraordinary situations.

The way out for high-cost water is to raise high-value crops, but we much prefer, though, to count on staples. It is much safer to do that. If you can get away with high-value crops, that is the thing to do.

GOVERNOR PITTMAN: Do you know whether such crops could be raised in the southern part of Nevada profitably, such as grapefruit, celery, and crops of that nature?

MR. MEAD: Grapefruit has a tremendous competition with Texas now. I understand Moapa Valley, for a while, at any rate, was raising celery, and is raising tomato plants for shipment all over the United States, and doing very well indeed.

GOVERNOR PITTMAN: Isn't that possible for the southern part of the State?

MR. MEAD: That is just fine where they can do that.

MR. PETERSEN: I might make an observation. In talking with Mr. Witwer, Clark County Agent, he brought up the same thing Mr. Mead mentioned regarding these pests. The tomato plant crops in Moapa Valley are already being hedged by some sort of pest which infects tomato plants. According to Mr. Witwer, it is now beginning to show up and these fellows have got to go into a rotation of some kind, or make other provisions in order to continue this tomato plant growing. It is very profitable farming, as I understand it, but it is something that cannot be carried on indefinitely. It shows that specialty crops are not the profitable operation for all time that they appear to be in the beginning.

One other thing I would like to take up: I would like to go back to Mr. Maxey's question. I don't think it was quite as fully answered as Mr. Maxey would have it. I think Mr. Maxey was referring to areas in these valleys in which ground water might be found within a reasonable pumping distance of the surface.

I think what he was aiming at was to get some statement as to what the Bureau of Reclamation's attitude would be in developing those areas. In other words, if it were possible to find an area of some five or six thousand acres that could be developed by pumping, I think the Geologic Survey could be in a position to furnish information regarding the amount of water available and so on, then the question

---

### COOPERATIVE SNOW SURVEY

<table>
<thead>
<tr>
<th>Month</th>
<th>Receive</th>
<th>Retained</th>
<th>Total</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance July 1, 1946</td>
<td></td>
<td></td>
<td></td>
<td>$182.90</td>
</tr>
<tr>
<td>July</td>
<td>$150.00</td>
<td></td>
<td>$150.00</td>
<td></td>
</tr>
<tr>
<td>September</td>
<td>$115.00</td>
<td></td>
<td>$115.00</td>
<td></td>
</tr>
<tr>
<td>December</td>
<td></td>
<td>$12.00</td>
<td>$12.00</td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>$287.00</td>
<td></td>
<td>$287.00</td>
<td>$287.00</td>
</tr>
</tbody>
</table>

---

### COOPERATIVE STREAM MEASUREMENT

<table>
<thead>
<tr>
<th>Month</th>
<th>Receive</th>
<th>Retained</th>
<th>Total</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance July 1, 1946</td>
<td></td>
<td></td>
<td></td>
<td>$1,187.06</td>
</tr>
<tr>
<td>July</td>
<td></td>
<td></td>
<td></td>
<td>$1,187.06</td>
</tr>
<tr>
<td>September</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>December</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td></td>
<td></td>
<td>$1,187.06</td>
</tr>
</tbody>
</table>
I think possibly a lot of the prosperity for the State may be gotten through the development of projects based on ground water in valleys of the State.

Maybe I have not expressed myself very well. Do you (addressing Mr. Shamburger) understand what I am driving at?

Mr. Shamburger: Yes.

Mr. Maxey: I think it is important to bring that out at the meeting here because it is one of the vital things in the development of Nevada.

Mr. Mead: Maybe I had better not try to answer that directly. Our Central Arizona Project is very much involved in the question of ground water. The area in the general vicinity of Phoenix has been depleting its ground water. Unless we can stop the overdevelopment of ground water supplies, then the Government should help by importing Colorado River water to Central Arizona we will, after the implementation, see repeated the same situation that exists now near Phoenix—we will bring in water and then there will be an extraordinary development of pumping on the fringe of the area that is supplied, and the first thing you know, the ground water will be carried down so far by pumping that it will become uneconomical to pump. Unless the State of Arizona has a good ground water law, there will be a continual state of emergency following overdevelopment of ground water supplies.

We have a small project near Joseph City, Arizona, on the Little Colorado in which we propose to pump from wells. The difficulty on that project is to estimate how much water can be supplied. Water users would like a firm contract, but how are we going to have a firm contract until we know how much water we can develop? It is quite a ticklish problem.

Mr. Smith: Mr. Mead, regarding the Las Vegas Pumping Project, you were referring to the excessive cost of pumping water through the 300-foot lift into Las Vegas Valley—your reference was more particularly to pumping water for agricultural purposes, was it not?

Mr. Mead: That's right.

Mr. Smith: For the raising of crops?

Mr. Mead: For the raising of crops; that's right. It means that irrigators would have to grow high-value crops to pay for the extraordinarily high price of water. Our economists, when I talked with them suggesting the growing of specialty crops, did not encourage that suggestion because specialty crops will be specialty crops only for a while, and to count on a project based on specialty crops is precarious business.

Mr. Smith: But, on the other hand, the use of that water and the cost of pumping for manufacturing purposes, for municipal use, and for specialized uses, are not limited—ornamental agriculture you might call it, for resort hotels and the like, suburban development to the city of Las Vegas—from that standpoint the high cost of pumping would be justified, wouldn't it not?

Mr. Mead: Yes.
some slope lands, but I think the Bureau now will probably attempt to find out first what can be done with about 2,600 acres of bottom lands and probably not include the less-promising slope lands at all, at least for the first stage of development. Part of the bottom lands are under the jurisdiction of the Indian Service, about 1,600 of the 2,600 are total. The area to be developed is 11 miles below Davis Dam, and will receive power from Davis Dam for pumping from the Colorado River. The lift is comparatively small, somewhere from 35 to 45 feet, dependent upon whether the river stays stable or retrogresses further. The present clear water of the Colorado River removes the finer material on the river bottom and since there is no lift to replace it, the river will cut until its bottom is protected with enough coarse material to resist further erosion.

A project for the more distant future is the Las Vegas Pumping Project. If Las Vegas ever grows to be a city of fifty or sixty thousand people, or perhaps sooner, she will have to get water from Lake Mead; and it may be possible to develop some of the irrigable land around there by charging most of the construction cost and a large part of the pumping cost to municipal water.

As conditions now are, the Las Vegas Pumping Project isn’t a promising irrigation project because the lift is somewhere between 900 and 1,000 feet. There are six and a half miles of tunnel and 24 miles of line canal. It is financially out of reach, at present, but if Las Vegas grows there is a possible project.

Other small projects in Nevada in the Colorado River Basin have been investigated, but they do not look promising at the present time. The trouble is the high pumping lift make pumping costs so great that it doesn’t look as if water users could even pay O. & M., and of course Congress does not, at the present time, look very long at projects which cannot pay for operation and maintenance charges.

That’s about all at present.

Mr. Shamberg: Thank you, Mr. Neal.

Anyone have any questions to ask Mr. Neal? Mr. Mason.

Mr. Mason: I would like to ask Mr. Neal if the Mojave Project includes development from both sides of the Colorado River or if it is just within Nevada.

Mr. Neal: No, it is just within Nevada. We have one Mojave Valley Project on the other side of the river in Arizona, but we are not paying much attention to it because Arizona will want to use her water, presumably, in the Central Arizona and Yuma areas so we will probably give our attention to the places where the water is most wanted by the State before we investigate the projects like the Mojave Valley in Arizona.

Mr. Shamberg: Any further questions?

Mr. Maxwell: In regard to the Bureau of Reclamation’s policies on the development of small projects based on underground water, I wonder if you could make some statement as to how the Bureau might operate if the presence of ground water is proven within a valley somewhere in the State of Nevada, rather than along a great river, which is apparently the only place where much activity is being done.
CONGRESSMAN RUSSELL: Mr. Smith, I have nothing further to add to what Governor Pittman has said.

My purpose in being here at the meeting today is to learn as much as I can and to carry back what I can to Washington, so I can help out the State in the conservation and development of water.

I appreciate very much your invitation to be here; and, as I stated, I am present in a listening capacity, learning capacity; I want to find out as much as I can; and I am sure that any program proposed here in which I can help in any way, you may be assured that I will do so.

Thank you.

MR. SMITH: Thank you, Congressman Russell.

Our State legislative body is represented here by one who has done a great deal for the State, and whose interest is unsurpassing in developing water resources. He is a leader in our State Senate, Senator A. V. Tallman. Will you say a word for us, Senator Tallman?

SENATOR A. V. TALLMAN: Mr. Smith, Governor Pittman, Mr. Russell:

My sole interest in this whole program is that, as a member of the Legislature, we have to help dig up funds to pay for the development of the State of Nevada. There is only one way Nevada can carry the taxation load. It is to increase our taxable wealth.

Being an active engineer and farmer for the last 27 years, I can't help but feel that future substantial growth in this State depends upon bringing into cultivation new irrigable lands.

This study you have been putting up money for in the Legislature ties up with this growth of Nevada I hope will come about because of these studies. It also ties up with the program bringing about a low cost of power through the State, and making it available throughout the State. Those two things are the most important to me, and are things this State can benefit most by; and anything you gentlemen can do toward enlightening us on our underground water resources will be of material help to the next Legislature. We do feel that the money we are spending on this program is going to bring about an increase in our irrigable acreage and taxable wealth and make it possible for the people in this State to have more of the things people in other States have.

Thank you.

MR. SMITH: Thank you, Senator Tallman.

Now I will not undertake to introduce everybody here, but would like to have you all in turn stand, one at a time, and tell us who you are and who you represent, for the benefit of the record, and for purpose of getting better acquainted.

The following persons were present:

Clarence E. Byrd, Agricultural Extension Service, University of Nevada, Reno, Nevada.

acres under civil sections. The State Engineer had no authority to exercise any jurisdiction over such rights. Section 465 30, chapter 139, has been added to the water law which provides a method whereby such decreed rights can be administered.

To aid in the distribution of water on the Humboldt River, the law now provides that the State Engineer can create a water district and appoint an advisory board of representative citizens within the district to assist him in formulating plans and projects for the conservation of the water resources and the use thereof in such district. Further provisions are made for the payment of a per diem and necessary travel expenses from the distribution fund.

A very important addition to the general water law is contained in section 75 121, chapter 159. This provides that when the State Engineer brings into a district court any proceedings, after civil or of a criminal nature, concerning the administration of and for the enforcement of the provisions of a decree, wherein the validity of the decree or any of its provisions has been drawn into question by adversary parties and the decision or judgment of the said court is that the said decree is invalid, and/or void, the State Engineer shall be deemed to be in interest in the right to take an appeal from such decision or judgment to the Supreme Court. I might state that this section was added due to a recent decision by the Nevada Supreme Court, which ruled that if it had no authority to decide matters pertaining to the merits of a certain controversy. In this case, the State Engineer brought criminal contempt proceedings in a district court, and the District judge ruled that the State Decree was faulty and uncertain, and that the complaints did not state facts sufficient to constitute contempt. The State Engineer sought certiorari in the Supreme Court upon the ground that the lower court had exceeded its jurisdiction in ruling on the State Decree. The Supreme Court decided in strict accordance with its rulings of many years standing, which was that the only question the Supreme Court will decide on certiorari is whether the lower court had the jurisdiction to make the ruling notwithstanding whether the lower court’s ruling was correct in law or not. Under this new section 75 121, the State Engineer now will be able to appeal any such decision made by a District Court to the Supreme Court.

Now, in the conference today, we will carry it on the same as we carried on the conference last year and will call upon representatives of the various agencies, both Federal and State, who are here today, to make reports on the work that they have been carrying on during the past year and their plans for the current year in connection with water development, conservation, and use.

We would like you to feel that this conference is entirely informal in nature. The purpose is to hear from the various representatives and to ask questions and have discussions; we want you to feel free, following the report of anyone, to ask that person questions, or start a general discussion. From such discussions will come a great deal of benefit.

I would like also to say that we have a few copies left of the report.
God granting us international peace, water is the magic element that will increase our State wealth a hundred-fold within the span of years of men now living. Electric power, generated by streams on the eastern slope of the Sierra Nevada Mountains will turn the wheels of mills and mines in Central and Northern Nevada, and operate the pumps that will provide irrigation for farms located in many of the one hundred desert valleys we are just beginning to investigate. This is no imaginative dream. We have many examples of such developments throughout the Western States. Each well that is developed and put to use in the semi-arid regions is an inexhaustible supply of wealth. It is a mine wherein the mineral values cannot be depleted, but are constantly restored when used. It is like the purse of Fortunatus in which the original gold coin when spent was magically replaced.

Nevada's ground water is her greatest latent resource. Without it much known mineral wealth cannot be economically developed. Given water many of our sagebrush plains will soon be dotted with homes, gray plains will become green meadows, and livestock will graze upon the surrounding hills.

Thanks to a forward-looking Legislature, we have under way a ground water exploration program, and I am fortunate in being associated with technical men who are making substantial and satisfactory progress. They are an inspiration to me and to all with whom they work. You will hear from them at this meeting.

We will have the pleasure of hearing from the various representatives of Federal and State groups who are as we go on. Much good came out of our meeting last year. We know more will be accomplished as a result of our meeting here today.

At the convention of the National Reclamation Association in Denver in 1943, in a tribute to Ralph Carpenter, champion of reclamation and author of many laws beneficial to western waters, former Governor Ralph Carr of Colorado quoted from an English writer certain sentiments that all men interested in the development of water should bear in mind. I quote:

Although the tomb of Moses is unknown, the traveler of todayakes his thirst at the well of Jacob. The gorgeous palaces of the wisest and wealthiest of monarchs, with their cedar and gold and ivory, and even the great temple of Jerusalem, hallowed by the visible glory of the Deity Himself, are gone; but Solomon's reservoirs are as perfect as ever. Of the magnificent and costly architecture of the Holy City, not one stone is left upon another, but the pool of Bethesda commands the pilgrims' reverence at the present day. The columns of Persia are moldering into dust, but the aqueducts still pervade the city of Rome its limpid stream. The Temple of the Sun, at Tadmor in the wilderness, has fallen, but its fountain sparkles in the rays of the morning as when thousands of worshippers thronged in lofty colonnades. And if any work of this generation shall rise over the deep ocean of time, we may well believe that it will be neither a palace nor a temple, but some vast aqueduct or reservoir; and if any name shall hereafter flash brightest through the mist of antiquity, it will probably be that of the man who in his day sought the happiness of his fellow men and linked his memory to some such work of national utility or benevolence.

I will now deliver the meeting to my efficient colleague, who will be our Chairman, Mr. Hugh Shamberger.

Mr. SHAMBERGER: Mr. Smith, Governor Pittman, Friends.

In order to better acquaint ourselves with the work that was done by the various Federal and State agencies on programs concerned with the development and conservation of our water resources, and to assist in the coordination of such programs and become better acquainted with the men who are carrying them out, the State Engineer invited representatives of all such agencies to attend the Nevada Water Conference held in Carson City, Nevada, on September 17, 1946. The meeting was highly successful and was attended by representatives of the U. S. Army Engineers, Bureau of Reclamation, U. S. Geological Survey, Farm Security Administration, Soil Conservation Service, U. S. Forest Service, U. S. Weather Bureau, Nevada Agricultural Experiment Station, U. S. Grazing Service, U. S. Fish and Wildlife Survey, U. S. Department of Agriculture and U. S. Indian Agency.

It was the unanimous opinion of all present that such meetings should be held yearly. This then will be the Second Nevada Water Conference.

The ground water program will be discussed later, but at this time I would like to briefly mention some late additions to our ground water law. Perhaps the most important was the setting up of a license law for well drillers. Under this Act, every active well driller in the State must be licensed and must submit logs of every well drilled within thirty days following completion of the well. To date, some forty-two drillers have been licensed and are cooperating in fine manner and over 150 well logs have been received. The Act further provides that the State Engineer shall prepare rules and regulations for well drilling. Other important new phases of the present ground water law are: the providing for loss of water right by five consecutive years of nonuse or by abandonment; the dividing of a vested right to ground water; providing for the adjudication of ground water in any one drainage basin; and providing for the restriction of well drilling in any portion of a designated area if it is determined that additional wells would cause undue interference.

The general water law of the State was also strengthened by the 1947 Legislature by the addition of certain amendments and new sections. I will only enumerate the most important.

Prior to the enactment of a State water law under which a statutory method was provided for the adjudication of water rights, the District Courts of the State adjudicated water rights on many of our smaller
God granting us international peace, water is the magic element that will increase our State wealth a hundred-fold within the span of years of men now living. Electric power, generated by streams on the eastern slope of the Sierra Nevada Mountains will turn the wheels of mills and mines in Central and Northern Nevada, and operate the pumps that will provide irrigation for farms located in many of the one hundred desert valleys we are just beginning to investigate. This is no imaginative dream. We have many examples of such developments throughout the Western States. Each well that is developed and put to use in the semi-arid regions is an inexhaustible supply of wealth. It is a mine wherein the mineral values cannot be depleted, but are constantly restored when used. It is like the purse of Fortunatus in which the original gold coin when spent was magically replaced.

Nevada's ground water is her greatest latent resource. Without it much known mineral wealth cannot be economically developed. Given water many of our sagebrush plains will soon be dotted with homes, gray plains will become green meadows, and livestock will graze upon the surrounding hills.

Thanks to a forward-looking Legislature, we have under way a ground water exploration program, and I am fortunate in being associated with technical men who are making substantial and satisfactory progress. They are an inspiration to me and to all with whom they work. You will hear from them at this meeting.

We will have the pleasure of hearing from the various representatives of Federal and State groups here as we go on. Much good came out of our meeting last year. We know more will be accomplished as a result of our meeting here today.

At the convention of the National Reclamation Association in Denver in 1943, in a tribute to Ralph Carpenter, champion of reclamation and author of many laws beneficial to western waters, former Governor Ralph Carr of Colorado quoted from an English writer certain sentiments that all men interested in the development of water should bear in mind. I quote:

Although the tomb of Moses is unknown, the traveler of today makes his request at the well of Jacob. The grottoes of the wisest and wealthiest of monarchs, with their cedar and gold and ivory, and even the great temple of Jerusalem, hallowed by the visible glory of the Deity Himself, are gone; but Solomon's reservoirs are as perfect as ever. Of the magnificent and costly architecture of the Holy City, not one stone is left upon another, but the pool of Bethesda commands the pilgrim's reverence at the present day. The columns of Persia are moldering into dust, but its cisterns and aqueducts remain to challenge our admiration. The golden house of Necho is a mass of ruins, but the spring of Claudius still pours into the city of Rome its limpid stream. The Temple of the Sun, at Tadmor in the wilderness, has fallen, but its fountain sparkles in the rays of the morning as when thousands of worshippers thronged its lofty colonnades. And if any work of this generation shall rise over the deep ocean of time, we may well believe that it will be neither a palace nor a temple, but some vast aqueduct or reservoir; and if any name shall hereafter flash brightest through the mist of antiquity, it will probably be that of the man who in his day sought the happiness of his fellow men and linked his memory to some work of national utility or benevolence.

I will now deliver the meeting to my efficient co-worker, who will be our Chairman, Mr. Hugh Shamburger.

Mr. SHAMBERGER: Mr. Smith, Governor Pittman, Friends,

In order to better acquaint ourselves with the work that was done by the various Federal and State agencies on programs concerned with the development and conservation of our water resources, and to assist in the coordination of such programs and become better acquainted with the men who are carrying them out, the State Engineer invited representatives of all such agencies to attend the Nevada Water Conference held in Carson City, Nevada, on September 17, 1946. The meeting was highly successful and was attended by representatives of the U. S. Army Engineers, Bureau of Reclamation, U. S. Geological Survey, Farm Security Administration, Soil Conservation Service, U. S. Forest Service, U. S. Weather Bureau, Nevada Agricultural Experiment Station, U. S. Grazing Service, U. S. Fish and Wildlife Service, U. S. Department of Agriculture and U. S. Indian Agency.

It was the unanimous opinion of all present that such meetings should be held yearly. This then will be the Second Nevada Water Conference.

The ground water program will be discussed later, but at this time I would like to briefly mention some late additions to our ground water law. Perhaps the most important was the setting up of a license law for well drillers. Under this Act, every active well driller in the State must be licensed and must submit logs of every well drilled within thirty days following completion of the well. To date, some forty-two drillers have been licensed and are cooperating in fine manner and over 150 well logs have been received. The Act further provides that the State Engineer shall prepare rules and regulations for well drilling. Other important new phases of the present ground water law are: the providing for loss of water right by five successive years of nonuse or by abandonment; the defining of a vested right to ground water; providing for the adjudication of ground water in any drainage basin; and providing for the restriction of well drilling in any portion of a designated area if it is determined that additional wells would cause undue interference.

The general water law of the State was also strengthened by the 1947 Legislature by the addition of certain amendments and new sections. I will only enumerate the most important.

Prior to the enactment of a State water law under which a statutory method was provided for the adjudication of water rights, the District Courts of the State adjudicated water rights on many of our smaller...
across under civil actions. The State Engineer had no authority to exercise any jurisdiction over such rights. Section 461b, chapter 155, has been added to the water law which provides a method whereby such decreed rights can be administered.

To aid in the distribution of water on the Humboldt River, the law now provides that the State Engineer can create a water district and appoint an advisory board of representative citizens within the district to assist him in formulating plans and projects for the conservation of the water resources and the use thereof in such district. Further provisions are made for the payment of a per diem and necessary travel expenses from the distribution fund.

A very important addition to the general water law is contained in section 751a, chapter 159. This provides that when the State Engineer brings into a district court any proceedings, either civil or of a criminal nature, concerning the administration of and for the enforcement of the provisions of a decree, wherein the validity of the decree or any of its provisions has been drawn into question by adversary parties and the decision or judgment of the said court is that the said decree is invalid, and/or void, the State Engineer shall be deemed to be a party in interest with the right to take an appeal from such decision or judgment to the Supreme Court. I might state that this section was added due to a recent decision by the Nevada Supreme Court, which ruled that it had no authority to decide matters pertaining to the merits of a certain controversy. In this case, the State Engineer brought criminal contempt proceedings in a district court and the District judge ruled that the State Decree was faulty and uncertain, and that the complaints did not state facts sufficient to constitute contempt. The State Engineer sought certiorari in the Supreme Court upon the ground that the lower court had exceeded its jurisdiction in ruling on the State Decree. The Supreme Court decided in strict accordance with its rulings of many years standing, which was that the only question the Supreme Court will decide on certiorari is whether the lower court had the jurisdiction to make the ruling notwithstanding whether the lower court’s ruling was correct in law or not. Under this new section 751a, the State Engineer now will be able to appeal any such decision made by a District Court to the Supreme Court.

Now, in the conference today, we will carry it on the same as we carried on the conference last year and will call upon representatives of the various agencies, both Federal and State, who are here today, to make reports on the work that they have been carrying on during the past year and their plans for the current year in connection with water development, conservation, and use.

We would like you to feel that this conference is entirely informal in nature. The purpose is to hear from the various representatives and to ask questions and have discussions; we want you to feel free, following the report of anyone, to ask that person questions, or start a general discussion. From such discussions will come a great deal of benefit.

I would like also to say that we have a few copies left of the report.
CONGRESSMAN RUSSELL: Mr. Smith, I have nothing further to add to what Governor Pittman has said.

My purpose in being here at the meeting today is to learn as much as I can and to carry back what I can to Washington, so that I can help out the State in the conservation and development of water.

I appreciate very much your invitation to be here; and, as I stated, I am present in a listening capacity, learning capacity; I want to find out as much as I can; and I am sure that any program proposed here in which I can help in any way, you may be assured that I will do so.

Thank you.

MR. SMITH: Thank you, Congressman Russell.

Our State legislative body is represented here by one who has done a great deal for the State, and whose interest is unremitting in developing water resources. He is a leader in our State Senate, Senator A. V. Tallman. Will you say a word for us, Senator Tallman?

SENATOR A. V. TALLMAN: Mr. Smith, Governor Pittman, Mr. Russell:

My sole interest in this whole program is that, as a member of the Legislature, we have to help dig up funds to pay for the development of the State of Nevada. There is only one way Nevada can carry the taxation load. It is to increase our taxable wealth.

Being an active engineer and farmer for the last 37 years, I can't help but feel that future substantial growth in this State depends upon bringing into cultivation new irrigable lands.

This study you have been putting up money for in the Legislature ties up with this growth of Nevada. I hope to come about because of these studies. It also ties in with the problem of bringing about a low cost of power through the Carter, and making it available throughout the State. Those two things are the most important, and are things this State can benefit most by; and anything you gentlemen can do toward enlightening us on our underground water resources will be of material help to the next Legislature. We do feel that the money we are spending on this program is going to bring about an increase in our irrigable acreage and taxable wealth and make it possible for the people in this State to have more of the things people in other States have.

Thank you.

MR. SMITH: Thank you, Senator Tallman.

Now I will not undertake to introduce everybody here; but would like to have you all in turn stand, one at a time, and tell us who you are and who you represent, for the benefit of the record, and for purpose of getting better acquainted.

The following persons were present:

Clarence E. Byrd, Agricultural Extension Service, University of Nevada, Reno, Nevada.


on the meeting last year, and those of you, who have not received a copy can take one of these with you.

We also have copies of the Nevada water law, brought up to date, the State Engineer's Biennial Report, and some copies of the ground water reports prepared by the U. S. Geological Survey in cooperation with the State Engineer's office.

I will first call on Mr. Thomas C. Mead, of the Bureau of Reclamation, Region 3, Boulder City, Mr. Mead, may we hear from you?

MR. MEAD: The Bureau has been conducting investigations in Moapa Valley, in the vicinity of Overton, in an area along the lower Muddy River, a tributary of the old Virgin River. The Muddy River flows into Lake Mead, near the head of the Virgin arm of the lake. About forty seconds-feet, which have their origin in springs near the head of the Muddy Valley, furnish a supply of water which is very satisfactory except for one thing; the supply coming from the springs is almost constant, but the irrigation demands vary; in the middle of the summer there isn't enough water to go around.

We have had our engineer, W. P. Adair, and party at Overton where he has been conducting an investigation to find out what can be done to improve the water situation. We have a reservoir site to the White Narrows and our geologists are now investigating that. It is believed that somewhere between 7,000 and 9,000 acre-feet of spring water can be stored at the White Narrows and be released as needed.

In general, the investigations have been similar to those followed on any irrigation project. Our engineers have gone over the existing distribution system to see what can be done to reduce losses. Drainage is a problem. The soil in certain parts is very tight. The Soil Conservation Service has been doing a lot of work to determine ground water levels and the Bureau has continued this work of the Soil Conservation Service. We have also taken topography in order to revise the present distribution system, if that proves necessary. Our soil experts have recently completed the field work of land classification of this project.

I do not know what the results will be yet, but we have counted on about 2,800 acres of present irrigated land to receive supplemental water, and perhaps 2,000 acres more of new land to be irrigated.

This project, like nearly all our present-day western projects, may be comparatively costly to construct, but the Moapa Valley is favored in having a good local market in Las Vegas, and a long and a good early growing season, which means good prices; and the valley has been raising some specialty crops, which further results in good prices.

The Bureau plans to complete the draft of its Moapa Valley Project report in the fall of 1944; that means that some time early in 1945 this report will have been submitted to the various agencies for criticism, and ready for action by Congress.

After the Moapa Valley Project investigation is completed, we plan to investigate Fort Meade Project, one of former Congressman Scurrah's favorites. He had felt that the returning soldiers could be settled there. It is in the extreme southern tip of Nevada. The project at the time Congressman Scurrah was interested in it, included
some slope lands, but I think the Bureau now will probably attempt to find out first what can be done with about 2,600 acres of bottom lands and probably not include the less-promising slope lands at all, at least for the first stage of development. Part of the bottom lands are under the jurisdiction of the Indian Service, about 1,600 of the 2,600 acre total. The area to be developed is 11 miles below Davis Dam, and will receive power from Davis Dam for pumping from the Colorado River. The lift is comparatively small, somewhere from 15 to 25 feet, dependent upon whether the river stays stable or retrogresses further. The present clear water of the Colorado River removes the finer material on the river bottom and since there is no lift to replace it, the river will cut until its bottom is protected with enough coarse material to resist further erosion.

A project for the more distant future is the Las Vegas Pumping Project. If Las Vegas ever grows to be a city of fifty or sixty thousand people, or perhaps sooner, she will have to get water from Lake Mead; and it may be possible to develop some of the irrigable land around there by charging most of the construction cost and a large part of the pumping cost to municipal water.

As conditions now are, the Las Vegas Pumping Project isn’t a promising irrigation project because the lift is somewhere between 500 and 1,000 feet. There are six and a half miles of tunnel and 34 miles of line canal. It is financially out of reach, at present, but if Las Vegas grows there is a possible project.

Other small projects in Nevada in the Colorado River Basin have been investigated, but they do not look promising at the present time. The trouble is the high pumping lifts make pumping costs so great that it doesn’t look as if water users could even pay O & M, and of course Congress does not, at the present time, look very long at projects which cannot pay for operation and maintenance charges.

That’s about all at present.

Ms. Shambaugh: Thank you, Mr. Mead.
Anyone have any questions to ask Mr. Mead? Mr. Mason.

Mr. Mason: I would like to ask Mr. Mead if the Mojave, Fort Mojave Project includes development from both sides of the Colorado River or if it is just within Nevada.

Mr. Mead: No, it is just within Nevada. We have one Mojave Valley Project on the other side of the river in Arizona, but we are not paying much attention to it because Arizona will want to use her water, presumably, in the Central Arizona and Yuma areas so we will probably give our attention to the places where the water is most wanted by the State before we investigate the projects like the Mojave Valley in Arizona.

Ms. Shambaugh: Any further questions?

Mr. Exley: In regard to the Bureau of Reclamation’s policies on development of small projects based on underground water, I wonder if you could make some statement as to how the Bureau might operate if the presence of underground water is known within a valley somewhere in the State of Nevada, rather than along a great river, which is apparently the only place where much activity is being done.
I think possibly a lot of the prosperity for the State may be gotten through the development of projects based on ground water in valleys of the State. Maybe I have not expressed myself very well. Do you (addressing Mr. Shamberger) understand what I am driving at?

Mr. SHAMBERGER: Yes.

Mr. MAAX: I think it is important to bring that out at the meeting here because it is one of the vital things in the development of Nevada.

Mr. MEOAD: Maybe I had better not try to answer that directly. Our Central Arizona Project is very much involved in the question of ground water. The area in the general vicinity of Phoenix has been depleting its ground water. Unless we can stop the overdevelopment of ground water supplies, then if the Government should help by importing Colorado River water to Central Arizona we will, after the importation, see repeated the same situation that exists now near Phoenix—we will bring in water and then there will be an extraordinary development of pumping on the fringe of the area that is supplied, and the first thing you know, the ground water will be carried down so far by pumping that it will become uneconomical to pump. Unless the State of Arizona has a good ground water law, there will be a continual state of emergency following overdevelopment of ground water supplies.

We have a small project near Joseph City, Arizona, on the Little Colorado in which we propose to pump from wells. The difficulty on that project is to estimate how much water can be supplied. Water users would like a firm contract, but how are we going to have a firm contract until we know how much water we can develop? It is quite a ticklish problem.

Mr. SMITH: Mr. MEOAD, regarding the Las Vegas Pumping Project, you were referring to the excessive cost of pumping water through the 900-foot lift into Las Vegas Valley—your reference was more particularly to pumping water for agricultural purposes, was it not?

Mr. MEOAD: That's right.

Mr. SMITH: For the raising of crops?

Mr. MEOAD: For the raising of crops; that's right. It means that irrigators would have to grow high-value crops to pay for the extraordinarily high price of water. Our economists, when I talked with them suggesting the growing of specialty crops, did not encourage that suggestion because specialty crops will be specialty crops only for a while, and to count on a project based on specialty crops is precarious business.

Mr. SMITH: But, on the other hand, the use of that water and the cost of pumping for manufacturing purposes, for municipal use, and for specialized uses, are not limited—ornamental agriculture you might call it, for resort hotels and the like, suburban development to the city of Las Vegas—from that standpoint the high cost of pumping would be justified, would it not?

Mr. MEOAD: Yes.
GOVERNOR PITTMAN: Why do you say specialty crops will be of such short duration? What do you mean it would not be feasible? Specialty crops for a short time?

Mr. MEAD: They will be satisfactory at first, but it is precarious matter to count on them indefinitely.

I had been of a Frenchman who had come to Nevada and grown flowers for perfume and had done very well indeed. When I cited this to Mr. West, who is one of our economists, he said, "That is very well, but the same pests that this man had in France may, in the course of time, come here to Nevada." Now that may or may not be true. One table with specialty crops is although they may not be beaten by pests to start with in Nevada, you never tell when the pests will be introduced, and it is not particularly safe to count on extraordinary situations.

The way out for high cost water is to raise high value crops, but we much prefer, though, to count on staples. It is much safer to do that. If you can get away with high value crops, that is the thing to do.

GOVERNOR PITTMAN: Do you know whether such crops could be raised in the southern part of Nevada profitably, such as grapefruit, celery, and crops of that nature?

Mr. MEAD: Grapefruit has a tremendous competition with Texas now. I understand Moapa Valley, for a while, at any rate, was raising celery, and is raising tomato plants for shipment all over the United States, and doing very well indeed.

GOVERNOR PITTMAN: Isn't that possible for the southern part of the State?

Mr. MEAD: That is just fine where they can do that.

Mr. PETERSON: I made an observation. In talking with Mr. Wittwer, Clark County Agent, he brought up the same thing Mr. Mead mentioned regarding these pests. The tomato plant crops in Moapa Valley are already being bothered by some sort of pest which infects tomato plants. According to Mr. Wittwer, it is now beginning to show up and these fellows have not to go into a rotation of some kind, or make other provisions in order to continue this tomato plant growing. It is very profitable farming, as I understand it, and it is something that cannot be carried on indefinitely. It shows that specialty crops are not the profitable operation for all time that they appear to be in the beginning.

One other thing I would like to take up: I would like to go back to Mr. Maxey's question. I don't think it was quite as fully answered as Mr. Maxey would have it. I think Mr. Maxey was referring to areas in these valleys in which ground water might be found within a reasonable pumping distance of the surface.

I think what he was aiming at was to get some statement as to what the Bureau of Reclamation's attitude would be in developing those areas. In other words, if it were possible to find an area of some five or six thousand acres that could be developed by pumping, I think the Geological Survey could be in a position to furnish information regarding the amount of water available and so on, then the question

<table>
<thead>
<tr>
<th>Cooperate Stream Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statement of Receipts and Disbursements from July 1, 1946, to June 30, 1948</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>---------------------------</td>
</tr>
<tr>
<td>Balance July 1, 1946</td>
</tr>
<tr>
<td>July</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>December</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Appropriation July 1, 1947</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Balance July 1, 1948</td>
</tr>
</tbody>
</table>
### PAHRUMP VALLEY ABETRAN BPSN

<table>
<thead>
<tr>
<th>Month and year</th>
<th>Subtotal</th>
<th>Administration</th>
<th>Total</th>
<th>Receipts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Balance July 1, 1946</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>July 1947</strong></td>
<td><strong>$33,800</strong></td>
<td><strong>$21,940</strong></td>
<td><strong>$55,740</strong></td>
<td><strong>$1,553,57</strong></td>
</tr>
<tr>
<td>August</td>
<td><strong>$42,550</strong></td>
<td><strong>$22,940</strong></td>
<td><strong>$65,490</strong></td>
<td><strong>$54,43</strong></td>
</tr>
<tr>
<td>September</td>
<td><strong>$174,400</strong></td>
<td><strong>$61,200</strong></td>
<td><strong>$235,600</strong></td>
<td><strong>$54,43</strong></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>$251,750</strong></td>
<td><strong>$95,180</strong></td>
<td><strong>$346,930</strong></td>
<td><strong>$54,43</strong></td>
</tr>
<tr>
<td><strong>Balance January 1, 1947</strong></td>
<td><strong>$1,553,570</strong></td>
<td><strong>$80,000</strong></td>
<td><strong>$1,593,570</strong></td>
<td><strong>$1,198,94</strong></td>
</tr>
<tr>
<td>January</td>
<td><strong>$165,150</strong></td>
<td><strong>$106,950</strong></td>
<td><strong>$272,100</strong></td>
<td><strong>$349,15</strong></td>
</tr>
<tr>
<td>February</td>
<td><strong>$60,940</strong></td>
<td><strong>$13,150</strong></td>
<td><strong>$74,090</strong></td>
<td><strong>$349,15</strong></td>
</tr>
<tr>
<td>March</td>
<td><strong>$4,150</strong></td>
<td><strong>$13,150</strong></td>
<td><strong>$17,300</strong></td>
<td><strong>$349,15</strong></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>$230,240</strong></td>
<td><strong>$133,250</strong></td>
<td><strong>$363,490</strong></td>
<td><strong>$349,15</strong></td>
</tr>
<tr>
<td><strong>Balance January 1, 1948</strong></td>
<td><strong>$1,593,570</strong></td>
<td><strong>$133,250</strong></td>
<td><strong>$1,726,820</strong></td>
<td><strong>$349,15</strong></td>
</tr>
<tr>
<td>February</td>
<td><strong>$249,090</strong></td>
<td><strong>$133,250</strong></td>
<td><strong>$382,340</strong></td>
<td><strong>$349,15</strong></td>
</tr>
<tr>
<td>March</td>
<td><strong>$7,300</strong></td>
<td><strong>$133,250</strong></td>
<td><strong>$140,550</strong></td>
<td><strong>$349,15</strong></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>$326,390</strong></td>
<td><strong>$266,500</strong></td>
<td><strong>$592,890</strong></td>
<td><strong>$349,15</strong></td>
</tr>
</tbody>
</table>
| **Balance July 1, 1948** | **$1,726,820** | **$266,500** | **$1,993,320** | **$349,15**

### UNDERGROUND WATER INVESTIGATION

<table>
<thead>
<tr>
<th>Month and year</th>
<th>Subtotal</th>
<th>Administration</th>
<th>Total</th>
<th>Receipts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Balance July 1, 1946</strong></td>
<td><strong>$15,113.00</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>July</td>
<td><strong>$199.00</strong></td>
<td><strong>$209.00</strong></td>
<td><strong>$408.00</strong></td>
<td><strong>$209.00</strong></td>
</tr>
<tr>
<td>August</td>
<td><strong>$415.00</strong></td>
<td><strong>$209.00</strong></td>
<td><strong>$624.00</strong></td>
<td><strong>$209.00</strong></td>
</tr>
<tr>
<td>September</td>
<td><strong>$159.00</strong></td>
<td><strong>$209.00</strong></td>
<td><strong>$368.00</strong></td>
<td><strong>$209.00</strong></td>
</tr>
<tr>
<td>October</td>
<td><strong>$199.00</strong></td>
<td><strong>$209.00</strong></td>
<td><strong>$408.00</strong></td>
<td><strong>$209.00</strong></td>
</tr>
<tr>
<td>November</td>
<td><strong>109.00</strong></td>
<td><strong>209.00</strong></td>
<td><strong>318.00</strong></td>
<td><strong>209.00</strong></td>
</tr>
<tr>
<td>December</td>
<td><strong>99.00</strong></td>
<td><strong>209.00</strong></td>
<td><strong>298.00</strong></td>
<td><strong>209.00</strong></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>$6,473.00</strong></td>
<td><strong>$1,453.50</strong></td>
<td><strong>$7,926.50</strong></td>
<td><strong>$209.00</strong></td>
</tr>
<tr>
<td><strong>Balance January 1, 1947</strong></td>
<td><strong>$7,926.50</strong></td>
<td><strong>$1,453.50</strong></td>
<td><strong>$9,380.00</strong></td>
<td><strong>$209.00</strong></td>
</tr>
<tr>
<td>January</td>
<td><strong>$219.73</strong></td>
<td><strong>$219.73</strong></td>
<td><strong>$439.46</strong></td>
<td><strong>$209.00</strong></td>
</tr>
<tr>
<td>February</td>
<td><strong>$46.76</strong></td>
<td><strong>219.73</strong></td>
<td><strong>266.49</strong></td>
<td><strong>209.00</strong></td>
</tr>
<tr>
<td>March</td>
<td><strong>109.00</strong></td>
<td><strong>219.73</strong></td>
<td><strong>328.73</strong></td>
<td><strong>209.00</strong></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>$475.49</strong></td>
<td><strong>$668.19</strong></td>
<td><strong>$1,143.68</strong></td>
<td><strong>$209.00</strong></td>
</tr>
<tr>
<td><strong>Balance January 1, 1948</strong></td>
<td><strong>$1,143.68</strong></td>
<td><strong>$668.19</strong></td>
<td><strong>$1,811.87</strong></td>
<td><strong>$209.00</strong></td>
</tr>
<tr>
<td>February</td>
<td><strong>$317.24</strong></td>
<td><strong>$668.19</strong></td>
<td><strong>$985.43</strong></td>
<td><strong>$209.00</strong></td>
</tr>
<tr>
<td>March</td>
<td><strong>59.00</strong></td>
<td><strong>$668.19</strong></td>
<td><strong>$727.19</strong></td>
<td><strong>$209.00</strong></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>$376.24</strong></td>
<td><strong>$1,336.38</strong></td>
<td><strong>$1,712.62</strong></td>
<td><strong>$209.00</strong></td>
</tr>
</tbody>
</table>
| **Balance July 1, 1948** | **$1,811.87** | **$1,336.38** | **$3,148.25** | **$209.00**

"Would be, would the Bureau be in a position or would it be interested in going there and developing wells and selling that water or however else they furnish it to settlers who might be induced to come in. I think that was what Mr. Maxey—

Mr. Maxey: Assuming the safety of such an operation was proven,

Mr. MEAD: Just speaking as an individual, I think the Bureau is interested in any development that will furnish water; and the point of proving a safe yield of water is very important because the Bureau would be terribly handicapped in going into a project where the yield is uncertain because we could not fix up a farm repayment contract not knowing how much water could be developed.

Mr. Petersen: I think that would be the work of the Geological Survey to investigate that—to make such an investigation.

Mr. MEAD: That is one place where the Bureau and the Geological Survey could be working together.

Mr. CLARENCE BYRD: Does that apply also to surface water dams to conserve and hold back water for development of land in these small valleys?

Mr. MEAD: The Bureau, of course—

Mr. BYRD: (Interrupting). You are talking primarily about underground water; I am wondering about something that’s a regular guerilla blowing itself off every spring.

Mr. MEAD: The Bureau, of course, is interested in all irrigation projects, but small projects are not as easily developed as large ones because of the way the Bureau operates. Our overhead is too great a percent of the cost of a small project. Now, on a large project the overhead will represent only a small fraction of the cost of the project. For example, in the building of Hoover Dam—the overhead would represent only a small percent, but on a small project we have to go through certain procedures prescribed by law, and before we get through we may find that on very small projects that the overhead makes us ashamed. We can’t help it; we have to go through a certain rigmarole; and it is probably true that the Soil Conservation Service and some of the other agencies of government could do more to help than the Bureau of Reclamation on very small projects.

Mr. Maxey: I just wanted to carry my question a little further. I think the fundamental reason for the Ground Water Division of the Geological Survey being here in the State of Nevada, as I understand it, is to locate supplies of ground water for further development of land in the State in cooperation, more or less, with our program, and there will be agencies determining the quality of land; and, as Mr. Petersen says, if such areas of considerable extent are found that are apparently worth while developing, it seemed to me that the Bureau of Reclamation would be one agency in a position to carry the development on from where we leave off with the fact-finding function. And, I, more or less, think it is a matter of importance to bring out, at this meeting, an understanding of what, or how far we could go, because we are constantly asked the question, "What good are you doing us?"
We know the water is there, too. The natives in the State will say that.

Mr. Mead: Yes.

Mr. Maxey: What we are trying to explain is that if we locate the water, its development can be taken up there by some other agency in cases where private enterprise cannot move in and develop it profitably at the present time. I believe I have knowledge of two or three areas, in my experience in this State, where such projects may be feasible.

Mr. Mead: That point is a good point. The Bureau now needs to know the probable ground water yield before it can report on a ground water project. We can do better with very large projects than we can with very small projects, because our overhead is a smaller percentage of the large project cost. We have to submit our reports to various States for criticism, and we have to make our reports meet certain prescribed criteria; we have several kinds of specialists on field investigations; on very small projects the overhead is too large a percentage of the cost of investigation.

But the point you make is good. We are certainly glad to know what our underground yield is, or for that matter, the water supply of any prospective project.

Mr. Shamberger: In that connection, I might mention that I understand that there is a great deal of agitation throughout the West to have the Bureau of Reclamation organize a small projects division designated in such a way as not to have this great overhead you speak of.

Mr. Mead: I have not heard of it, but I am glad to hear of it. That would avoid one defect of our present system.

Mr. Shamberger: I am going to call upon another representative of the Bureau of Reclamation. As you probably know, Region 4, which has its headquarters in Salt Lake City, covers perhaps the major portion of the State, and Region 3, with headquarters at Boulder City, and the region Mr. Mead is from is in the southern part of the State.

It is a pleasure to see that William Slattery, Engineer, Bureau of Reclamation, Region 4, is here today. Bill, will you say a few words.

Mr. Slattery: Mr. Shamberger, Gentlemen: I am not one of those fortunate or unfortunate Irishmen who have kissed the Blarney Stone, but I have a few written statements here that I will attempt to read to you if you will bear with me.

First, I want to say that Regional Director E. O. LaBahn, who is Director of this region, was called down into Southern Colorado over the weekend. He was at Lovelock earlier in the week and represented very much he had to return to Colorado, so the job of presenting his talk here, or representing the Bureau, fell upon me, and I didn’t have any information upon it until yesterday about three o’clock in the afternoon. I will try to read some of the statements, and probably add something to them.

Now, as I understand, Mr. Smith wants a report on what activities the Bureau has been engaged in during the past year and what they have in mind during this current year.

<table>
<thead>
<tr>
<th>Month and year</th>
<th>Revenue</th>
<th>Administration</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 1, 1946</td>
<td>$102.34</td>
<td>$102.34</td>
<td>$102.34</td>
</tr>
<tr>
<td>August</td>
<td>$102.34</td>
<td>$102.34</td>
<td>$102.34</td>
</tr>
<tr>
<td>September</td>
<td>$102.34</td>
<td>$102.34</td>
<td>$102.34</td>
</tr>
<tr>
<td>October</td>
<td>$102.34</td>
<td>$102.34</td>
<td>$102.34</td>
</tr>
<tr>
<td>November</td>
<td>$102.34</td>
<td>$102.34</td>
<td>$102.34</td>
</tr>
<tr>
<td>December</td>
<td>$102.34</td>
<td>$102.34</td>
<td>$102.34</td>
</tr>
<tr>
<td>Totals</td>
<td>$102.34</td>
<td>$102.34</td>
<td>$102.34</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Month and year</th>
<th>Revenue</th>
<th>Administration</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>$102.34</td>
<td>$102.34</td>
<td>$102.34</td>
</tr>
<tr>
<td>February</td>
<td>$102.34</td>
<td>$102.34</td>
<td>$102.34</td>
</tr>
<tr>
<td>March</td>
<td>$102.34</td>
<td>$102.34</td>
<td>$102.34</td>
</tr>
<tr>
<td>April</td>
<td>$102.34</td>
<td>$102.34</td>
<td>$102.34</td>
</tr>
<tr>
<td>May</td>
<td>$102.34</td>
<td>$102.34</td>
<td>$102.34</td>
</tr>
<tr>
<td>June</td>
<td>$102.34</td>
<td>$102.34</td>
<td>$102.34</td>
</tr>
<tr>
<td>July</td>
<td>$102.34</td>
<td>$102.34</td>
<td>$102.34</td>
</tr>
<tr>
<td>August</td>
<td>$102.34</td>
<td>$102.34</td>
<td>$102.34</td>
</tr>
<tr>
<td>September</td>
<td>$102.34</td>
<td>$102.34</td>
<td>$102.34</td>
</tr>
<tr>
<td>October</td>
<td>$102.34</td>
<td>$102.34</td>
<td>$102.34</td>
</tr>
<tr>
<td>November</td>
<td>$102.34</td>
<td>$102.34</td>
<td>$102.34</td>
</tr>
<tr>
<td>December</td>
<td>$102.34</td>
<td>$102.34</td>
<td>$102.34</td>
</tr>
<tr>
<td>Totals</td>
<td>$102.34</td>
<td>$102.34</td>
<td>$102.34</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Month and year</th>
<th>Revenue</th>
<th>Administration</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>July</td>
<td>$102.34</td>
<td>$102.34</td>
<td>$102.34</td>
</tr>
<tr>
<td>August</td>
<td>$102.34</td>
<td>$102.34</td>
<td>$102.34</td>
</tr>
<tr>
<td>September</td>
<td>$102.34</td>
<td>$102.34</td>
<td>$102.34</td>
</tr>
<tr>
<td>October</td>
<td>$102.34</td>
<td>$102.34</td>
<td>$102.34</td>
</tr>
<tr>
<td>November</td>
<td>$102.34</td>
<td>$102.34</td>
<td>$102.34</td>
</tr>
<tr>
<td>December</td>
<td>$102.34</td>
<td>$102.34</td>
<td>$102.34</td>
</tr>
<tr>
<td>Totals</td>
<td>$102.34</td>
<td>$102.34</td>
<td>$102.34</td>
</tr>
</tbody>
</table>
The growth and security of our western civilization depends on how well we maintain and manage watershed lands and how efficiently we collect, distribute, and utilize our water supply.

Thank you, Mr. Chairman.

Mr. SHAWBERG: Are there any questions for Mr. Hansen? That was a very nice talk; thank you, very, very much.

Mr. HANSEN: Thank you.

Mr. SHAWBERG: Mr. Morrison, did you wish to ask Mr. Hansen a question?

Mr. MORRISON: I was wondering if I could get a clarification of a few points: I was wondering whether the trouble might not be improved—I don't know if I understood you correctly—whether some of the terms could not be clarified as to whether you mean total run-off from the area, or dependability from the run-off where storage does not take place.

Mr. HANSEN: I think I understand what you are referring to. Good vegetation on the watershed will reduce the total flow somewhat, but it will also retard and taper off more gradually the summer flow, so that there is a slight increase during that season. The largest decrease will be noted in reducing the high flow, particularly following summer storms.

Mr. MORRISON: I was wondering, say down in the Lahontan Reservoir, people there might actually be benefited by deforestation up here. That would not be the case where there was not storage, but some water that might be stored in Lahontan Reservoir would be saved by less evaporation and transpiration loss. There would be a greater loss in the drainage area of the high mountains.

Mr. HANSEN: I am not prepared to answer that because I don't know what the evaporation on the Lahontan Reservoir might be. I would guess it might be pretty high; you know more about it than I do. It seems to me, however, that deforestation of mountain lands to acquire a little more water for storage in reservoirs is a serious point of consideration, inasmuch as the soil movements off the slopes do considerable damage in the valleys, threaten valley improvements, shortens the effective life of your downstream structures, such as the Lahontan Reservoir. And it fails to contribute lumber and other resources we get from the mountain areas that our civilization is so dependent on.

Mr. MORRISON: Yes, the other was just more of an academic point.

Mr. HANSEN: I think probably the greatest loss of deforestation is the soil loss, because that affects water infiltration and holding capacity and it seriously reduces the producing capacity of the land.

This area (indicating Carson Watershed on map), is like a sieve. Water runs through its course granite sand. When we dug a hole on the bare spot, shown on the slide, just six or eight feet from the lupine, moisture was found in a few inches and extends down several feet or as far as our test holes were dug. When we dug a hole in the lupine...
the Hope Valley reservoir. The Bureau financed the installation of seven stream-flow recording gages on the East Fork of the Carson River to measure the flows diverted to the Hope Valley reservoir, and paid for the operation of the gages through fiscal year 1947.

WALKER RIVER PROJECT

The only work accomplished on the Walker River project investigation during fiscal year 1947 consisted of reconnaissance geological investigations of the Leavitt Meadows and Pickle Meadows reservoir sites, and of the potential power site below the Pickle Meadows reservoir.

DRAFT

Reclamation Program in Nevada—Regional Branch of Operation and Maintenance

1. Of the fifteen Bureau of Reclamation operating projects in Region 4, three are located in Nevada. These three projects are the Newlands, in which storage, distribution, and drainage works were constructed by the United States to serve lands in the Truckee River and Carson River valleys; the Humboldt Project, where the Rye Patch Dam and Reservoir were constructed to furnish water to lands in the lower Humboldt Valley; and the Truckee River Storage Project, where the Boca Dam and Reservoir were constructed for irrigation of lands in Reno Valley. Combined, the three Nevada projects are capable of furnishing irrigation water for 138,000 acres of land, of which 113,000 acres were cropped in 1946.

2. We are very interested in the success of the operating projects and in their operation and maintenance. After planning activities and construction works were completed, the Bureau continued to assist the projects with their problems through direct contact with the project and in cooperation with State and Federal agencies on problems confronting the water users.

3. The Newlands Project (formerly the Truckee-Carson Project) was the first project on which construction work and the delivery of irrigation water were undertaken under the Reclamation Act. The ultimate irrigable area of the project is considered to be 87,500 acres, of which about 67,500 acres are covered by water right applications, and approximately 50,000 acres are being irrigated. There are a number of problems affecting the project which will have to be solved. The reclassification of project lands, opening of additional public lands to homestead entry, and the transfer of water rights from inferior lands are some of the local problems needing early consideration and solution.

4. A classification of project lands was made by the Board of Survey and Adjustments in 1936, and as a result of their findings the Omnibus Adjustment Act of May 25, 1936, gave authority, among other things, for suspension of construction payments against certain lands. At present a reclassification of such suspended lands is in order to determine if the lands are possessed of sufficient productive power properly to be placed in a paying status, wherein payment of construction charges will be resumed. Should said lands be found to be permanently unproductive, the charges against them will be

from fire and erosion. Stamp markings indicate that in places as much as one foot of top soil and litter has been lost from this area, thus making the land unproductive.

4th Slide—Unsatisfactory timber reproduction from early cutting and the extremely poor reproduction on the area burned in 1926. This area should be planted to get this land producing its maximum of timber and thus reforest a stable watershed.

5th Slide—Good timber reproduction, indicating what land is capable of producing if it is properly managed.

6th Slide—Cheat grass comes in following fires if area is not planted to trees and perennial grass. Cheat grass constitutes an extreme fire hazard, and as it continues to spread, fire will become a much more serious problem in the future. Nevada in recent years has stepped up its fire control organization, but more intensive control will be needed to eliminate extreme losses. In 1912 less than 500 acres were burned in the State. This year the burned area has exceeded 20,000 acres. This increase can be largely attributed to the spread of cheat grass and other flammable fuel plants.

7th-9th Slides—Showing depleted vegetative cover. Bare soil has lost its original ability to hold water and produce timber and forage to help sustain our civilization. For 50 to 70 years these lands have been unproductive. They should be planted to stimulate production.

10th Slide—Wash in Visee Canyon indicates that large quantities of soil have been washed from the mountain.

11th Slide—At water diversion in Ash Canyon. Sand must be cleaned from the settling box every two or three days. In the spring there is so much sand in the water the farmers do not use it for irrigation. Such water is unusable and represents a loss to the water user who depends on this supply to irrigate his land.

12th Slide—Small mud-rock flow from burned area on Carson River. This debris washed from a damaged washes finds its way into Carson River and adds to the sedimentation problem for the river and Lahontan Reservoir.

13th Slide—Deposits of sediment in Carson River. The top layer is fresh deposit washed from area burned this summer. A continuing of this deposit will finally become a serious problem to farmers in the valley and decrease the storage capacity in Lahontan Reservoir.

14th Slide—Picture of sign on highway north of Carson City. "At this point the high pressure pipe line crosses, carrying the water from the high Sierras to Virginia City. Pressure on pipe line 900 lbs. System completed in 1875 at cost of $3,000,000. The Virginia City Water Company." Water values have increased since 1875 because of increased population and uses.

15th Slide—View from Carson City to mountains. Carson City depends on these mountains for its domestic water supply. Precipitation on these mountains is about 30 inches; in the valley it is only about 10 inches. The water that flows in the canyon streams and that recharges the underground supply comes from these mountain lands. Therefore, the supply of usable water depends on how these mountain watershed lands are protected and managed.
The Forest Service is conducting flood-control studies in various parts of the region, and this fall plan to initiate studies on the Virgin River Meadow Valley Wash drainage. It is hoped that this study will be completed during next year.

In addition to these larger drainage basin studies, we are working on small watershed units. Generally these units are small in area when compared to a river drainage, but to the dependent population they are very important. (Reference to map of Carson River drainage contrasted with small municipal watersheds for Carson City, Virginia City, Glenbrook, and Reno.) These small areas of watershed land supply water for domestic, irrigation, and power uses and are therefore highly important.

Where these small but highly important watershed lands are in unsatisfactory condition, rehabilitation programs should be worked out with the dependent water users, land owners, and administrative land agencies on a cooperative basis.

Under this program, preliminary studies have been made of the Carson City watershed. This area, like much of the east slope of the Sierras, is in a depleted condition. Excessive timber cutting during the early days when the land was given to the state by the United States, and today these highly important watershed lands have only 28 million board feet of timber, and this is being cut out more rapidly than it is growing.

Nevada might well consider securing public control of these steep watershed lands and initiating a reforestation and rehabilitation program. In order to more clearly illustrate the depleted watershed condition that exists, I would like to show some slides. The pictures were taken on the Carson City watershed during September of this year.

1st Slide—From Carson City looking toward mountains that show a general worn-out condition of the mountain slopes.

2d Slide—Sketch showing Carson City and watershed of 8,000 acres. First, Ash, and Vinee Canyons furnish water for State Capitol and Carson City (population of 8,000), the V. & T. Railroad and irrigation water for 660 acres of farm land. (Over $200,000 has been invested in these systems, or the equivalent of $31 per watershed acre.)

3d Slide—Stumps and bare ground. This forest area was cut out in 1869 and 1870. Nothing has grown since because precautions were not made for continuing the forest cover or to protect the rich top soil charged off to a permanent loss to the Reclamation Fund. It is expected that the reclassification work will be completed this fiscal year.

5. During fiscal year 1948, in addition to the reclassification of temporarily unproductive Class 3 lands, it is planned to make a detailed classification and irrigation area survey to determine the suitability of certain vacant public lands within and adjoining the boundaries of the Truckee-Carson Irrigation District for opening to homestead entry by veterans. Canals and laterals have been constructed to serve some of such lands. Lands open to entry or private lands covered by water-right applications subsequent to January 1, 1945, are required to repay their proportion of the construction cost. In conjunction with the classification and the irrigable area determination, a program of water use investigations is being carried on.

6. In 1946 the Bureau undertook a program for determining canal linings that would be less expensive than those presently used and at the same time serve the needs of projects with respect to prevention of excessive canal losses, decreasing water logging and alkali accumulation, stabilizing subgrades for increasing structural permanency, and other reasons.

3. Three experimental linings have been approved for Region 4. One of those selected is on the Newlands Project. Experimental investigations are now under way. The actual lining work will be done next spring and the results studied after water is turned in for the irrigation season.

8. On the Humboldt Project the United States constructed the Rye Patch Dam on the Humboldt River; all other irrigation facilities were being the project areas were privately constructed. The project is confronted with a serious drainage problem from which early relief is necessary by the construction of an adequate system of dikes to protect the irrigable area. Investigations to determine ground-water elevations and future drainage have been in progress by the Bureau of Reclamation. Considerable work in the construction of dikes along the Humboldt River and rehabilitation of existing main outlet drain for flood protection have been done by the United States Army Engineers, and excavation of some new drain is under way by the Pershing County Water Conservation District of Nevada. It is considered highly important that such investigational work by the Bureau be continued and the drainage system extended to protect the land of the Humboldt Project. During the present fiscal year the drainage investigations will be continued, including investigations of water use and irrigation practices on the project, to determine the extent to which the need for additional drains is affected by such existing practices and other conditions.

9. Also, in conjunction with the drainage investigations, it is important that there be an accurate knowledge of the soil and land characteristics. During the next fiscal year it is planned to make a detailed land classification of a considerable portion of the project irrigable area to obtain this knowledge, together with a continuance of the drainage investigations, water use, and irrigation practices.
and other undesirable weeds growing in and on distribution systems contribute to inefficient operation and costly maintenance of distribution systems. The Bureau also recognizes that weeds on canal banks infest project farm lands, decreasing crop production and farm income. To alleviate the present condition and prevent the further spreading of weeds on distribution systems, the Bureau is active in keeping project operators informed of the latest methods of controlling weeds and encouraging them to take control measures into effect. Efforts are also being made to assure project farmers of a means of controlling weeds on their farms by the latest methods. Where county, State, individual, or other agencies are active on projects, the Bureau fully cooperates with them. Where there are no active agencies or individuals, the Bureau encourages the establishment of a weed-control organization and acts in its formation.

11. To facilitate the weed control program and to provide further advancement in less costly and more effective weed control methods, the Bureau in cooperation with the Bureau of Plant Industry has established a research laboratory at Denver, Colorado, and two field experimental stations, one at Boise, Idaho, and the other at Phoenix, Arizona. The experimental work at Denver, since its inception less than a year ago, has developed a chemical compound which shows promise as an effective agent in controlling aquatic weeds. If further field trials substantiate the limited trials already made, this new chemical may be in equal efficiency and be far lower in cost than any other now used.

12. On the Nevada projects the water users are current in their payments of construction charges as required by their contracts with the United States.

I guess that's all I have to say. Thanks.

Ms. Shamberger: Thank you, Mr. Slattery. Does anyone have any questions to ask Mr. Slattery?

Mr. Muth: Bill, has anything been done about the growth of a type of moss in canals which is causing so much trouble in Lovelock District?

Mr. Slattery: Well, I understand that a year ago some chemical company, I think it was the Denver Clay Potash Co., most of you engineers are familiar with the name of the company, they came over to Lovelock and used a solution, I think it is "Dentate," to exterminate moss in the canals. However, at the time they came, it was quite late in the season and they did not derive very many benefits. This summer I don't think there was any such work done on any of the canals in Lovelock. In fact, I think it worked to conserve water this year. The canals were badly messed up; they didn't have to deliver so much water. The result was they kept more water in reservoirs; so they didn't work very hard on the eradication of moss.

Ms. Shamberger: Before we proceed with the next speaker, I would like to introduce two gentlemen who came in a little late, Mr. L. J. Ross of the Federal Power Commission, of San Francisco, and Mr. Ed Walker, Secretary of the Chamber of Commerce, Reno.
and transpiration. Also, it is estimated that possibly 15 percent of the total discharge is wasted through lack of conservation, mostly within the city of Las Vegas. It appears that at least half of the water thus wasted can be utilized by further development of wells in the "near-surface" reservoir, and by increased, more efficient, conservation of supplies now obtained from the confined water reservoir.

In Pahrump Valley approximately 25,000 acre-feet of water are annually available for recharge, and about 17,000 acre-feet are annually discharged from wells and springs. Water levels have declined during the short period of record and they may be expected to decline until the cones of depression have grown sufficiently to intercept the recharge necessary to balance the total withdrawals of ground water. However, some ground water is available for additional development in Pahrump Valley. Although sufficient data are not available to show whether there is a substantial unused supply in Indian Spring Valley, it appears that some additional ground water is also available there.

I think that's all.

Mr. Sharrer: Mr. Mead made a prediction that Las Vegas may grow to a town of 50,000. Our studies indicate, conclusively, that the use of water in the Las Vegas Valley is now greater than the annual recharge, and for that reason we helped sponsor legislation in the last Legislature making it possible to set up a water district in Las Vegas Valley. I am glad to see that this movement has now started, and when this new district is formed they contemplate negotiating for the Las Vegas Land & Water Company which supplies the town of Las Vegas; and they will look to Lake Mead water to supplement the ground water, Mr. Mead.

Mr. Mead: That figure of 50,000 should not be taken too seriously because we have not made any close studies.

Mr. Hansen: As a matter of human interest, I would like to ask Mr. Maxey regarding his work in the Pahrump Valley, if he heard a rumor from some of the old timers that there was a subterranean river coming down there, fed by artesian wells. I was stationed at Charleston Mountain near there for a time, and that's all I heard—they could not believe any of the water came from the mountain.

Mr. Maxey: I might elaborate a little on that. I have never learned, from inquiry in the area, whether the mythical subterranean river originates in Canada, or from Walker Lake. (Laughter.) Apparently the reason Walker Lake is declining so rapidly, is because it is drawing out into Las Vegas Valley.

Seriously, as far as any scientific determination can be made, the entire recharge to Pahrump Valley and Las Vegas and Indian Spring Valleys is from the surrounding mountain ranges. I might add it is one of the most efficient; the spring mountain range is one of the most efficient water gatherers I have ever seen in my experience, for the reason that alluvial gravels extend far up the range and they immediately absorb the precipitation which eventually reaches the ground.

At this time, I am going to ask Mr. T. W. Robinson, District Engineer, U.S. Geological Survey, who is in charge of ground water study in Nevada, to give us a report. Mr. Robinson.

Mr. Robinson: Mr. Chairman, members of the Conference: The State-wide program of ground-water studies in Nevada, in cooperation with the State Engineer began on July 1, 1945, as the result of an appropriation of $45,000 for the biennium by the Legislature that year. For the biennium beginning July 1, 1947, the last Legislature continued the program by an appropriation of $40,000. Proceeding the present program, a study of the geology and ground-water conditions was started in Las Vegas, Pahrump, and Indian Spring valleys in the summer of 1944. In July 1945 the study was made a part of the State-wide study.

The present ground-water studies are planned as a long-range program. This is necessary because of the size of Nevada, which is the sixth largest State in the Union. Development and cultivation of additional land in the State must be largely by the use of ground water, since practically all of the surface water in the streams has been fully appropriated.

The long-range program calls for a study of all of the valleys of consequence in the State. Nevada is characterized by a series of north-south trending mountains with intervening valleys. The ground water that may be readily developed occurs in the valleys. Recharge to the ground water in the valleys is largely from precipitation fall in the mountain ranges and then flowing out into the valley floor. Enroute to the valley floor the streams pass over alluvial fans which are, in general, quite permeable, and readily absorb a part of the stream flow. There are between 80 and 90 valleys in Nevada. Not all of them have potentialities for development of ground water. Some are small and have an area of only twenty or so square miles, whereas the larger valleys have areas of more than 1,000 square miles. The drainage areas are, of course, much larger, ranging up to three times the area of the valley floor.

Under the present plans it is expected to complete coverage of all of the major valleys of the State, with a reconnaissance type survey, by the end of next field season in order to evaluate the ground water possibilities. These surveys will not be in detail, but are intended only to give a general overall picture of the ground water conditions in the valley. Attention will be given to topography, drainage, general geology, and general ground water conditions, such as depth to water, and, where possible, character of the sediments. It is also planned to study some valleys quantitatively and in detail. In the valleys which are studied quantitatively, estimates will be made of the inflow to the valley, discharge out of the valley, and the quantity of ground water available for development.

During the present year, quantitative studies are being made in three valleys: Paradise and Grass Valleys in Humboldt County, and White River Valley in White Pine and Nye Counties. Qualitative, or reconnaissance, studies are expected to be completed in three other valleys before the end of the field season. These are: Diamond Valley.
in Eureka County, Quino River Valley in Humboldt County, lower
Reno River Valley in Lander County. Weather permitting it may
be possible to cover one other valley in the vicinity of Carson City.
Considerable field work has been done in several other valleys: Spring
Valley and Snake Valley in White Pine County, and Hatlin Valley
in White Pine and Lincoln Counties, Fish Lake Valley in Esmeralda
County, Argoia Swamp along the Humboldt River in Lander County,
Washoe Valley in Washoe County, Eagle Valley in Ormsby County,
Carson Valley in Douglas County, and in the Reno-Sparks area.

The comprehensive and detailed studies that were started in the
Las Vegas area in 1944 were completed in early 1947, and a final
report prepared. Mr. Miley, who did most of the work, will discuss
the Las Vegas Wash a little later.

A detailed study of the Meadow Valley Wash Drainage Area, begun
in the spring of 1946, has been completed and a report prepared.
This report is now in Washington for review. The studies in the
Meadow Valley Wash show that there is additional ground water for
further development. In Panaca Valley it is estimated there is about
5,000 acre-feet yearly in addition to the pumpage in 1946 which
amounted to about 760 acre-feet.

Studies were completed and a report prepared on the ground-water
conditions in the vicinity of Ely. This work was done at the request
of the city in order that they might increase their water supply which
is inadequate. The development of ground water in the vicinity of
Ely is complicated by a fault which apparently passes to the west of
the city, and by the presence of warm or hot water. Drilling sites
were located close to the city limits which avoid the undesirable hot water.

In 1945 and 1946 studies were made, and a report prepared, for
increasing the water supply for the city of Lovelock by ground water.
The ground water in the immediate vicinity of Lovelock is mineralized
and not suitable for municipal use. The only site capable of develop-
ing sufficient water of good quality was found to be about 14 miles
north of town near the city wells.

In addition to the field work numerous inquiries have been answered
either by letter or conference in the office. In fact the number of
inquiries for information on wells and ground water have been increas-
ing steadily, more have been received this summer than any other
previous period.

Through an arrangement with the State Engineer the results of the
cooperative ground-water studies are published by the State Engineer
as a series of Water Resources Bulletins. To date, four printed Bul-
letins and two mimeographed reports. These are:

1. Progress Report on the Ground Water Resources of the Las Vegas
   Artesian Basin (Mimeographed).
3. Bull. 3. Water Levels and Artesian Pressure in Wells in Las Vegas
   Valley and in Other Valleys in Nevada, 1913-1945.
4. Bull. 4. Well Data in Las Vegas and Indian Spring Valleys in
   Nevada.

Of the total discharge of ground water in Las Vegas Valley prob-
ably 5,000 to 8,000 acre-feet, or 12 to 15 percent, is lost by evaporation

4. Ground Water in Las Vegas, Pahrump, and Indian Spring Val-
   eys, Nevada (a summary): State of Nevada, Office of the State Engi-
   neer, Water Resources Bulletin No. 6, 1947. (By G. B. Miley and
   T. W. Robison.)
5. Geology and Water Resources of Las Vegas, Pahrump, and Indian
   Spring Valleys, Clark and Nye Counties, Nevada; in preparation
   (edited by Washington) and will be published as Water Resources
   Bulletin No. 5 this coming winter. (By G. B. Miley and C. H. Jame-

   The main ground-water aquifer and reservoirs in the three valleys
   occur in the early alluvial deposits of the alluvial fan and the valley
   fill.

Formations of secondary importance as aquifers are certain lime-
stone of Middle Paleozoic age, which are permeable but, for the most
part, are above the regional ground-water level; and the valley fill
and wash materials of recent age, which are limited in both vertical
and horizontal extent and are only locally permeable. The other for-
mations in the area are only of minor importance as aquifers or act as
barriers to the movement of ground water.

The only source of ground water for the three valleys is precipita-
tion on the higher areas of the Spring and Sheep Mountains. How-
ever, only a small part of the precipitation recharges the alluvial fan
and valley fill materials that compose the ground-water reservoirs.
The rest of the water from precipitation on the area is lost by evapo-
ration and transpiration.

Estimates based on the available precipitation data, and checked
with information from all available geologic and hydrologic data,
show that the annual recharge to the ground-water reservoir in Las
Vegas Valley is between 30,000 and 35,000 acre-feet.

The total annual discharge from the ground-water reservoirs in Las
Vegas Valley probably never exceeded 35,000 acre-feet until 1946,
when that figure was exceeded for the first time. Water levels have
been declining and are continuing to decline in the valley. The
ground-water levels may be expected to continue to decline until the
cumulative recharging of the piezometric or pressure-injecting surfaces
caused by the withdrawal of water from wells and springs have grown
sufficiently to intercept the discharge necessary to balance the total
withdrawals of ground water. Locally much of the excessive decline of
water levels in Las Vegas Valley has been a result of local over-
development caused by close spacing and heavy pumping of wells.
However, the available data indicate that ground water is now being
pumped from storage, that is, more water is being taken from the
reservoirs than is entering them from the recharge areas, and, there-
therefore, that part of the water-level decline has resulted from over-
pumping. Thus, continued withdrawal of substantially more than
35,000 acre-feet of ground water annually will result in continued, and
possibly increasing decline of the water level and in overdevelopment
of the ground water supply in Las Vegas Valley.

Of the total discharge of ground water in Las Vegas Valley prob-
ably 5,000 to 8,000 acre-feet, or 12 to 15 percent, is lost by evaporation
to the workings of any scientific organization; and I want to commend him for his fine service in Las Vegas Valley. Won't you stand up, Harry, and let them look at you?

(Mr. Jameson rises and assembly applauds.)

Also, I want to mention the staff of the Geological Survey which was of great assistance in reviewing the work that was done in Las Vegas Valley, and the valuable suggestions; and I should like to mention they are entitled to fully as much credit as the author of the paper.

GROUND WATER STUDIES IN LAS VEGAS, PAHUMP, AND INDIAN SPRING VALLEYS

From 1907 until 1921, a number of studies were conducted in the valleys of the Las Vegas, Pahump, and Indian Spring valleys. These studies were aimed at understanding the geology of the area and the physical conditions of the valleys. The work was done primarily by the U.S. Geological Survey and the Nevada State Engineer's Office.

The studies included a detailed investigation of the geology, the occurrence of ground water, and the quality of water in the valleys. The results were used to develop a better understanding of the hydrological conditions in the area and to help with the development of water resources.

The studies were funded by the federal government through the U.S. Geological Survey, and the Nevada State Engineer's Office provided assistance in conducting the work. The results of the studies were published in several reports and bulletins, including:

1. "Ground Water in the Vicinity of Elko, Nevada (mimeographed)."
2. "Water Levels and Artesian Pressure in Wells in Las Vegas Valley and in Other Valleys in Nevada, 1913-1945."
4. "Ground Water in the Vicinity of Elko, Nevada (mimeographed)."

These studies were important in understanding the hydrological conditions in the area and in developing a better understanding of the water resources in the Las Vegas, Pahump, and Indian Spring valleys.
Mr. Maxey: May I say a word?
Mr. Shawber: Yes.

Mr. Maxey: The most fundamental condition necessary to get the public to comply with the law is for someone to report violations. In other words, we are not, the State Engineer's office, I should say, is not exactly able to just go around and check up on every person.

I have noticed in at least three cases that have come to light since the well-drilling law went into effect, of drillers drilling in the State without license, and the cases that are reported I believe two of them have already gotten their licenses. The other one has moved out of the State. Those three I happen to know of, that the State Engineer has to know about it, so it is quite necessary for the public to cooperate and make the law 100 percent perfect.

Mr. Shawber: All the well-drillers in the State drilling wells, we have received reports from all, I think, but one, and we are going to see him shortly; and I think they have all been cooperating very nicely, considering the fact that heretofore most of them only kept logs in their minds. It is quite a sudden change, but is working out very nicely.

Mr. Mason: I would like to ask a question: If, in those quantitative studies you are giving consideration to possible measures of conserving present recharge sources, which may be destroyed through pipelines or storage or something that will wind up that particular recharge?

Mr. Robinson: No, we have not. We recognize it, we give consideration to it, but there is little we can do about it as those pipelines are there. We recognize, immediately, of course, that the amount of recharge to the underground water is going to be cut down, and that is noted, but we can't go beyond that.

Mr. Shawber: Mr. Petersen—

Mr. Petersen: I would like to ask a point as to what Mr. Robinson has found the general prospects for development mentioned in the Pahrump Valley, where you found some 5,000 acre-feet of water that might be developed. How about some of these other projects—are the prospects equally as good in other valleys?

Mr. Robinson: Some of them, yes; some of them, better. We have just completed a rather hasty investigation of the possibilities in Paradise Valley, and it seems we have good possibilities in Grass Valley, and Quinn River Valley seems to have possibilities.

Mr. Maxey: White Pine?

Mr. Robinson: White River.

Mr. Shawber: There are many valleys that seem to be possible projects, we have not yet made determinations.

Mr. Campbell: I would like to ask if all these men who are registered well-drillers have facilities for giving adequate tests of the water available after they finish drilling?
Mr. Maxey: May I say a word?

Mr. Shamberger: Yes.

Mr. Maxey: The most fundamental condition necessary to get the public to comply with the law is for someone to report violations. In other words, we are not, the State Engineer's office, I should say, is not exactly able to just go around and check up on every person.

I have noticed in at least three cases that have come to light since the well-drilling law went into effect, of drillers drilling in the State without license, and the cases that are reported I believe one of them have already gotten their licenses. The other one has moved out of the State. Those three I happen to know of. But the State Engineer has to know about it, it is quite necessary for the public to cooperate and make the law 100 percent perfect.

Mr. Shamberger: Of all the well-drillers in the State drilling wells, we have received reports from all, I think, but one, and we are going to see him shortly; and I think they have all been cooperating very nicely, considering the fact that heretofore most of them only kept logs in their minds. It is quite a sudden change, but it is working out very nicely.

Mr. Mason: I would like to ask a question: If, in those qualitative studies you are giving consideration to possible measures of conserving present recharge sources, which may be destroyed through pipelines or storage or something that will wind up that particular recharge?

Mr. Robinson: No, we have not. We recognize it, we give consideration to it, but there is little we can do about it as those pipelines are there. We recognize, immediately, of course, that the amount of recharge to the underground water is going to be cut down, and that is noted, but we can't go beyond that.

Mr. Shamberger: Mr. Petersen—

Mr. Petersen: I would like to ask a point as to what Mr. Robinson has found, the general prospects for development mentioned in the Paradise Valley, where you found some 5,000 acre-feet of water that might be developed. How about some of these other projects—are the prospects equally as good in other valleys?

Mr. Robinson: Some of them, yes; in some of them, better. We have just completed a rather hasty investigation of the possibilities in Paradise Valley, and it seems we have good possibilities in Grass Valley, and Quinn River Valley seems to have possibilities.

Mr. Maxey: White Pine?

Mr. Robinson: White River.

Mr. Shamberger: There are many valleys that seem to be possible projects, we have not yet made determinations.

Mr. Campbell: I would like to ask if all these men who are registered well-drillers have facilities for giving adequate tests of the water available after they finish drilling?
to the workings of any scientific organization; and I want to commend him for his fine service in Las Vegas Valley. Won't you stand up, Harry, and let them look at you?

(Mr. Jameson rises andassembly applauds.)

Also, I want to mention the staff of the Geological Survey which was of great assistance in reviewing the work that was done in Las Vegas Valley, and the valuable suggestions; and I should like to mention they were entitled to fully as much credit as the author of the paper.

GROUND WATER STUDIES IN LAS VEGAS, Pahrump, AND INDIAN SPRING VALLEYS

From 1967 until well into the thirties several agencies, including the Nevada State Engineer's office, the State Agricultural Experiment Station, and the Geological Survey, conducted studies of the ground-water supply in Las Vegas Valley, primarily for the purpose of developing water for irrigation. The influx of population resulting from the construction of Hoover Dam and, later, from wartime activities, resulted in increased concerns over the water supply, not only for irrigation, but for domestic and industrial use.

In 1938, a study to determine underground leakage from wells in the valley was undertaken by the city of Las Vegas, the water company, and the Geological Survey. This study resulted in increased conservation of water through repair of leaky wells and control of wells not in use. However, conservation of water did not wholly solve the problem, for water levels continued to decline and more and more wells ceased to flow. The amount of water used and the rate of water-level decline increased considerably in the early forties. The State Engineer realized that the safe yield of the valley may have been exceeded and, in 1944, asked the Geological Survey to make a detailed study of the ground-water resources. Accordingly, in July 1944, this study was started in conjunction with studies in Pahrump and Indian Spring Valleys.

The scope of the studies in the three valleys included a detailed investigation of the geology in relation to occurrence of ground water, a ground-water inventory for a period of three years, study of the chemical character of the ground waters, and study of the relationship of precipitation, run-off, and recharge to the occurrence of ground water. Five publications showing the results of the study were prepared during the course of the investigation. These publications are:


Ground Water in the Vicinity of Elko, Nevada (mimeographed). Shortly after the start of the cooperative ground-water studies in 1945 a rotary well rig was purchased for test drilling purposes. During the fall of 1945 and the field season of 1946 this rig was used to drill wells for observation purposes and also for test purposes. In all a total of 20 holes were drilled, ranging in depth from 30 to 1,000 feet. The total footage drilled was 6,705 feet, and the average depth of the holes was 142 feet. Cost of drilling was $2.96 per foot, which included dressing and amortization of the equipment and overhead for office depreciation. Total distance traveled by drilling rig was 90 miles.

No drilling was done during the 1947 season, in part due to uncertainty of Federal funds and to personnel shortage.

I think Mr. Chairman, that about covers my report. If there are any questions, I would be glad to answer them.

Mr. Byrd: I would like to ask Mr. Robinson—on your agenda if you plan to include Smokey Valley and the Duck Water area in Nye County?

Mr. Robinson: Well, we are certainly going to try to cover both of these areas in qualitative type survey. I don't know if we can cover it with a quantitative type study in the immediate future. That requires a great deal more time, but we certainly want to do that if possible.

Mr. Byrd: In regard to these reports you put out, are those available to our county agents?

Mr. Robinson: They are available to all, to the general public.

Mr. Byrd: We would like to have a copy of those reports, in the respective counties, of course, in which the county agents are interested.

Mr. Robinson: Yes, we are trying to maintain a mailing list.

Mr. Byrd: We would like to have our State office to have a copy, too. We have some of them, but not all.

Mr. Robinson: Our policy of distributing these reports has been that the Geological Survey has been distributing to the Federal agencies, and the State Engineer's office to the State agencies.

Mr. Byrd: I would like to ask another question in regard to this law. Take a rancher, for instance, that wants to do a little developmental work, survey his own water, on his own piece, with his own apparatus, can it be done?

Mr. Shamburger: Yes, it can be done. Without licensing. The law does not apply to a man who wants to drill on his own property.

Mr. Byrd: Is it applied to commercial operators?

Mr. Shamburger: Yes.

Mr. Byrd: Thank you.

Mr. Mowbray: I would like to ask, if there is any check-up on compliance with the law. Is there any provision for enforcement of drillers who are complying with the clause for sending in logs?

Mr. Shamburger: Yes, there is such a provision.
in Eureka County, Quinns River Valley in Humboldt County, lower Reose River Valley in Lander County. Weather permitting it may be possible to cover one other valley in the vicinity of Carson City. Considerable field work has been done in several other valleys: Spring Valley and Snake Valley in White Pine County, Hatitlin Valley in White Pine and Lincoln Counties, Fish Lake Valley in Elmore County, Argenta Swamp along the Humboldt River in Lander County, Washoe Valley in Washoe County, Eagle Valley in Ormsby County, Carson Valley in Douglas County, and in the Reno Sparks area.

The comprehensive and detailed studies that were started in the Las Vegas area in 1942 were completed in early 1947, and a final report prepared. Mr. Moxey, who did most of the work, will discuss the Las Vegas Wash a little later.

A detailed study of the Meadow Valley Wash Drainage Area, begun in the spring of 1946, has been completed and a report prepared. This report is now in Washington for review. The studies in the Meadow Valley Wash show that there is additional ground water for further development. In Panaca Valley it is estimated there is about 3,000 acre-feet yearly in addition to the pumping in 1946 which amounted to about 750 acre-feet.

Studies were completed and a report prepared on the ground-water conditions in the vicinity of Elko. This work was done at the request of the city in order that they might increase their water supply which is inadequate. The development of ground water in the vicinity of Elko is complicated by a fault which apparently passes to the west of the city, and by the presence of warm or hot water. Drilling sites were located close to the city limits which avoid the undesirable hot water.

In 1945 and 1946 studies were made, and a report prepared, for increasing the water supply for the city of Lovelock by ground water. The ground water in the immediate vicinity of Lovelock is mineralized and not suitable for municipal use. The only site capable of developing sufficient water of good quality was found to be about 14 miles north of town near the city wells.

In addition to the field work numerous inquiries have been answered either by letter or conference in the office. In fact the number of inquiries for information on wells and ground water have been increasing steadily, more have been received this summer than any other previous period. Through an arrangement with the State Engineer the results of the cooperative ground water studies are published by the State Engineer as a series of Water Resources Bulletins. To date, four printed Bulletins and two mimeographed reports have been published:

**Progress Report on the Ground Water Resources of the Las Vegas Artesian Basin (Mimeographed).**

Bull. 2. Ground Water in Lovelock Valley, Nevada.

Bull. 3. Water Levels and Artesian Pressure in Wells in Las Vegas Valley and in Other Valleys in Nevada, 1913-1945.

Bull. 4. Well Data in Las Vegas and Indian Spring Valleys in Nevada.


5. Geology and Water Resources of Las Vegas, Pahrump, and Indian Spring Valleys, Clark and Nye Counties, Nevada: in preparation (edited by Washington) and will be published as Water Resources Bulletin No. 5 this coming winter. (By G. B. Moxey and C. H. Jameson.)

The main ground-water aquifer and reservoirs in the three valleys occur in the early alluvial deposits of the alluvial fan and the valley fill.

Formations of secondary importance as aquifers are certain lime-stones of Middle Pelsonian age, which are permeable but, for the most part, are above the regional ground-water level; and the valley fill and wash materials of recent age, which are limited in both vertical and horizontal extent and are only locally permeable. The other formations in the area are only of minor importance as aquifers or act as barriers to the movement of ground water.

The only source of ground water for the three valleys is precipitation on the higher areas of the Spring and Sheep Mountains. However, only a small part of the precipitation recharges the alluvial fans and valley fill materials that compose the ground-water reservoirs. The rest of the water from precipitation on the area is lost by evaporation and transpiration.

Estimates based on the available precipitation data, and checked with information from all available geologic and hydrologic data, show that the annual recharge to the ground-water reservoir in Las Vegas Valley is between 30,000 and 35,000 acre-feet.

The total annual discharge from the ground-water reservoirs in Las Vegas Valley probably never exceeded 35,000 acre-feet until 1946, when that figure was exceeded for the first time. Water levels have been declining and are continuing to decline in the valley. The ground-water levels may be expected to continue to decline until the cones of depression in the piezometric or pressure-indicating surface caused by the withdrawal of water from wells and springs have grown sufficiently to intercept the recharge necessary to balance the total withdrawals of ground water. Locally much of the excessive decline of water levels in Las Vegas Valley has been a result of local overdraft caused by close spacing and heavy pumping of wells. However, the available data indicate that ground water is now being pumped from storage, that is, more water is being taken from the reservoirs than is entering them from the recharge areas, and, therefore, that part of the water level decline has resulted from overpumping. Thus, continued withdrawal of substantially more than 35,000 acre-feet of ground water annually will result in continued, and possibly increasing decline of the water level and in overdevelopment of the ground water supply in Las Vegas Valley.

Of the total discharge of ground water in Las Vegas Valley probably 5,000 to 8,000 acre-feet, or 12 to 15 percent, is lost by evaporation...
and transpiration. Also, it is estimated that possibly 15 percent of the total discharge is wasted through lack of conservation, mostly within the city of Las Vegas. It appears that at least half of the water thus wasted can be utilized by further development of wells in the "near-surface" reservoir, and by increased, more efficient, conservation of supplies now obtained from the confined water reservoir.

In Pahrump Valley approximately 25,000 acre-feet of water are annually available for recharge, and about 17,000 acre-feet are annually discharged from wells and springs. Water levels have declined during the short period of record and they may be expected to decline until the cones of depression have grown sufficiently to intercept the recharge necessary to balance the total withdrawals of ground water. However, some ground water is available for additional development in Pahrump Valley. Although sufficient data are not available to show whether there is a substantial unused supply in Indian Spring Valley, it appears that some additional ground water is also available there.

I think that's all.

MR. SHAMMERSON: Mr. Mead made a prediction that Las Vegas may grow to a town of 50,000. Our studies indicate, conclusively, that the use of water in the Las Vegas Valley is now greater than the annual recharge, and for that reason we helped sponsor legislation in the last Legislature making it possible to set up a water district in Las Vegas Valley. I am glad to see that this movement has now started, and when this new district is formed they contemplate negotiating for the Las Vegas Land & Water Company which supplies the town of Las Vegas; and they will look to Lake Mead water to supplement the ground water, Mr. Mead.

Mr. Mead: That figure of 50,000 should not be taken too seriously because we have not made any close studies.

MR. HANSEN: As a matter of human interest, I would like to ask Mr. Maxey regarding his work in the Pahrump Valley, if he heard a rumor from some of the old timers that there was a subterranean river coming down there, fed by artesian wells. I was stationed at Charleston Mountain near there for a time, and that's all I heard—they could not believe any of the water came from the mountain.

MR. MAXEY: I might elaborate a little on that. I have never learned, from inquiry in the area, whether the mythical subterranean river originates in Canada, or from Walker Lake. (Laughter.)

Anyway, the reason Walker Lake is declining so rapidly, is because it is draining into Las Vegas Valley. Seriously, as far as any scientific determination can be made, the entire recharge to Pahrump Valley and Las Vegas and Indian Spring Valleys is from the surrounding mountain ranges. I might add it is one of the most efficient; the spring mountain range is one of the most efficient water gatherers I have ever seen in my experience, for the reason that alluvial gravels extend far up the range and they immediately absorb the precipitation which eventually reaches the ground.

At this time, I am going to ask Mr. T. W. Robinson, District Engineer, U.S. Geological Survey, who is in charge of ground water study in Nevada, to give us a report. Mr. Robinson.

Mr. Robinson: Mr. Chairman, members of the Conference:
The State-wide program of ground-water studies in Nevada in cooperation with the State Engineer began on July 1, 1945, as the result of an appropriation of $50,000 for the biennium by the Legislature in that year. For the biennium beginning July 1, 1947, the last Legislature continued the program by an appropriation of $40,000. Proceeding the present program, a study of the geology and ground-water conditions was started in Las Vegas, Pahrump, and Indian Spring valleys in the summer of 1944. In July 1945 the study was made a part of the State-wide study.
The present ground-water studies are planned as a long-range program. This is necessary because of the size of Nevada, which is the sixth largest State in the Union. Development and cultivation of additional land in the State must be largely by the use of ground water, since practically all of the surface water in the streams has been fully appropriated.
The long-range program calls for a study of all of the valleys of consequence in the State. Nevada is characterized by a series of north-south trending mountains with intervening valleys. The ground water that may be readily developed occurs in the valleys. Recharge to the ground water in the valleys is largely from precipitation fall in the mountain ranges and then flowing out onto the valley floor. Enroute to the valley floor the streams pass over alluvial fans which are, in general, quite permeable, and readily absorb a part of the stream flow. There are between 80 and 90 valleys in Nevada. Not all of them have potentialities for development of ground water. Some are small and have an area of only twenty or so square miles, whereas the larger valleys have areas of more than 1,000 square miles. The drainage areas are, of course, much larger, ranging up to three times the area of the valley floor.

Under the present plans it is expected to complete coverage of all of the major valleys of the State, with reconnaissance type survey, by the end of next field season in order to evaluate the ground water possibilities. These surveys will not be in detail, but are intended only to give a general overall picture of the ground water conditions in the valley. Attention will be given to topography, drainage, general geology, and general ground water conditions, such as depth to water, and, where possible, character of the sediments. It is also planned to study some valleys quantitatively and in detail. In the valleys which are studied quantitatively, estimates will be made of the inflow to the valley, discharge out of the valley, and the quantity of ground water available for development.

During the present year, quantitative studies are being made in three valleys: Paradise and Grass Valleys in Humboldt County, and White River Valley in White Pine and Nye Counties. Qualitative or reconnaissance studies are expected to be completed in three other valleys before the end of the field season. These are: Diamond Valley,
water reservoirs. It is a very efficient storage reservoir for water. Does that answer your question, Mr. Hansen?

Mr. Hansen: Yes.

Mr. Shamberger: Before getting off the ground-water subject, I might make a little observation. It is the purpose of our ground water program to make detailed quantitative studies of the valleys in the State which we feel have possibilities, which include Smokey and all the other valleys of the State; and the purpose is to determine how much the annual recharge is into each valley. By means of our ground water law, now in effect, we can restrict drilling and protect recharge into the valleys so as not to interfere with the economical lift.

Mr. Shamberger: We will have slides presented as the first report this afternoon by Mr. Hansen, U. S. Forest Service, Ogden, Utah, on watershed protection. We will get started on the slides at exactly 1:15, and proceed as rapidly as possible in order to finish. It is now just a few minutes of twelve. Unless we have other questions on the subjects already covered, we will recess until 1:15.

(Recess at 1:15 a.m. until 1:15 p.m.)

AFTERNOON SESSION

Mr. Shamberger: The conference will be in order. We will get started now. I will now introduce Mr. W. L. Hansen, U. S. Forest Service, Ogden, Utah. Mr. Hansen.

MANAGEMENT OF WATERSHED LANDS

Mr. Chairman, Ladies and Gentlemen:

The Forest Service is glad to be represented and participate in this water conference. Mr. Rice, Regional Forester, regrets that he was unable to attend.

We are intensely interested in the water resource. In the West, water is now becoming the limiting factor on which our future development depends. Therefore, it becomes increasingly more important that our watershed lands be given adequate protection and administration and that our water supply be used more efficiently for public good.

The Forest Service was created and given a specific assignment to protect the public water supply. Water is undoubtedly the most valuable renewable resource our mountain lands supply; therefore, it is important that the watersheds be so managed that they will yield their maximum of usable water.

Water as a resource cannot be divorced from other renewable resources such as timber, grazing, and recreation, because they are all produced by the same acre of mountain land. If this land has a stable soil held in place by plant growth and possesses a high infiltration and water-holding capacity, then all these resources, as a product of mountain land, are compatible and interdependent. If watershed lands are managed for usable water yield, then the other resources will be safely provided for.
charged off to a permanent loss to the Reclamation Fund. It is expected that the reclassification work will be completed this fiscal year.

5. During fiscal year 1948, in addition to the reclassification of temporarily unproductive Class 3 lands, it is planned to make a detailed classification and irrigable area survey to determine the suitability of certain vacant public lands within and adjoining the boundaries of the Truckee-Carson Irrigation District for opening to homestead entry by veterans. Canals and laterals have been constructed to serve some of such lands. Lands open to entry or private lands covered by water right applications subsequent to January 1, 1945, are required to repay their proportion of the construction cost. In conjunction with the classification and the irrigable area determination, a program of water use investigations is being carried on.

6. In 1946 the Bureau undertook a program for determining canal linings that would be less expensive than those presently used and at the same time serve the needs of projects with respect to prevention of excessive canal losses, decreasing water logging and alkali accumulation, stabilizing subgrades for increasing structural permanency, and other reasons.

7. Three experimental linings have been approved for Region 4. One of these selected is on the Newlands Project. Experimental investigations are now under way. The actual lining work will be done next spring and the results studied after water is turned in for the irrigation season.

8. On the Humboldt Project the United States constructed the Rye Patch Dam on the Humboldt River; all other irrigation facilities serving the project area were privately constructed. The project is confronted with a serious drainage problem from which early relief is necessary by the construction of an adequate system of dikes to protect the irrigable area. Investigations to determine ground-water elevations and future drainage have been in progress by the Bureau of Reclamation. Considerable work in the construction of dikes along the Humboldt River and rehabilitation of existing main outlet drain for flood protection have been done by the United States Army Engineers, and excavation of some new drains is under way by the Pershing County Water Conservation District of Nevada. It is considered highly important that such investigations be continued and the drainage system extended to protect the land of the Humboldt Project. During the present fiscal year the drainage investigations will be continued, including investigations of water use and irrigation practices on the project, to determine the extent to which the need for additional drains is affected by such existing practices and other conditions.

9. Also, in conjunction with the drainage investigations, it is important that there be an accurate knowledge of the soil and land characteristics. During the next fiscal year it is planned to make a detailed land classification of a considerable portion of the project irrigable area to obtain this knowledge, together with a continuance of the drainage investigations, water use, and irrigation practices.

10. The Bureau of Reclamation is conscious of the fact that noxious
the Hope Valley reservoir. The Bureau financed the installation of seven stream-flow recording gages on the East Fork of the Carson River to measure the flows divertible to the Hope Valley reservoir, and paid for the operation of the gages through fiscal year 1947.

WALKER RIVER PROJECT

The only work accomplished on the Walker River project investigation during fiscal year 1947 consisted of reconnaissance geological investigations of the Leavitt Meadows and Picke Meadows reservoir sites, and of the potential power site below the Picke Meadows reservoir.

DRAFT

Reclamation Program in Nevada—Regional Branch of Operations and Maintenance

1. Of the sixteen Bureau of Reclamation operating projects in Region 4, three are located in Nevada. These three projects are the Newlands, in which storage, distribution, and drainage works were constructed by the United States to serve lands in the Truckee River and Carson River valleys; the Humboldt Project, where the Rye Patch Dam and Reservoir were constructed to furnish water to lands in the lower Humboldt Valley; and the Truckee River Storage Project, where the Boca Dam and Reservoir were constructed for irrigation of lands in the Reno Valley. Combined, the three Nevada projects are capable of furnishing irrigation water for 138,000 acres of land, of which 133,000 acres were cropped in 1946.

2. We are very interested in the success of the operating projects and in their operation and maintenance. After planning activities and construction works were completed, the Bureau continued to assist the projects with their problems through direct contact with the project and in cooperation with State and Federal agencies on problems confronting the water users.

3. The Newlands Project (formerly the Truckee-Carson Project) was the first project on which construction work and the delivery of irrigation water were undertaken under the Reclamation Law. The ultimate irrigable area of the project is considered to be 87,500 acres, of which about 47,000 acres are covered by water right applications, and approximately 30,000 acres are being irrigated. There are a number of problems affecting the project which will have to be solved. The reclassification of project lands, opening of additional public lands to homestead entry, and the transfer of water rights from inferior lands are some of the local problems needing early consideration and solution.

4. A classification of project lands was made by the Board of Survey and Adjustments in 1936, and as a result of their findings the Omnibus Adjustment Act of May 25, 1936, gave authority, among other things, for suspension of construction payments against certain lands. At present a reclassification of such suspended lands is under way to determine if the lands are possessed of sufficient productive power properly to be placed in a paying status, whereupon payment of construction charges will be resumed. Should said lands be found to be permanently unproductive, the charges against them will be from fire and erosion. Stamp markings indicate that in places as much as one foot of top soil and litter has been lost from this area, thus making the land unproductive.

5th Slide—Unsatisfactory timber reproduction from early cutting and the extremely poor reproduction on the area burned in 1926. This area should be planted to get this land producing its maximum of timber and thus recreate a stable watershed.

5th Slide—Good timber reproduction, indicating what land is capable of producing if it is properly managed.

6th Slide—Cheat grass comes in following fires if area is not planted to trees and perennial grass. Cheat grass constitutes an extreme fire hazard, and as it continues to spread, fire will become a more serious problem in the future. Nevada in recent years has stepped up its fire control organization, but more intensive control will be needed to eliminate extreme losses. In 1912 less than 500 acres were burned in the State. This year the burned area has exceeded 260,000 acres. This increase can be largely attributed to the spread of cheat grass and other brush fuel plants.

7th-9th Slides—Showing depleted vegetative cover. Bare soil has lost its original ability to hold water and produce timber and forage to help sustain our civilization. For 50 to 70 years these lands have been unproductive. They should be planted to stimulate production.

10th Slide—Wash in Visee Canyon indicates that large quantities of soil have been washed from the mountain.

11th Slide—At water diversion in Ash Canyon. Sand must be cleaned from the settling box every two or three days. In the spring there is so much sand in the water the farmers do not use it for irrigation. Such water is unusable and represents a loss to the water user who depends on this supply to irrigate his land.

12th Slide—Small mud-rock flow from burned area on Carson River. This debris washed from a damaged washes bed finds its way into Carson River and adds to the sedimentation problem for the river and Lahontan Reservoir.

13th Slide—Deposits of sediment in Carson River. The top layer is fresh deposit washed from area burned this summer. A continuation of this deposit will finally become a serious problem to farmers in the valley and decrease the storage capacity in Lahontan Reservoir.

14th Slide—Picture of sign on highway north of Carson City. "At this point the high pressure pipe line crosses, carrying the water from the high Sierras to Virginia City. Pressure on pipe line 900 lbs. System completed in 1875 at cost of $3,000,000. The Virginia City Water Company." Water values have increased since 1875 because of increased population and uses.

15th Slide—View from Carson City to mountains. Carson City depends on these mountains for its domestic water supply. Precipitation on these mountains is about 30 inches; in the valley it is only about 10 inches. The water that flows in the canyon streams and that recharges the underground supply comes from these mountain lands. Therefore, the supply of usable water depends on how these mountain watersheds are protected and managed.
The growth and security of our western civilization depends on how well we maintain and manage watershed lands and how efficiently we collect, distribute, and utilize our water supply.

Thank you, Mr. Chairman.

Mr. SHANDERSON: Are there any questions for Mr. Hansen? That was a very nice talk. Thank you, very, very much.

Mr. HANSEN: Thank you.

Mr. SHANDERSON: Mr. Morrison, did you wish to ask Mr. Hansen a question?

Mr. MORRISON: I was wondering if I could get a clarification of a few points. I was wondering whether the trouble might not be improved—I don’t know if I understood you correctly—whether some of the terms could not be clarified as to whether you mean total run-off from the area, or dependability from the run-off where storage does not take place.

Mr. HANSEN: I think I understand what you are referring to. Good vegetation on the watershed will reduce the total flow somewhat, but it will also retard and taper off more gradually the summer flow, so that there is a slight increase during that season. The largest decrease will be noted in reducing the high flow, particularly following summer storms.

Mr. MORRISON: I was wondering, say down in the Lahontan Reservoir, people might actually be benefited by deforestation up here. That would not be the case where there was storage, but some water that might be stored in Lahontan Reservoir would be saved by less evaporation and transpiration loss. There would be a greater loss in the drainage area of the high mountains.

Mr. HANSEN: I am not prepared to answer that because I don’t know what the evaporation on the Lahontan Reservoir might be. I would guess it might be pretty high; you know more about it than I do. It seems to me, however, that deforestation of mountain lands to acquire a little more water for storage in reservoirs is a serious point of consideration, inasmuch as the soil movements off the slopes do considerable damage in the valleys, threatens valley improvements, shortens the effective life of your down-stream structures, such as the Lahontan Reservoir, and it fails to contribute lumber and other resources we get from the mountain areas that our civilization is so dependent on.

Mr. MORRISON: Yes, the other was just more of an academic point.

Mr. HANSEN: I think probably the greatest loss of deforestation is the soil loss, because that affects water infiltration and holding capacity and it seriously reduces the producing capacity of the land.

This area (indicating Carson Watershed on map), is like a sieve. Water runs through its course granite sand. When we dug a hole on the barn spot, shown on the slide, just six or eight feet from the lupine, moisture was found in a few inches and extends down several feet as far as our test holes were dug. When we dug a hole in the lupine

Well, as you all know, we maintained a project planning office here in Carson City up until about the fifteenth of August, but due to lack of funds we were forced to close it. However, we have established an office at Fallon, Nevada, mostly for the investigation of rehabilitation work. And another thing I might add, I think the three Nevada projects received practically 50 percent of the funds that were allotted to the 10 projects in Region 4 for investigational work under this rehabilitation set-up.

**Lahontan Basin Investigation**

A preliminary draft of the Lahontan Basin Report was completed in June 1947 and has since been distributed to various Federal, State, and other agencies for review and comment. The report in general has been very well received, and has aroused widespread interest in potentialities for developing the water resources of the basin. Development plans presented for the Truckee, Carson, and Walker Rivers are unique, but the projects will require detailed field study before construction can be recommended.

It is planned to carefully consider all of the comments submitted on the report and to prepare a final draft for official submission to the States, the Congress, and other agencies in accordance with provisions of the Flood Control Act of 1944.

A prerequisite to the further detailed planning of projects on the Truckee and Carson Rivers is a careful determination of the water requirements of the Newlands Reclamation project which uses water from both rivers. An investigation intended, among other things, to make such a determination was underway during the past year under the direction of the Branch of Operation and Maintenance.

**Truckee River Storage Project Extension**

The investigation of the Truckee River Storage Project Extension was retarded during the year by a shortage of housing facilities for Bureau personnel.

A reconnaissance geological investigation was made of the Prosser Creek, Stampede, and Independence dam sites and of the Prosser-Boca and Boca-Mystic tunnel sites. A triangulation net was extended from the Boca Reservoir to the Stampede Reservoir site. Field ground locations and profiles of the Prosser-Boca and Boca-Mystic tunnel sites were completed. Periodic well measurements were taken.

**Carson River Project**

The Carson River investigation was also retarded by the fact that houses could not be obtained for personnel. A survey of the Hope Valley reservoir site, intended to be made in the summer of 1946, was delayed for a year by lack of housing. Trailers were finally obtained for living quarters.

A reconnaissance investigation was made of the possibility of developing the Double Springs reservoir site as an alternative to the Hope Valley site and a rough report was prepared in the Regional Office. Reconnaissance geological investigations were made of potential storage sites on the Carson River and of the potential tunnel which would collect water from the East Fork of Carson River for storage in...
side of Duckwater Creek at the old Floris blacksmith shop, were installed in a combination and check structure of reinforced concrete. Several small wooden bridges were built for use of individual farmers.

The reconstruction of the Duckwater works is expected to result in a considerable saving of water and time consumed in trying to operate the old system.

At Campbell Ranch, near Verdi, 14 miles of 4" bottom and from 2.5 to 5" depth drain was constructed leading from the lower north boundary of the Indian Campbell Ranch to the Persiano slough. This drainage ditch, while not being deep enough for heavy drainage, will carry away 3 to 4 seconds feet of waste water from the Campbell Ranch and other nearby ranches.

At Walker River, about 3 miles below Schurz, 500 cubic yards of loose rock were placed in the Walker River for protection to the abutments of a lateral flume and as protection against further erosion of the river banks. Two small laterals near the shore of Walker Lake, on the east side of the river, were extended in length for a total distance of three miles to spread water over additional lands used for tribal pasture. Some 3,000 acres of fairly good pasture lands have been developed in this way, making use of excess water which would otherwise be wasted into Walker Lake.

Approximately $42,000 was expended on the three projects.

Our proposed work for this fiscal year will consist of the following:

On the Fort McDermitt project a rock masonry diversion dam will be built on Quinn River to divert water from the Harev ranch, replacing two rock and brush dams used for many years. Two miles of domestic water pipe are to be laid from a small spring on the south side of the mountains on the east of the Fort McDermitt School to a 42,000 gallon capacity metal storage tank just above the agency houses, which will furnish a supply of pure drinking water to the people of the community.

The Fort McDermitt Indian Tribal Council are planning on the installation of several small turnouts and check dams for water distribution on the Gessette Ranch.

On the Pyramid Lake project riprapping and construction of the five rock check dams are to be started, but may not be completed this year. One-half mile of small lateral is to be constructed to shorten the distance of delivery, one and one-half miles, to a tract of farm land on the lower end of the irrigated area.

On the Wasco project, near Gardnerville, water protection work is proposed, consisting of rock riprap and rock groins along the Carson River bank within the Indian lands.

At Hassel River one small diversion dam of rock construction is to be built and reconstruction of some three miles of small canals will be accomplished.

The canal systems on Walker River and Pyramid Lake projects will be cleaned where the need is most urgent.

And that about concludes the construction of the various projects.

Thank you.

Mr. Shamburger: Thank you, Mr. Pence.

We have a few other gentlemen in the room who know a great deal

area we did not find moisture; the plant growth had apparently used all the moisture and the soil is unable to support a more dense stand of vegetation; and so, the water, as I said, probably goes through this soil too fast. I think a watershed rehabilitation program should be directed toward slowing it down to make more moisture available for plant growth and delayed ground storage. Protection of the vegetation cover would be important in slowing the rate of water for the runoff of the Sierra Nevada Mountains for water and timber supply.

Water and timber are the greatest renewable resources available in the State, and I believe they may very seriously consider a reforestation program to reestablish forest cover on those slopes.

Mr. Maxey: Is the Forest Service doing any research on the various amounts or fractions of water consumed by restoration of plants in the high mountain areas, and evaporation in the fraction that enters the ground, water from the high mountain areas?

Mr. Maxey: Yes, they have been making studies in the Wasatch Range in Utah and farther east, and I am not certain, but I think they are making studies in Colorado, but we have not in Nevada.

Mr. Maxey: Are their investigations in completed form, from which reliable information is available on such projects?

Mr. Hansen: I think these are some in the East, but the data on the Wasatch I do not think has been completed.

Mr. Maxey: You mean east of the Mississippi?

Mr. Hansen: Yes.

Mr. Peterson: Craft has published something on that.

Mr. Hansen: I am not acquainted with it.

Mr. Maxey: That doesn't help; we need to know a lot about it. I believe our fellows just recently conducted a tour with some of your fellows in Salt Lake. I am not familiar with the results of their discussion or findings.

Mr. Shamburger: I will now call on Mr. Clyde Houston of the Soil Conservation Service, Mr. Houston.

Mr. Houston: Mr. Shamburger, Members of the Conference: My little talk will just be limited to some surveys we have conducted in Nevada. A new accomplishment during the past year was the completion of a cooperative agreement between Nevada State Engineer, Nevada Agricultural Experiment Station, and Division of Irrigation and Water Conservation of the Soil Conservation Service, to conduct surveys and irrigation investigations throughout the State. This agreement ensures that the survey work of the three agencies will be coordinated and conducted on a more formal basis than previously. Greater
efficiency in both administrative and technical operations will result.

The program of shortening snow courses, mentioned last year at this conference, which entailed a great deal of statistical work on the past of Prof. Boardman and others, was completed. Thirty snow courses were shortened. This decreases the labor of the surveyor and in turn increases the accuracy of the surveys.

Ten more courses were permanently marked with iron pipe set in concrete. This brings to 60 the number of courses as marked in Nevada.

In cooperation with the U.S. Geological Survey and Walker River Irrigation District, a series of observation wells were established in Bridgeport Valley, California. It is hoped that after a few years of record, a correlation correction can be obtained from these measurements to be applied to the snow-water runoff relationship in order to obtain greater accuracy in forecasting discharge of East Walker River near Bridgeport.

Three new snow courses were established during the past year. Two are on Duck Creek Watershed in White Pine County, in cooperation with Kennebec Copper Company at McGill for purposes of forecasting the discharge of Duck Creek into Duck Creek Reservoir. The other was established on McAfee Creek in the White Mountains of Eureka County to assist in the Federal-State ground water investigation of Fish Lake Valley. There are now 97 active snow courses in Nevada and in the eastern slope of the Sierra in California, which are used for forecasting Nevada stream-flow.

In general, the snow water content as measured April 1, 1947, throughout the mountains was from 40 to 60 percent of normal, indicating a subnormal water supply in prospect for the irrigation season. Throughout the central and eastern part of the State irrigation season rainfall varied from about 140 percent of normal at the higher elevations to 80 percent in the valleys, while in the west and on the eastern slope of the Sierra it varied from about 70 percent in the mountains to 50 percent in the valleys. Streamflow forecasts from snow surveys are based on the assumption of normal precipitation during the runoff season; therefore the above normal rainfall in the Eastern part of the State increased the runoff while the subnormal rainfall on the Sierra and in Western Nevada had the effect of reducing runoff from the amount predicted.

A partial summary of 1947 runoff forecasts in percent of the 1936-1945 average and the measured runoff for the irrigation season in percent of the same average are shown in the following table:

<table>
<thead>
<tr>
<th>Location</th>
<th>1947 Forecast</th>
<th>1947 Runoff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nevada</td>
<td>70-90%</td>
<td>70-90%</td>
</tr>
<tr>
<td>Sierra</td>
<td>50-70%</td>
<td>50-70%</td>
</tr>
<tr>
<td>Western</td>
<td>40-60%</td>
<td>40-60%</td>
</tr>
</tbody>
</table>

of the water year in the Humboldt River Basin started with a flow of 329 percent of normal and the first six months developed over 250 percent, the last half of the water year dropped to an average of only 67 percent. This low water flow for the period April-September was in marked contrast to the excellent runoff for the six preceding years which were unusually good, averaging 218 percent of the 25-year normal, 1921-1945. With the exception of the last six months, flow in the Humboldt River Basin has also been unusually high in comparison with adjacent basins. Runoff from streams draining the Sierra Nevada Mountains has averaged near normal for the same period—the West Walker River near Coldwater, California, recording 105 percent of its 25-year normal. Based on preliminary computations, runoff for the water year ending September 30, 1947, totaled 187,600 acre-feet, or 70 percent of the 25-year normal. Stream flow in the southern part of Nevada has been relatively low as reported by the gaging station on Meadow Valley Wash at the Delmas dam site. This station was established in November 1945. Total runoff at that location for the water years 1945 and 1946 was 4,800 acre-feet, respectively. Although records have not yet been completed for the past water year, total runoff was in the same general magnitude. From these records it appears doubtful that there is sufficient water to justify a dam for storing an irrigation supply at this location.

And I would also like, at this time, to express my appreciation to the State Engineer's office, Forest Service, Bureau of Reclamation, Soil Conservation Service, and the Pacific Power Company, all of whom have been very cooperative and helpful in furnishing data, the Forest Service in furnishing the use of their Range Station for shelter, and just general encouragement in some cases.

I had an opportunity of returning some of it the other day when I accompanied Mr. Houston up McAfee Creek to establish a snow survey course. I was glad to do it once, but I don’t want to have to do it again.

Mr. Stamper: Thank you, Tom. I will now call on Mr. C. J. Proctor, Irrigation Manager, Indian Service.

Mr. Proctor: Mr. Chairman, I have a very short report here showing our irrigation activities in the agency last year.

During the fiscal year ending June 30, 1947, irrigation construction was accomplished on the Duckwater, Coldwater, and Walker River projects in Nevada, to the following extent:

At Duckwater, 5 miles of new canal were constructed doing away with the old canal and worn-out structures entirely. The headworks at the Big Warm Spring were completed. This is a rubble masonry structure, 14 feet in height and 30 feet in length, containing approximately 270 cubic yards of masonry. A 24" Calco measuring gate is installed for the Indian canal leading north, and a 30" gate to turn water to other water users below and onto the storage basin during winter months. A concrete check constructed 900 feet down the ditch from the 30" gate is for use in turning the winter water onto the so-called "Big Warm Springs Platte" for storage.

For the Indian farmers, twelve 16" Calco measuring lateral gates with concrete checks and corrugated pipe turnouts were installed along the canal leading to their lands. The two turnouts, one on each
Engineers on the East Walker and West Walker at the head of Mason Valley are for flood control studies by that organization. Cage house structures for the latter four stations were constructed of corrugated pipe and standard cableways were installed.

Although the Bureau of Reclamation financed the construction and the first year's operation of the stations requested, it was with the understanding that continued operation would be financed by the State-Federal cooperative stream gaging program. In compliance with this program the Nevada State Legislature increased its cooperative appropriation by $2,000 for the current fiscal year. Since the new stations are actually located in California and that State will also receive power, flood control, and irrigation benefits, Mr. Ed. W. Hyatt, State Engineer, allotted $1,900 of California cooperative stream gaging funds to assist in the operation and maintenance of this program.

It was originally anticipated that some gaging stations in the Truckee River Basin now being operated by the local water users could be rehabilitated and added to the State-Survey program. However, because of restricted funds by both the State and Federal legislatures, no new work will be possible this fiscal year. All funds available will be required for operation and maintenance purposes.

Stream gaging activities in the Humboldt River Basin for the past year have been restricted primarily to the maintenance and operation of existing stations. Two stations in that basin, namely, the Humboldt River at Comus and the Lovelock irrigation, Light and Power Company twelfth canal, were rehabilitated with the installation of new corrugated pipe cage house structures.

The total number of gaging stations, including lakes and reservoirs, now being operated under the Nevada cooperative program is as follows:

- Humboldt River Basin: 20
- Owyhee River Basin: 4
- Muddy River Basin: 1
- Carson River Basin: 10
- Truckee River Basin: 4
- Walker River Basin: 8
- Total: 47

To improve field operating procedure and to have stream-flow records readily available for use of State officials and citizens, a Surface Water Division office was established at Carson City during the past year. The work is under my direct supervision, assisted by two engineers and one clerk. One engineer, Mr. McConkie, is stationed at Elko, so that current measurements and records will be available to local users of water supply data. All data collected for the past seven years and filed in connection with surface water investigations in Nevada have been transferred from Salt Lake City to Carson City. Only minor administrative supervision, principally in regard to accounts, purchases, and personnel assignments, will be continued from the Salt Lake City District office.

Surface water supplies, particularly those in the Humboldt River Basin, for the water year ending September 30, have been much lower than those for several previous years. Although the first month
The Bureau has four main divisions—the first is forecasting comprised of weather forecasts for airways, fruit frost warnings, special flight forecasts, hurricane warnings, and precipitation forecasts.

Second, is the climatological service comprised of collection of climatological records, including precipitation, evaporation, temperature, and so on. The climatological service maintains approximately 130 stations in Nevada, some of which are recording stations. Most recording stations were started during the period 1940 to 1944.

Third, is the organization for the development of new weather instruments. One of the latest developments is a storage gage for collecting precipitation data in the mountains where we have no regular observers. From this storage gage the logical step is to go into a recording and radio reporting type of instrument. Such instrumentation is physically possible. However, there are plenty of practical problems to be met.

Fourth, is the division of special services. This division makes reports of hydrologic and meteorological nature dealing with extremes of rainfall, storms, and weather phenomena that may occur under certain conditions. Reports of this type are available for the San Joaquin and other areas. Many of these reports are prepared in cooperation with the Bureau of Reclamation and the Corps of Engineers, U. S. Army.

We have available maps covering the United States that show the collection points of hydrologic data, including stream-flow measuring stations, snow survey courses, precipitation and temperature stations. These were prepared cooperatively with various Federal agencies.

We have established this year three storage precipitation gages in the Humboldt Basin of Nevada. Considerable difficulty was encountered in installing them. These are only a start. They will give us much needed data at higher elevations. An evaluation of the precipitation distribution in the higher mountains may be obtained from storage gages by correlation with data from stations at lower elevations.

Another phase of Bureau activity that may be of interest is the proposed new program of placing weather data on punch cards. This will be started soon in this region. The punch card program will enable users of data to obtain summaries, means, frequency distribution, and so on, quickly and easily by machine methods, eliminating a great deal of work.

No provision has been made to place back data on punch cards. At present this is being done in other States by interested groups such as universities or other organizations wishing to set up such a project for their own purposes.

An interesting development over the past four or five years has been the correlation study between precipitation and runoff data. We have found a high degree of correlation between seasonal precipitation and annual runoff. We have found considerable value being placed on early estimates of runoff, particularly January and February forecasts. In that connection, the Bureau has, in the past few years, issued forecasts of water supply in various basins such as the Colorado, the Great Basin, and the Rio Grande. Next year we plan to make available during the first part of January, forecast for some of the streams.

U. S. Geological Survey, the Bureau of Reclamation, the Soil Conservation Service, and all the others who have given assistance.

Thank you.

Mr. Shankweiler: Are there any questions to be asked of Mr. Miller?

Mr. Miller, your suggestion for a State Water Laboratory is extremely important, not only for the individual farmers, but for ground-water studies.

Mr. Robinson told me some time ago we should have a number of samples analyzed, and if they are sent out of the State it would cost about $10 a sample.

The State Engineer's office has cooperated with the Geological Survey, their surface water program, and that program has been increased and has gone a long way. We need further increases. It is extremely important to determine the runoff in these streams, not only as an aid to distribution work, but for the working out of plans for better use, and better conservation. In this State, Mr. L. W. "Tom" Sawyer, of the U. S. G. S., is in charge of that work. I will call Mr. Sawyer now.

Mr. Sawyer: Mr. Chairman, Gentleman: In outlining achievements and activities of the State of Nevada-Geological Survey cooperative surface water investigations program since the last meeting of the Nevada Water Conference held in this city on September 17, 1946, I am pleased to report that good progress has been made.

At the time of the last conference we had just made a good beginning on the construction of eight new gaging stations requested by the U. S. Bureau of Reclamation and three requested by the Corps of Engineers in the Carson, Truckee, and Walker River Basins. Installation was completed on all of the stations during the following months, so that satisfactory records were obtained covering the past snow runoff period.

Seven of the stations requested by the Bureau of Reclamation are located in the Carson River Basin in connection with the proposed project of diverting streams tributary to the East Carson by aqueduct to the West Carson for storage in the Hope Valley reservoir. The water would be further released for irrigation and power development. Available head for the proposed power plant would be about 1,200 feet, which would be largely responsible for financing the construction work. Gaging stations to determine the water supply are located near the proposed conduit line at an elevation of about 7,800 feet. Several are located at remote locations where it was necessary to convey construction materials by pack train. These gage house structures were built of timber, while those located at accessible sites were constructed of corrugated pipe. Cableways from which high water discharge measurements are made were necessary at all locations except on the West Fork where a satisfactory bridge was available.

One gaging station requested by the Bureau was constructed on the Little Truckee River near Hobart Mills and one requested by the Army Engineers on the Truckee River near Reno. These gages were required to ascertain water supplies in connection with irrigation, power, and flood control projects being considered by both agencies in the Truckee River Basin. The two stations requested by the Army
the University was made by Legislature by which free examinations and analyses of soils, minerals, ores, and waters would be made for citizens of the State. The University arranged that examination of the minerals and ores would be made in the School of Mines, and the soil and water samples would receive attention by the Agriculture Division and the Laboratory of the Food and Drug Division, respectively. For a long time when money and help were more abundant this arrangement was satisfactory. The water samples were examined by Prof. Dinsmore in the Food and Drug Laboratory and the soils received attention by the agriculture and soils department of the University Experiment Station. On the passing of Prof. Dinsmore the steady increase in demands for analyses, arrangements were made with Mr. Wayne B. Adams, the new Commissioner of Foods and Drugs, whereby his burden was lightened by a sharing of the work whereby the irrigation waters were examined by our Station Laboratory and the domestic waters by the Food and Drug Laboratory. The State Analytical Laboratory at this time then has given service, and the work of this analytical laboratory has justified no criticism whatever.

Incidentally, the growth of public service work in other lines which were and are now carried out by the University has in the past been very similar to the growth of the demands for examinations of soils, ores, and waters. With the growth from similar beginnings of service work in other lines has evolved finally the State Food and Drug Laboratory, the State Hygienic Laboratory, and the State Veterinary Control Service. These have all lessened the demand on the time of the University and Experiment Station staffs and have set up specific agencies for the work to be done.

It would appear, then, that possibly the time is now at hand when the same thing might profitably be done to provide expanded service to agriculture by the State Analytical Laboratory. The frame work of a more comprehensive State Analytical Laboratory is already in existence and by a slight expansion and rearrangement the demands for water and soil analyses could be taken care of. Professor Walter Palmer, the Director of the State Analytical Laboratory, and who is now carrying on the mineral and ore work, Mr. Adams, Commissioner of Foods and Drugs, Mr. S. L. and myself of the Experiment Station staff, who have been looking after these water and soils, are all favorable to such an expansion and consolidation. We all, of course, would be available for advice and consultation when necessary. We feel that if, possibly the State Engineer’s office could meet with the University officials, it might be that some such an expansion might be devised and by so doing the needed service work could be more satisfactorily and expeditiously than is possible at present. It is felt that the services of a full-time wholly qualified man with a very small extra expenditure for added equipment would be sufficient when added to the personnel of the present State Analytical Laboratory to provide these services.

Mr. Chairman, I feel that this is an opportune time to indicate my appreciation of the fine cooperation which has been given the laboratory by the State Engineer’s office and those other agencies which are interested in the water supply of the State, in this area. These forecasts will be based entirely upon antecedent and current precipitation.

According to plan, data will be received and forecasts made by the 5th of each month, January to May. Printing and mailing will take place after that date. I have several copies of last year’s forecasts which I will leave with the Chairman and, in that way, you can see what we are doing. Some of you have seen them and are familiar with the methods that are being used.

Methods of these forecasts permit analyses of many years of past record. It permits exact methods of verification of forecasts, it also permits an immensely exact method of determining limits of error within the procedure.

Among the points we expect to forecast this year in Nevada are the following: West Walker at Bridgeport, East Walker near Coleville, Carson River at Fort Churchill and Carson City, Taho at the outlet.

The Water Supply Forecast Unit will be located at the Salt Lake City Weather Bureau Office. In the forecasting procedure as set up for this unit, the effect of storms occurring immediately after the release of the forecast may be easily evaluated in terms of runoff. This may be done in a very few minutes after precipitation data for key stations has been received by the unit. Thank you.

Mr. SEAMONS: Are there any questions?

Mr. ROBINSON: You mentioned you were getting close correlation between precipitation and runoff, and I am very much interested in that phase, but I am wondering how far you can establish those, for instance if you have drainage areas in the mountains, runoff, can that be applied to other mountainous areas with the same altitude, with any degree of accuracy?

Mr. RUPP: Not likely. That is something that would have to be investigated. You might find an occasional correlation. Our correlation studies deal with the relationship between rainfall and measured runoff. They do not deal with the relationship between precipitation and measured runoff from one area as compared to unmeasured runoff in some other area.

Mr. ROBINSON: In other words, if you have a portion of stream in mountainous areas due to this, of runoff in that total mountain area you could not apply what you had in that mountain stream to the remainder of the area, with any degree of accuracy?

Mr. RUPP: If I understand your question, I would say no, probably not. There are too many unknown factors. It might work out occasionally through coincidence.

Mr. ROBINSON: In other words, if you have a portion of stream in mountainous areas, due to this, of runoff in that total mountain area you could apply what you had in that mountain stream to the remainder of the area, with any degree of accuracy?

Mr. RUPP: No, you could not do that—too many elements entering into the picture; it might work out occasionally.

Mr. SHAMBERGER: Thank you very much.
Now I am going to call on a representative of the Corps of Engineers, Mr. P. P. Friend, Chief of the Flood Control Report Section of the Los Angeles office of the Corps of Engineers. Mr. Friend.

Mr. Friend: My remarks will be very limited. First, the Los Angeles district includes about two-fifths of this State. The remaining three-fifths is covered by the Sacramento District of the Corps of Engineers. Then the work of the Corps of Engineers is, principally, flood control work, which is definitely prescribed by Congress. No work of investigation or study is undertaken without specific authorization from Congress.

In the case of the Nevada area in our district, there are about six thousand (6,000) square miles now covered by Congressional authorization for investigation and study. That is the Virgin River Basin which includes about 6,000 square miles of the southern part of the State. The Congress authorized an investigation previous to the beginning of the war. A preliminary study was made which showed there were sufficient flood damages and reasons for intensive study of this Virgin River area.

A survey was authorized by the Chief Engineer. This was prepared and certain recommendations were made by the District Office and concurred in by the Division Office. This study went on to the office of the Chief Engineers for final review before presentation of the report to Congress.

The Chief of Engineers, because of the nature of the study, the rather low justification in the area for the projects considered, and because of local interests, consideration of the White Narrows project in that basin returned the report to our district for review, reconsideration, and re-submittal.

The war intervened and interrupted our activities in the study of this area. Since that date, we have suffered a very severe reduction in force, and little has been done. However, the report is definitely scheduled and will be worked on during the next year and will be complete early in 1949. In the meantime, Congressman Shaffer, Senator McCarran and the Nevada farmer community would like the Chief of Engineers various inquiries as to certain local areas within that region, and these areas have been reported on in some detail to the Chief of Engineers and these reports have been submitted to the inquiring Congressman and Senators.

The individuals of such organization greatly appreciate the opportunity to attend a conference of this character. We appreciate that here is the arid west much of the present value comes from the utilization of water and much of the future growth will depend upon such utilization. These developments require protection from floods. So we try to keep in touch with all the planning that relates to these areas, to learn of the basic data that is being accumulated by other Government agencies. Thank you.

Mr. Shaffer: Thank you, Mr. Friend. Does anyone have any questions to ask Mr. Friend?

Mr. Byrd: Mr. Chairman, I would like to ask the gentleman what, briefly, are your boundaries for your two-fifths and your—(question not concluded).
irrigation facilities this past year have consisted of pipe lines for bringing water over alluvial fans, drilling of wells, and installing pumps and power units.

I believe that's about all, Mr. Chairman.

Mr. Stahmer: Thank you, Mr. Campbell. Does anyone have any questions to ask of Mr. Campbell? If not I am going to call on Mr. R. Miller of the Experiment Station at the University of Nevada.

Mr. Miller: Mr. Chairman and Gentlemen. Not having prepared a formal paper for this occasion I feel that a few observations on the work of the Laboratory of Research Chemistry of the Nevada Agricultural Experiment Station relating to the quality of irrigation water in the State might be of interest to you.

The Experiment Station Laboratory began its first systematic study of the quality of irrigation water in 1942 when a project on this subject was approved by the Office of Experiment Stations at Washington. The principal work of our laboratory, as well as all the other work of the Nevada Agricultural Experiment Station, is conducted on a project basis. Each of the station projects, in order to become operative, must have their approval when submitted to the office at Washington and our station is answerable to that office. Until the last session of Legislature, no funds have been provided by the State for Experiment Station investigations and we have been somewhat limited as to what we could do in the way of service to Nevada agriculture.

All that has been done in the past has been done for the most part at the expense of time taken from our regular project work.

Institution of the project on the quality of irrigation water of the State was urged by Dr. C. S. Scofield who was then in charge of the work of the Division of Irrigation Agriculture in the Bureau of Plant Industry. Information on the quality of the water of the Humboldt River was desired and needed, both by the Bureau and in the areas irrigated by those waters, and inasmuch as this river is not an inter-state stream the Division of Irrigation Agriculture could not enter this field as they had done on the Rio Grande and other rivers of the West.

On approval of the project which was set up particularly for the study of the waters of the Humboldt River, our laboratory, with the cooperation of the State Engineer's Office and the Pershing County Water Conservation District and others interested, established a number of sampling stations at gauging points on the river and began systematic sampling and analysis of samples from these points. With the passage of time and the pressure of other duties the original number of five stations were reduced to two, samples being taken at Palisade and the Ryegate dam. The weekly samples taken at those stations are sent to the laboratory for analysis, with no charge to the cooperating agencies, and the results are published and kept available for anyone interested in them. The results we have obtained have been eagerly sought by the Geological Survey, the Bureau of Reclamation, and others interested in irrigation water quality.

As for the present, the smaller run-off this year on the Humboldt River watershed is now being reflected in a smaller storage in Ryegate.
As you undoubtedly know, the Farmers Home Administration was brought into existence through passage of the Farmers Home Administration Act a little over a year ago. Under the Act, the F. H. A. was authorized to assume the activities previously carried on by the old Farm Security Administration and the Emergency Crop and Feed Loan Office of the Farm Credit Administration.

There are three principal types of loans available in Nevada at the present time, all of which can directly or indirectly assist individual farmers and/or groups of farmers incident to development and use of water resources. First, there are Production and Subsistence loans which provide credit to individual farm families for periods up to five years for the purchase of livestock, machinery, seed, feed, and other farm and family operating expenses. The interest on this type of loan is 5 percent on the unpaid balance. The second type is the Farm Ownership, Renovation and Development loans which provide credit for the purchase, enlargement, and development of family-type farms. These loans have a 40-year repayment period. Interest is 3½ percent. Repayments are made on a variable payment plan which permits repayment of large amounts in favorable years so that a reserve may be built against possible low income in bad years. Loans are made only after a county committee of three local persons, two of whom are farmers, has appraised the farm and certified that it can be purchased at a price based on long-time earning capacity values.

The third type is the Water Facilities loan. This is the loaning program which most directly has helped and can continue to help in the development of Nevada’s water resources. The Water Facilities Program is administered by F. H. A., although it is carried on under separate legislation. The program was brought into existence through passage of the Pope-Jones Act in 1937. The Act was a direct outgrowth of the report of the President’s Great Plains Committee which recognized the need for the development of small water facilities in the arid and semi-arid parts of the West.

The objective of the Act is to provide facilities for water storage and utilization in the arid and semi-arid areas to alleviate wastage and inadequate utilization of water resources on farms, grazing, and forest lands. These arid and semi-arid areas comprise the seventeen Western States. Part of Nevada’s allotment in the development of her water resources can be met through this basic objective.

Water Facilities assistance is mostly provided by making of loans. Such loans are for the purpose of construction, repair, and rehabilitation of irrigation facilities. Funds are used also for construction and improvement of livestock facilities.

In addition, funds can be loaned to purchase water stock, a water right and membership in, or the payment of assessments to an association. We have just recently been authorized to loan WF money for land leveling. Water associations may purchase equipment needed for construction or maintenance of a farmstead or irrigation water system.

Loans are made to individual farmers or groups of farmers including associations. Individuals can borrow up to $5,000. A group loan cannot exceed $50,000. Any applicant must first determine that adequate credit is not available from other local sources before receiving a water facilities loan. Loans are repayable over a period of 20 years at 3 percent interest on the unpaid balance.

With all loans made, engineering and other planning assistance is given. Engineering help is given in laying out and supervising the construction and operation of a facility. F. H. A. personnel assist applicants in working out farm management plans which provide for efficient use of land and water. These services are an essential part of each loan. Often, they are more important than the loan itself.

This fiscal year, Congress appropriated $1,750,000 for operation of the Water Facilities Program. This amount is the same as appropriated during 1947. Prior to 1947, Water Facilities had normally received an annual appropriation of around one million dollars.

In Nevada during the year ending June 30, 1947, loan funds in the amount of $57,460 were advanced. This included loans to one association and about 10 individual farmers. During the history of the program, there has been about $135,000 loaned in the State. This isn’t very much for a State where so much of the water development needed is for small individual or group water facilities. The funds are distributed to States on a first come, first served basis. Funds are limited. Nevada has more than its share of need for the Water Facilities program. It is expected that applications will come in at a faster rate than in the past. Veterans are continuously attempting to get established on farms. Our offices are receiving inquiries and applications consistently from veterans. Demand for assistance for all types of loans is increasing and is expected to continue to increase. Now that water facility loans can be made for leveling of land where justified, it is expected that additional applications will come from farmers needing this type of assistance. Advancing of loan funds, however, for land leveling will only be made where such land leveling is needed in connection with the development of other water facilities.

With the expanded use for which funds can be used and with the increased number of applications coming in, it is expected that Nevada will this year obtain its fair share of the limited funds available.

Now to mention some of the work of WF here in the State. A loan was made in 1946 to the Alamo Irrigation Company for $46,200 to line their ditches with concrete. Work was started on this project this summer. Some delay was experienced in getting started because of the time taken in attempting to locate contractors to take the job on a reasonable bid. The company has gone ahead and is doing the work themselves under a competent foreman and supervision of one F. H. A. engineer. Most of the work will be completed by the end of this winter. Approximately $20,000 of the loan is to be repaid from ACP payments which the company expects to earn this year from carrying out this improved practice. The Alamo job is one example of the type of development needed in many areas of the State. We find that after the need is not development of additional water, but the more efficient use of land and water already available.

A few individual farmstead WF loans have been made. Most of these consist of drilling of domestic wells, putting in pressure systems and laying distribution systems throughout the farmstead. Individual
As you undoubtedly know, the Farmers Home Administration was brought into existence through passage of the Farmers Home Administration Act a little over a year ago. Under the Act, the F. H. A. was authorized to assume the activities previously carried on by the old Farm Security Administration and the Emergency Crop and Feed Loan Office of the Farm Credit Administration.

There are three principal types of loans available in Nevada at the present time, all of which can directly or indirectly assist individual farmers and/or groups of farmers incident to development and use of water resources. First, there are Production and Subsistence loans which provide credit to individual farm families for periods up to five years for the purchase of livestock, machinery, seed, feed, and other farm and family operating expenses. The interest on this type of loan is 3 percent on the unpaid balance. The second type is the Farm Ownership, Restitution and Development loans which provide credit for the purchase, enlargement, and development of family-type farms. These loans have a 40-year repayment period. Interest is 3 percent. Repayments are made on a variable payment plan which permits repayment of large amounts in favorable years so that a reserve may be built against possible low income in bad years. Loans are made only after a county committee of three local persons, two of whom are farmers, has appraised the farm and certified that it can be purchased at a price based on long-time earning capacity value.

The third type is the Water Facilities loan. This is the loaning program which most directly has helped and can continue to help in the development of Nevada’s water resources.

The Water Facilities Program is administered by F. H. A., although it is carried on under separate legislation. The program was brought into existence through passage of the Pope-Jones Act in 1937. The Act was a direct outgrowth of the report of the President’s Great Plains Committee which recognized the need for the development of small water facilities in the arid and semi-arid parts of the West.

The objective of the Act is to provide facilities for water storage and utilization in the arid and semi-arid areas to alleviate wastage and inadequate utilization of water resources on farm, grazing, and forest lands. These arid and semi-arid areas comprise the seventeen Western States. Part of Nevada’s area in the development of its water resources can be met through this basic objective.

Water Facilities assistance is mostly provided by making of loans. Such loans are for the purpose of construction, repair, and rehabilitation of irrigation facilities. Funds are used also for construction and improvement of water facilities.

In addition, funds can be loaned to purchase water stock, a water right, and membership in, or the payment of assessments to associations. We have just recently been authorized to loan WP money for land leveling. Water associations can purchase equipment needed for construction or maintenance of a farmstead or irrigation water system.

Loans are made to individual farmers or groups of farmers including associations. Individuals can borrow up to $5,000. A group loan cannot exceed $50,000. Any applicant must first determine that adequate credit is not available from other local sources before receiving a water facilities loan. Loans are repayable over a period of 20 years at 3 percent interest on the unpaid balance.

With all loans made, engineering and other planning assistance is given. Engineering help is given in laying out and supervising the construction and operation of a facility. F. H. A. personnel assist applicants in working out farm management plans which provide for efficient use of land and water. These services are an essential part of each loan. Often, they are more important than the loan itself.

This fiscal year, Congress appropriated $1,750,000 for operation of the Water Facilities Program. This amount is the same as appropriated during 1947. Prior to 1947, Water Facilities had normally received an annual appropriation of around one million dollars.

In Nevada during the year ending June 30, 1947, loan funds in the amount of $675,460 were advanced. This included loans to one association and about 10 individual farmers. During the history of the program, there has been about $135,000 loaned in the State. This isn’t very much for a State where so much of the water development needed is for small individual or group water facilities. The funds are distributed to States on a first come, first served basis. Funds are limited. Nevada has more than its share of need for the water facilities program. It is expected that applications will come in at a faster rate than in the past. Veterans are continually attempting to get established on farms. Our offices are receiving inquiries and applications consistently from veterans. Demand for assistance for all types of loans is increasing and is expected to continue to increase.

Now that water facility loans can be made for leveling of land where justified, it is expected that additional applications will come from farmers needing this type of assistance. Advancing of loan funds, however, for land leveling will only be made where such land leveling is needed in connection with the development of other water facilities.

With the expanded uses for which funds can be used and with the increased number of applications coming in, it is expected that Nevada will this year obtain its fair share of the limited funds available.

Now to mention some of the work of WP here in the State. A loan was made in 1946 to the Alamo Irrigation Company for $46,800 to line their ditches with concrete. Work was started on this project this summer. Some delay was experienced in getting started because of the time taken in attempting to locate contractors to take the job on a reasonable bid. The company has grown ahead and is doing the work themselves under a competent foreman and supervision of an F. H. A. engineer. Most of the work will be completed by the end of this winter. Approximately $20,000 of the loan is to be repaid from ACP payments which the company expects to earn this year from carrying out this improved practice. The Alamo job is one example of the type of development needed in many areas of the State. We find that after the need for development of additional water, but the more efficient use of land and water already available.

A few individual farmstead WP loans have been made. Most of these consist of drilling of domestic wells, putting in pressure systems and laying distribution systems throughout the farmstead. Individual
irrigation facilities this past year have consisted of pipe lines for bringing water over alfalfa fans, drilling of wells, and installing pumps and power units.

Mr. Miller: Mr. Chairman and Gentlemen. Not having prepared a formal paper for this session I feel that a few observations on the work of the Laboratory of Research Chemistry of the Nevada Agricultural Experiment Station relating to the quality of irrigation water in the State might be of interest to you.

The Experiment Station Laboratory began its first systematic studies of the quality of irrigation water in 1942 when a project on the subject was approved by the Board of Experiment Stations at Washington. The principal work of our laboratory, as well as the other work of the Nevada Agricultural Experiment Station, is conducted on a project basis. Each of the station projects, in order to become operative, must have their approval when submitted to the office at Washington and our station is answerable to that office. Until the last session of Legislature, no funds have been provided by the State for Experiment Station investigations and we have been somewhat limited as to what we could do in the way of service to Nevada agriculture. All that has been done in the past has been done for the most part at the expense of time taken from our regular project work.

Institution of the project on the quality of irrigation water of the State was urged by Dr. C. S. Seefeld who was then in charge of the work of the Division of Irrigation Agriculture in the Bureau of Plant Industry. Information on the quality of the water of the Humboldt River was desired and needed, both by the Bureau and in the areas irrigated by those waters, and inasmuch as this river is not an interstate stream the Division of Irrigation Agriculture could not enter this field as they had done on the Rio Grande and other rivers of the West. On approval of the project which was set up particularly for the study of the waters of the Humboldt River, our laboratory, with the cooperation of the State Engineer's Office and the Pahrump County Water Conservation District and others interested, established a number of sampling stations at gauging points on the river and began systematic sampling and analysis of samples from these points. With the passage of time and the pressure of other duties the original number of five stations were reduced to two: samples being taken at Palisade and the Rye Patch dam. The weekly samples taken at these stations are sent to the laboratory for analysis, with no charge to the cooperating agencies, and the results are published and kept available for anyone interested in them. The results we have obtained have been eagerly sought by the Geological Survey, the Bureau of Reclamation, and others interested in irrigation water quality.

As for the present, the smaller run-off this year on the Humboldt River watershed is now being reflected in a smaller storage in Rye Patch...
Now I am going to call on a representative of the Corps of Engineers, Mr. P. P. Friend, Chief of the Flood Control Report Section of the Los Angeles office of the Corps of Engineers. Mr. Friend.

Mr. Friend: My remarks will be very limited. First, the Los Angeles district includes about two-fifths of this State. The remaining three-fifths is covered by the Sacramento District of the Corps of Engineers. Then the work of the Corps of Engineers is, principally, flood control work, which is definitely prescribed by Congress. No work of investigation or study is undertaken without specific authorization from Congress.

In the case of the Nevada area in our district, there are about six thousand (6,000) square miles now covered by Congressional authorization for investigation and study. That is the Virgin River Basin, which includes about 6,000 square miles of the southern part of the State. The Congress authorized an investigation previous to the beginning of the war. A preliminary study was made which showed there were sufficient flood damages and reasons for intensive study of this Virgin River area.

A survey was authorized by the Chief Engineer. This was prepared and certain recommendations were made by the District Office and concurred in by the Division Office. This study went on to the office of the Chief Engineers for final review before presentation of the report to Congress.

The Chief of Engineers, because of the nature of the study, the rather low justification in the area for the projects considered, and because of local interests, consideration of the White Narrows project in that basin returned the report to our district for review, reconsideration, and re-submittal.

The war intervened and interrupted our activities in the study of this area. Since that date, we have suffered a very severe reduction in forces; and little has been done. However, the report is definitely scheduled and will be worked on during the next year and will be complete early in 1949. In the meantime, Congressman Bunker, Senators McCarran and Malone have concurred to the Chief of Engineers various inquiries as to certain local areas within that region, and these areas have been reported on, in some detail, to the Chief of Engineers and these reports have been submitted to the inquiry made by Congressman and Senators.

The individuals of which organization greatly appreciate the opportunity to attend a conference of this character. We appreciate that here in the arid west much of the present value comes from the utilization of water and much of the future growth will depend upon such utilization. These developments require protection from floods. So we try to keep in touch with all the planning that relates to these areas, to learn of the basic data that is being accumulated by other Government agencies. Thank you.

Mr. Shamansky: Thank you, Mr. Friend. Does anyone have any questions to ask Mr. Friend?

Mr. Bax: Mr. Chairman, I would like to ask the gentleman what briefly, are your boundaries for your two-fifths and your—(question not concluded).
the University was made by Legislature by which free examinations and analyses of soils, minerals, ores, and waters would be made for citizens of the State. The University arranged that examination of the minerals and ores would be made in the School of Mines, and the soil and water samples would receive attention by the Agriculture Division and the Laboratory of the Food and Drug Division, respectively. For a long time many men of help were more abundant than necessary, as the arrangement was satisfactory. The water samples were examined by Prof. Dinsmore in the Food and Drug Laboratory and the soil samples received attention by the agriculture and soils departments of the University Experiment Station. On the passing of Prof. Dinsmore and the steady increase in demands for analyses, arrangements were made with Mr. Wayne B. Adams, the new Commissioner of Foods and Drugs, whereby his burden was lightened by a sharing of the work whereby the irrigation waters were examined by our Station Laboratory and the domestic waters by the Food and Drug Laboratory. The State Analytical Laboratory all this time has given service, and the work of this analytical laboratory has justified no criticism whatever.

Incidentally, the growth of public service work in other lines which were and are now carried out by the University has been very similar to the growth of the demands for analyses of soils, ores, and waters. With the growth from similar beginnings of service work in other lines has evolved finally the State Food and Drug Laboratory, the State Hygienic Laboratory, and the State Veterinary Control Service. These have all lessened the demand on the time of the University and Experiment Station staffs and have set up specific agencies for the work to be done.

It would appear, then, that possibly the time is now at hand when the same thing might profitably be done to provide expanded service to agriculture by the State Analytical Laboratory. The frame work of a more comprehensive State Analytical Laboratory is already in existence and by a slight expansion and rearrangement the demands for water and soil analyses could be taken care of. Professor Walter Palmer, the Director of the State Analytical Laboratory, and who is now carrying on the mineral and ore work, Mr. Adams, Commissioner of Foods and Drugs, Mr. Spencer and myself of the Experiment Station staff, who have been looking after the water and soils, are all favorably disposed to such an expansion and consolidation. We all, of course, would be available for advice and consultation when necessary. We feel that if, possibly the State Engineer's office could meet with the University officials, it might be that some such an expansion might be devised and so doing the needed service work could be more satisfactorily and expeditiously than is possible at present.

It is felt that the services of a full-time suitably qualified man with a very small extra expenditure for added equipment would be sufficient when added to the personnel of the present State Analytical Laboratory to provide these services.

Mr. Chairman, I feel that this is an opportune time to indicate my appreciation of the fine cooperation which has been given the laboratory by which I represent by the State Engineer's office and those other agencies which are interested in the water supply of the State, the

in this area. These forecasts will be based entirely upon antecedent and current precipitation.

According to plan, data will be received and forecasts made by the 5th of each month, June to May. Printing and mailing will take place after that date. I have several copies of last year's forecasts which I will leave with the Chairman and, in that way, you can see what we are doing. Some of you have seen them and are familiar with the methods that are being used.

Methods of these forecasts permit analyses of many years of past record. It permits exact methods of verification of forecasts, it also permits an unusually exact method of determining limits of error within the procedure.

Among the points we expect to forecast this year in Nevada are the following: West Walker at Bridgeport, East Walker near Coleville, Carson River at Fort Churchill and Carson City, Yub in the outlet. The Water Supply Forecast Unit will be located at the Salt Lake City Weather Bureau Office. In the forecasting procedure as set up for this unit, the effect of storms occurring immediately after the release of the forecast may be easily evaluated in terms of runoff. This may be done in a very few minutes after precipitation data for key stations has been received by the unit. Thank you.

MR. SHÄMMER: Are there any questions?

MR. ROEMIG: You mentioned you were putting close correlation between precipitation and runoff, and you are very much interested in that phase, but I am wondering how far you can establish those, for instance, if you have drainage areas in the mountain, runoff, can that be applied to other mountainous areas with the same altitude, with any degree of accuracy?

MR. RUPP: Not likely. That is something that would have to be investigated. You might find an occasional correlation. Our correlation studies deal with the relationship between rainfall and measured runoff. They do not deal with the relationship between precipitation and measured runoff from one area as compared to unmeasured runoff in some other area.

MR. ROEMIG: In other words, if you have a portion of stream in mountainous areas, due to this, of runoff in that total mountain area you could not apply what you had in that mountain stream to the remainder of the area, with any degree of accuracy?

MR. RUPP: If I understand your question, I would say no, probably not. There are too many unknown factors. It might work out occasionally through coincidence.

MR. ROEMIG: In other words, if you have a portion of stream in mountainous areas, due to this, of runoff in that total mountain area you could not apply what you had in that mountain stream with the remainder of the area, with any degree of accuracy?

MR. RUPP: No, you could not do that—too many elements entering into the picture; it might work out occasionally.

MR. SHÄMMER: Thank you very much.
The Bureau has four main divisions—the first is forecasting comprised of weather forecasts for airways, fruit frost warnings, special flight forecasts, hurricane warnings, and precipitation forecasts. Second, is the climatological service comprised of collection of climatological records, including precipitation, evaporation, temperature, and so on. The climatological service maintains approximately 130 stations in Nevada, some of which are recording stations. Most recording stations were started during the period 1940 to 1944.

Third, is the organization for the development of new weather instruments. One of the latest developments is a storage gage for collecting precipitation data in the mountains where we have no regular observers. From this storage gage the logical step is to go into a recording and radio reporting type of instrument. Such instrumentation is physically possible. However, there are plenty of practical problems to be met.

Fourth, is the division of special services. This division makes reports of hydrologic and meteorological nature dealing with extremes of rainfall, storms, and other phenomena that may occur under certain conditions. Reports of this type are available for the San Joaquin and other areas. Many of these reports are prepared in cooperation with the Bureau of Reclamation and the Corps of Engineers, U. S. Army.

We have available maps covering the United States that show the collection points of hydrologic data, including stream-flow measuring stations, snow survey courses, precipitation and temperature stations. These were prepared cooperatively with various Federal agencies.

We have established this year three storage precipitation gages in the Humboldt Basin of Nevada. Considerable difficulty was encountered in installing them. These are only a start. They will give us much needed data at higher elevations. An evaluation of the precipitation distribution in the higher mountains may be obtained from storage gages by correlation with data from stations at lower elevations.

Another phase of Bureau activity that may be of interest is the proposed program of placing weather data on punch cards. This will be started soon in this region. The punch card program will enable users of data to obtain summaries, means, frequency distribution, and so on, quickly and easily by machine methods, eliminating a great deal of work.

No provision has been made to place back data on punch cards. At present this is being done in other States by interested groups such as universities or other organizations wishing to set up such a project for their own purposes.

An interesting development over the past four or five years has been the correlation study between precipitation and runoff data. We have found a high degree of correlation between seasonal precipitation and annual runoff. We have found considerable value being placed on early estimates of runoff, particularly January and February forecasts. In that connection, the Bureau has, in the past few years, issued forecasts of water supply in various basins such as the Colorado, the Great Basin, and the Rio Grande. Next year we plan to make available during the first part of January, forecast for some of the streams.

U. S. Geological Survey, the Bureau of Reclamation, the Soil Conservation Service, and all the others which have given assistance. Thank you.

Mr. Shankweiler: Are there any questions to be asked of Mr. Miller?

Mr. Miller, your suggestion for a State Water Laboratory is extremely important, not only for the individual farmers, but for subground-water studies.

Mr. Robinson told me some time ago that we should have a number of samples analyzed, and if they are sent out of the State it would cost about $10 a sample.

The State Engineer's office has cooperated with the Geological Survey, their surface water program, and their program has been increased and has gone a long way. We need further increases. It is extremely important to determine the runoff in these streams, not only as an aid to distribution work, but for the working out of plans for better use, and better conservation. In this State, Mr. L. E. "Tom" Sawyer, of the U. S. G. S., is in charge of that work. I will call Mr. Sawyer now.

Mr. Sawyer: Mr. Chairman, Gentlemen: In outlining achievements and activities of the State of Nevada-Groundwater Survey cooperative surface water investigations program since the last meeting of the Nevada Water Conference held in this city on September 17, 1946, I am pleased to report that good progress has been made.

At the time of the last conference we had just made a good beginning on the construction of eight new gaging stations requested by the U. S. Bureau of Reclamation and three requested by the Corps of Engineers in the Carson, Truckee, and Walker River Basins. Installation was completed on all of the stations during the following months so that satisfactory records were obtained covering the past snow runoff period.

Seven of the stations requested by the Bureau of Reclamation are located in the Carson River Basin in connection with the proposed project of diverting streams tributary to the East Carson by an aqueduct to the West Carson for storage in the Hope Valley reservoir. The water would be later released for irrigation and power development. Available head for the proposed power plant would be about 1,200 feet, which would be largely responsible for financing the construction work. Gaging stations to determine the water supply are located near the proposed conduit line at an elevation of about 7,300 feet. Several are located at remote locations where it was necessary to convey construction materials by pack train. These gage house structures were built of timber, while those located at accessible sites were constructed of corrugated pipe. Cableways from which high water discharge measurements are made were necessary at all locations except on the West Fork where a satisfactory bridge was available.

One gaging station requested by the Bureau was constructed on the Little Truckee River near Hobart Mills and one requested by the Army Engineers on the Truckee River near Reno. These gages were required to ascertain water supplies in connection with irrigation, power, and flood control projects being considered by both agencies in the Truckee River Basin. The two stations requested by the Army
Engineers on the East Walker and West Walker at the head of Mason Valley are for flood control studies by that organization. Gage house structures for the latter four stations were constructed of corrugated pipe and standard cableways were installed.

Although the Bureau of Reclamation financed the construction and the first year's operation of the stations requested, it was with the understanding that continued operation would be financed by the State-Federal cooperative stream gaging program. In compliance with this proposal the Nevada State Legislature increased its cooperative appropriation by $2,000 for the current fiscal year. Since the new stations are actually located in California and that State will also receive power, flood control, and irrigation benefits, Mr. Ed. W. Hyatt, State Engineer, allotted $2,000 of California cooperative stream gaging funds to assist in the operation and maintenance of this program.

It was originally anticipated that some gaging stations in the Truckee River Basin now being operated by the local water users could be rehabilitated and added to the State Survey program. However, because of restricted funds by both the State and Federal legislators, no new work will be possible this fiscal year. All funds available will be required for operation and maintenance purposes. Stream gaging activities in the Humboldt River Basin for the past year have been restricted primarily to the maintenance and operation of existing stations. Two stations in that Basin, namely, the Humboldt River at Comus and the Lovelock Irrigation, Light and Power Company twelve mile, were rehabilitated with the installation of new corrugated pipe gage house structures.

The total number of gaging stations, including lakes and reservoirs, now being operated under the Nevada cooperative program is as follows:

- Humboldt River Basin: 20
- Owyhee River Basin: 4
- Muddy River Basin: 1
- Carson River Basin: 10
- Truckee River Basin: 4
- Walker River Basin: 8
- Total: 47

To improve field operating procedure and to have stream-flow records readily available for use of State officials and citizens, a Surface Water Division office was established at Carson City during the past year. The work is under my direct supervision, assisted by two engineers and one clerk. One engineer, Mr. McCrackie, is stationed at Elko, so that current measurements and records will be available to local users of water supply data. All basic data collected for the past several years and files in connection with surface water investigations in Nevada have been transferred from Salt Lake City to Carson City. Only minor administrative supervision, principally in regard to accounts, purchases, and personnel assignments, will be continued from the Salt Lake City District office.

Surface water supplies, particularly those in the Humboldt River Basin, for the water year ending September 30, have been much lower than those for several previous years. Although the first month
of the water year in the Humboldt River Basin started with a flow of 320 percent of normal and the first six months developed over 250 percent, the last half of the water year dropped to an average of only 67 percent. This low water flow for the period April-September was in marked contrast to the excellent runoff for the six preceding years which were unusually good, averaging 218 percent of the 25-year normal, 1921-1945. With the exception of the last six months, flow in the Humboldt River Basin has also been unusually high in comparison with adjacent basins. Runoff from streams draining the Sierra Nevada Mountains has averaged near normal for the same period—the West Walker River near Coleville, California, recording 105 percent of its 25-year normal. Based on preliminary computations, runoff for the water year ending September 30, 1947, totaled 187,000 acre-feet, or 70 percent of the 25-year normal. Stream flow in the southern part of Nevada has been relatively low as reported by the gauging station on Meadow Valley Wash at the Delunes dam site. This station was established in November 1944. Total runoff at that location for the water years 1945 and 1946 was 4,900 acre-feet, respectively. Although records have not yet been completed for the past water year, total runoff was in the same general magnitude. From these records it appears doubtful that there is sufficient water to justify a dam for storing an irrigation supply at this location.

I would also like, at this time, to express my appreciation to the State Engineer's Office, Forest Service, Bureau of Reclamation, Soil Conservation Service, and the Sierra Pacific Power Company, all of whom have been very cooperative and helpful in furnishing data, the Forest Service in furnishing the use of their Raingage Station for shelter, and just general encouragement in some cases.

I had an opportunity of returning some of it the other day when I accompanied Mr. Houston up McAfee Creek to establish a snow survey course. I was glad to do it once, but I don't want to have to do it again.

Mr. Stahmer: Thank you, Tom. I will now call on Mr. C. J. Friesen, Irrigation Manager, Indian Service.

Mr. Friesen: Mr. Chairman, I have a very short report here showing our irrigation activities in the agency last year.

During the fiscal year ending June 30, 1947, irrigation construction was accomplished on the Duckwater, Campbell Ranch, and Walker River projects in Nevada, to the following extent:

At Duckwater, 5 miles of new canal were constructed doing away with the old canal and worn-out structures entirely. The headworks at the Big Warm Spring were completed. This is a rubble masonry structure, 14 feet in height and 30 feet in length, containing approximately 210 cubic yards of masonry. A 24" Calco measuring gate is installed for the Indian canal leading north, and a 30" gate to turn water to other water users below and onto the storage basin during winter months. A concrete check constructed 900 feet down the ditch from the 30" gate is for use in turning the winter water onto the so-called "Big Warm Springs Flat" for storage.

For the Indian farmers, twelve 16" Calco measuring lateral gates with concrete checks and corrugated pipe turnouts were installed along the canal leading to their farms. The two turnouts, one on each
side of Duckwater Creek at the old Florin blacksmith shop, were
installed in a combination and check structure of reinforced concrete.
Several small wooden bridges were built for use of individual farmers.
The reconstruction of the Duckwater works is expected to result in
a considerable saving of water and time consumed in trying to operate
the old system.
At Campbell Ranch, near Yerington, 1 mile of 4" bottom and
from 2.5 to 5' depth drain was constructed leading from the lower
north boundary of the Indian Campbell Ranch to the Perazzo dumpy.
This drainage ditch, while not being deep enough for heavy drainage,
will carry away 3 or 4 second feet of waste water from the Campbell
Ranch and other nearby ranches.
At Walker River, about 1 mile below Schurz, 800 cubic yards of
loose rock were placed in the Walker River for protection to the
abutments of a lateral flume and as protection against further erosion
of the river banks. Two small laterals near the shore of Walker Lake,
the east side of the river, were extended in length for a total
distance of three miles to spread water over additional lands used for
tribal pasture. Some 3,000 acres of fairly good pasture lands have
been developed in this way, making use of excess water which would
otherwise be wasted into Walker Lake.
Approximately $42,000 was expended on the three projects.
Our proposed work for this fiscal year will consist of the following:
On the Fort McDermitt project a rock structure diversion dam will
be built on Quinn River to divert water from the Hassu ranch, replacing
two rock and brush dams used for many years. Two miles of
domestic water pipe are to be laid from a small spring on the side of
the mountains northeast of the Fort McDermitt school to a 30,000
gallon capacity metal storage tank just above the agency house, which
will furnish a supply of pure drinking water to the people of this
community.
The McDermitt Indian Tribal Council are planning on the installa-
tion of several small turnouts and checks for water distribution on the
Glaceoetto ranch.
On the Pyramid Lake project riprapping and construction of the
five rock check dams are to be started, but may not be completed this
year. One-half mile of small lateral is to be constructed to shorten
the distance of delivery, one and one-half miles, to a tract of farm
land on the lower end of the irrigated area.
On the Washoe project, near Virginia City, water protection work is
proposed, consisting of rock riprap and rock groins along the Carson
River bank within the Indian lands.
At Reno River one small diversion dam of rock construction is to
be built and reconstruction of some three miles of small canals will be
accomplished.
The canal systems on Walker River and Pyramid Lake projects
will be cleared where the weed is most severe.
And that about concludes the construction of the various projects.
Thank you.
Mr. Shambaugh: Thank you, Mr. Precke.
We have a few other gentlemen in the room who know a great deal
area we did not find moisture; the plant growth had apparently used
all the moisture and the soil is unable to support a more dense stand
of vegetation; and so, the water, as I said, probably goes through this
soil too fast. I think a watershed rehabilitation program should be
directed toward slowing it down to make more moisture available for
plant growth and delayed ground storage. Protection of the vegetation
cover would in time permit a slow recovery of vegetation which will
hold the soil in place and add the organic material that is now insuffi-
cient for good watershed purposes. I think Nevada should look to this
slope of the Sierra Nevada Mountains for water and timber supply.
Water and timber are the greatest renewable resources available in
the State, and I believe they might very seriously consider a reforesta-
tion program to reestablish forest cover on those slopes.
Mr. Maxey: Is the Forest Service doing any research on the vari-
ous amounts or fractions of water consumed by transpiration of plants
in the high mountain areas, and evaporation in the fraction that enters
the ground, water from the high mountain areas?
Mr. Maxey: Yes, they have been making studies in the Wasatch
Range in Utah and farther east, and I am not certain, but I think they
are making studies in Colorado, but we have not in Nevada.
Mr. Maxey: Are their investigations in completed form, from which
reliable information is available on such projects?
Mr. Hansen: I think there are some in the East, but the data on
the Wasatch I do not think has been completed.
Mr. Maxey: You mean east of the Mississippi?
Mr. Hansen: Yes.
Mr. Peterson: Croft has published something on that.
Mr. Hansen: I am not acquainted with it.
Mr. Maxey: That happens to be in the Geological Survey's memo;
it is a subject about which we know very little but on which we should
know very much.
Mr. Hansen: That's right; we need to know a lot about it. I
believe our fellows just recently conducted a tour with some of your
fellows in Salt Lake. I am not familiar with the results of their
discussion or findings.
Mr. Solaanen: I will now call on Mr. Clyde Houston of the Soil
Conservation Service. Mr. Houston.
Mr. Houston: Mr. Shambaugh, Members of the Conference: My
little talk will just be limited to snow surveys in Nevada.
A major accomplishment during the past year was the completion of
a cooperative agreement between Nevada State Engineer, Nevada Agri-
cultural Experiment Station, and Division of Irrigation and Water
Conservation of the Soil Conservation Service, to conduct snow surveys
and irrigation investigations throughout the State. This agreement
ensures that the snow survey work of the three agencies will be coor-
dinated and conducted on a more formal basis than previously. Greater
Magnesium Project can receive Nevada energy under the General Regulations governing the Boulder Canyon Project Adjustment Act. A number of reports ordered by the commission are also appended.

The commission wishes to gratefully acknowledge the use of the chambers of the Las Vegas City Council, and the offices of the Las Vegas Chamber of Commerce, for various meetings. We also thank the engineers of the Bureau of Reclamation, Region Nos. 2 and 3, for helpful advice on many occasions, and the contribution of engineering and hydrological data. We also thank our Senators and our Congressmen in Washington, who have been untiring and unceasing in their sympathetic work upon the problems of the commission.

ALFRED MERRITT SMITH. 
Secretary.

COLORADO RIVER COMMISSION MEETINGS 
LAB VEGAS, NEVADA, JUNE 28, 1946

The provisions of a proposed contract between Edison Company and Defense Plant Corporation to supply demand energy for lesser at Basie Magnesium Project, were reviewed and agreed to as presented, with suggestions to minor changes. Mr. H. D. Gillings was present at the meeting, representing J. H. Montgomery Company, operators of the Basie Magnesium Project for Reconstruction Finance Corporation, and he also had been employed by the commission as an advisory engineer. Gillings stated that he was leaving at once for Washington to confer with upper level War Assets Administration officials, and hoped to have the contract ready for execution by Edison Company on his return.

The State of Nevada and its Colorado River Commission were a party to the said proposed contract only to the extent of agreeing not to supply energy to the Basie Magnesium Project until the contract with Edison Company terminates in 1951. The contract was eventually executed and is in effect at the date this is written and under its terms energy is being supplied to all operators at Basie Magnesium Project. The full text of the contract is given at the end of this chapter as Appendix No. 1.

A proposal to establish an experimental farm for Clark County under the auspices of the State Department of Agriculture was considered. It had been suggested that the commission cooperate in such work, but no decision was made. An opinion prevailed among the members that probably the limited supply of water that could be pumped into Las Vegas Valley through the existing pumps and pipe line might as well or better be used for rapidly increasing municipal and suburban developments in and adjacent to Las Vegas, as a higher beneficial use.

LAB VEGAS, NEVADA, AUGUST 10, 1946

It was decided that conferences with the California allottees should be continued regarding additional generating capacity for Nevada, standby service, and equipment made idle by Nevada's energy withdrawals. The details of the City's proposal to generate and supply energy for Basie Magnesium Project are given in full by the City in the following letter:

about the Nevada water problems, and I know they will have some interesting observations to make.

First, I want to call on Mr. H. O. Peterson. Mr. Peterson is with the Water Facilities Branch of the United States Geological Survey from Los Angeles. While he is not directly connected with our groundwater study, he is a highly qualified hydrologist and has been interested on a great number of occasions in locating well sites for the Bureau of Land Management and Indian Service, and has been of assistance to us. I know he has some interesting remarks to make. Mr. Peterson.

Mr. Peterson: Mr. Shamberger, Gentlemen: I didn't come up here with any idea of making a talk, although Mr. Shamberger, in his invitation, did ask that I be prepared to participate in the discussion.

First of all, I think the State Engineer, who is connected with this conference, deserves your commendation. I do work in a great many States in the West and am in contact with a great number of officials, and I don't know of any place where the water problems of the entire State are so well summarized and so widely disseminated as they are in conferences of this kind; and, therefore, I consider Nevada is to be commended in starting this sort of conference, held annually, or less often, or more often, if need be; and I think the practice might very well be adopted in a good many other States where the water problems are perhaps just as acute as they are in this State.

In speaking of that, it is interesting to see the progress that has been made in the few years these conferences have been occurring. I think it was only possibly three years ago, maybe less, that I attended the first conference of this kind. That was held here, when the proposed program of investigation of ground water resources of the State was brought up. At that time it was sort of a nebulous plan. The State Engineer's office and those who had traveled around the State realized there were underground resources of ground water and other types of water in this State, but just how to reach out and bring that water in, how to develop new land and water, and make them produce, was something that had not been decided upon. At that meeting, there were certain phases of the program that were outlined and it was decided the program was to start.

Last year I missed the conference, but I understood that considerable progress has been made. Today we have reached a point where, as I listened to the various speakers, we are coming to a determination of how much water is available and how much land we have to put under irrigation and put into production. If we go along in this fashion, I think that in a year from now, or possibly two years from now, this group of engineers and other men interested in the primary development of the water, will be augmented by another group. Then we will begin to wonder how to acquire title, or how to transfer title of these various lands we have determined can be placed under irrigation from the present ownership, or State ownership, into private ownership. I think the conference will probably want to have some bankers present who will give some ideas as to how actual financing can be taking place, because
once your water has been determined to be present, it is then a question of drilling wells, installing machinery, bringing that to the surface, to the ground, where it can be put into production.

You also need to have considerably more work done by such agencies as the Soil Conservation Service, in planning forms, and things of that kind.

I am always interested in western development. Possibly a year from now there will be a very decided need for men of this kind, possibly a need for architects who have some ideas as to how farm houses should be built in these newly developed areas. It is very satisfactory to me, as one interested in conservation and development of this western country, very satisfactory to me to see some progress being made.

My particular interest in Nevada is not closely associated with the development as you have heard it outlined here. Our work is largely in the public domain development, water for range purposes, and other work that is connected with the development of the range. By doing that work, I have had an opportunity to get over a large part of the State. Some of the things I have watched have been touched upon here today, and one of these has been the development of water in a great number of valleys that occur in the State of Nevada.

Due to its peculiar geographic set-up the waters that occur in Nevada belong strictly to the State; there is no chance they will be transferred out. Nevada has internal drainage waters from the mountains in those valleys and are confined there. The question of whether that water is used, or not, does not become an interstate question at all; it becomes strictly a question of the State of Nevada. If those waters are allowed to waste, it is entirely Nevada’s loss. If it is put to land development, it is going to be Nevada’s gain.

One thing that has been touched upon here today which possibly deserves consideration for future studies of this kind, has to do with many large springs in the State of Nevada.

I think Mr. Mead of the Bureau of Reclamation mentioned this morning that the Bureau recognized a need for some kind of storage to hold waters in the Moapa Springs, which irrigate lower Moapa Valley. We have, particularly in the eastern and southeastern part of Nevada a great number of springs, ranging in size from five second feet to maybe thirty or forty, even larger. These springs have a constant flow. During the unsuperficial season water is wasted in most localities. I think as the study goes along, serious consideration should be given to conserving that water that is wasted during the unsuperficial season. It is possible that storage dams can be developed for some of them to conserve that water in surface reservoirs. In others, it might be well, too, for that terrain immediately surrounding to see if it could be put into some sort of basin during the off-season period, if possible, to see if it cannot be repumped when it is needed next season.

There are many other projects connected with the State water development that probably deserve some consideration. I am particularly cognizant of that, seeing what occurred in the northeastern part of the State. That area, as you recall, was formerly under the

CHAPTER XXII

COLORADO RIVER COMMISSION

Synopsis of Proceedings June 1, 1946, to May 31, 1948

FOREWORD

The past biennium was a period of great activity for this commission, whose acts have been of such importance and magnitude that it may be deemed advisable to publish the full detailed proceedings in a separate volume. For inclusion in the State Engineer’s report we have prepared and submit herewith a brief statement of the most important proceedings. Lack of space forbids a more complete report, and in view of a probable forthcoming verbatim volume it is unnecessary.

Work on the commission as its secretary, and as a member of its engineering committee, has consumed much of the State Engineer’s time, and has required considerable travel. During the last quarter of 1947 the commission authorized the secretary to employ an engineering assistant, but increasing work at Las Vegas and Henderson made it necessary to remove him to Henderson. Authority to employ another assistant has been obtained for the Carson City office.

The decision of the commission to take over the control and operation of the great Basic Magnesium Project at Henderson has necessarily resulted in a mass of new work and new responsibilities. The rapid growth of the Las Vegas area, with new development and calls for power have expanded our work. The 1947 Legislature ordered the preparation of a State-wide power market survey, by the commission, and it is now nearing completion, requiring much coordinated work with other State and Federal departments. The Legislature also authorized and instructed the commission to handle all matters concerning the purchase and sale of power for use by the State from sources other than the Colorado River, making it in effect a Nevada Power Authority, without such official title.

These activities have increased the work of the State Engineer and his staff, particularly in view of the augmented volume of office routine and State wide administration business, which is explained elsewhere. It has been suggested that the work of the commission be separated from work of the State Engineer, which would be most satisfactory to the State Engineer and his department, but this has not been favored by the Governor because of the long experience of the State Engineer in Colorado River water and power affairs. However, the official work has grown so rapidly that there is a necessity for increased personnel in both the commission and the office of the State Engineer which becomes more urgent daily.

In this chapter, I have included, in addition to major activities, copies of several legal agreements whereby the commission assumed the operation of Basic Magnesium Project, and the agreement under which certain California allottees supply power for the industries at Basic, during the three-year interim which must elapse before Basic
Mr. Devore, water and power is right up your alley. Do you think there is any possible future utilization of Steamboat Springs, for example?

Mr. Devore: Well, they tried on something along the lines of Steamboat Springs in Lake County, California, at some steel plant, but, as far as I know, the efforts were not very successful, probably due to the chemist in the water they had to combat with. I have never heard the details, but anyway the plot was given up. I think the General Electric Company had something to do with that.

That does not mean, however, that somebody is not going to find, sometime, the answer to the puzzle. I think probably it is more in the chemical engineers' field than in the hydraulic.

Mr. Slattery: What do you think about that, Mr. Slattery?

Mr. Slattery: I don't know. Klamath Falls, Oregon, has practically used some hot water from springs, but they are not contaminated with any minerals, no residue or anything like that.

Mr. Mason: I believe, of course I am not an engineer, I believe there are some new developments in extraction of heat by investigating the same process used in chemical refrigeration, where the quality of the water would not affect its usefulness at all. You take the heat out of it and throw it away. Probably some of the engineers here are more familiar with that than I am.

Mr. Smith: I just threw this subject into the hopper while we had you men here, as something to think about. It is possible there's something here now going to waste that will be of great future value. We have many hot springs in Nevada.

I think Mr. Miller here has given thermal waters some attention. Have you any thought on that?

Mr. Miller: I think the extraction of the energy, in many cases, is from pretty large springs that put out a good deal of heat energy. Many of our mineral springs in this State would be negligible in other parts of the West. It's been said Lake County, California, has more springs than all of Europe. I don't doubt Nevada has more springs than Lake County, California, and there are very few medicinal resorts, rest cures, in this State. There might be some opportunity for the development of that. Of course that would be along Ed Walker's line, the Reno Chamber of Commerce, but, nevertheless, it would be utilization of the springs. And, of course, there is the old pernicious outlet—put it up into bottles, and advertise it for medicine and get suckers to buy it.

Mr. Roehrig: Nevada has the second largest number of hot springs in the United States, topped only by California. That census was made about ten years ago, and it was not complete for Nevada at the time because I have found three or four hot springs not listed for Nevada. Nevada ranks second in the Nation for hot springs.

Mr. Smith: Anything further?

If not, I declare the meeting adjourned; and wish to thank you all very much for coming here, and for your valuable contributions to this work.

(Adjourned at 4:35 o'clock p.m.)
on irrigation problems that is accomplished is pretty hard to see, but we do hope at least to get out a comprehensive report on our reconnaissance inventories of land and water resources in Nevada which has been held up pretty much during the War. We have not done much with it during that period. However, the material in this study has been made available to a good many agencies, but the report will spread much wider.

I want to take this opportunity to restate a little of what I said last year, that our findings, our conclusions, are that there is not a great opportunity for expansion—that is, the spreading of our major water supplies over or more land. I was glad to hear this morning several speakers mention possibilities for developing small streams, small supplies of water. There is very considerable opportunity for both extensive development, that is, spread over more acreage, but also more water on the same acreage that is being irrigated at the present time, and greater production per acre. These small-scale developments have been retarded by two conditions. One is the absorption of most of our irrigation engineers and other technical people by the large projects. There is no great amount of relief for this situation in sight. The other condition I have in mind is the association of most of our small to medium irrigation water supplies with stock-ranch operation using public grazing lands. There are a few apparent exceptions to the general rule. In these the water supplies have been very materially improved by storage reservoirs or pipe line transportation. When examined these prove to be special cases in which the water development corrects a previous lack of balance in the ranch organization. The present price inflation may result in some development which would not otherwise occur, and more might be stimulated by land policies designed to secure more complete use of resources.

I think that's all I have to say.

Mr. Shumaker: Thank you, Mr. Mason.

We have another member of the Geological Survey we have not heard from. Mr. B. B. Morrison of Fallon, who is with the Geological branch, and is carrying on this special study in the Lahontan Basin. I think a part of his work is studying the whole of Lake Lahontan, and while it is not directly connected with the ground water program, his findings will, no doubt, be of great help to the men carrying on the ground water investigations. I am sure we would all be interested in having Mr. Morrison tell us a little about his work over there. Mr. Morrison.

Mr. Morrison: Mr. Chairman, and Gentlemen of the Conference: I don't know whether you realize that only 70 percent of the land area has been mapped. That is the reason for the delay in the geological map. In order to get accurate information on underground water supplies, adequate geological maps are very essential, and no more true than here in Nevada. There are big gaps in our geological knowledge, particularly in this State. We have a lack of determination on Tertiary and Quaternary deposits, materials that fill our basins between the mountain ranges. These deposits are the big yielders of ground water, but we do not have much information about them as yet, only knowledge of a general character, by and large.

August, in which I visited, I believe, all the major dams and water projects of the Western States.

You know it is funny for a person who has lived and was reared in the State of Nevada to go back to the eastern coast where they have so much water they are trying to get rid of it instead of saving it.

Last spring I spent three days making a more or less complete survey of the Tennessee Valley Authority Project where their problem is flood control and getting rid of the water. After going over that project and then coming West and seeing what has been done in the other States, how water has been developed, land been reclaimed, has been intensely interesting to me; and then to follow through in Nevada where we realize the one source of water we have left and must utilize is the underground water.

Most other States have their large rivers. We followed the Snake River through Idaho, from its inception in the Jackson Hole country, followed it down, and the Columbia River, and the Sacramento River in California, and also followed for many miles the Colorado River and the dam development, and how the water could be used from that great river in the southern part.

I know that the storage of underground water has been tried in a number of places. I visited one place in Davis County, Utah, where floods in the upper reaches are being stored to be utilized in irrigating later, and in building up water tables.

This meeting has been very interesting to me. It is a phase we did not cover in any of the other States. I have listened with interest, and if there is any way I know I can cooperate, or the two Nevada Senators, we will be very pleased to do so.

Mr. Smith: Thank you, Mr. Russell.

To get off on a slight tangent, there has been some discussion here and it comes up in various meetings, the fact that we have in this State a large number of hot springs; and, so far as I know, the tremendous amount of energy created by these hot springs is wasted. It may have occurred to some of you engineers, that in some manner we should take advantage of this energy now going to waste.

I have in mind one hot spring, absolutely a geyser in the southern end of Smoky Valley. It is pouring out thousands of gallons of water every day, boiling hot water. There are many others, such as Steamboat Springs near Reno. Probably a good many of such hot springs are not good for irrigation, but have a lot of heat energy, and they should be used, and doubt, sometime in the future, will be used for the heat they contain. It was freshly brought to my mind recently at a meeting of the Western States Engineers I attended in Boise. In that city there are a number of houses that have for many years been heated by waters from hot springs. They are free from the expense of heating with fuel. They not only utilize that hot water for heating, but for all other purposes hot water is used for. That is an example of what may be done with this resource where the water is free from chemicals or mineral ingredients that would render it deleterious.

I am wondering if anyone here has ideas as to how we might do something about that? Probably we are overlooking a substantial resource by passing it over and waiting too long for future development. Does anyone have anything to say on this topic.
MR. MAXY: I don't know how much good it will do, but I would like to carry Dave's suggestion a little further on a little different line. I don't know if it is possible or not, but I feel that Congress and some of our Government agencies should be apprized of the fact Nevada does not have many maps; and, not only that, but large sums of money could be saved by having mapping done. I know they have been apprized of the fact by other agencies, but this is just one more agency to add to the list. Possibly we could make some kind of resolution here. This conference might feel the need to make a resolution to suggest that more areas in Nevada be mapped.

I think it is vital to the operation of every agency concerned that they have good maps. The maps do not exist actually. They should be made.

And back in 1878 the Geological Survey was organized to map the United States in a period of fifty (50) years. I believe the law read, and the only reason they were not mapped was because the money was not appropriated. Probably the reason no money was appropriated was because there was no pressure on it. I think if each organization adds its voice to the whole, eventually Congress will hear of a broader map program for this State.

Maybe I'm out of line, but after working along without a map you get rather radical.

MR. FERGUSON: Mr. Smith, I am wondering if there isn't one other step we might pursue farther in that line. There are quite a number of agencies working in this State in various localities. I am wondering if it would not be possible to get those agencies together and possibly by each contributing something, get a map made. Thinking particularly of our own problem, we plan this coming spring to make a rather detailed geological map for development of range purposes in the northeastern part of Nevada, northeast of Wells. We certainly would be willing to contribute considerable to get an adequate mapping of that area. These may be other agencies in the same position, maybe not in a position at this time to contribute toward the cost of mapping, but possibly in their future budgets if estimates or something of the sort. If they could be brought together and each of us contribute something it might be possible to get maps of the kind desired with not too much cost to any one agency.

MR. SMITH: I hardly think it is necessary, in view of our universal interest in this matter, to pass a resolution. We are all interested; and you can be assured that the Department of the State Engineer will do all it can to promote a better mapping program and get the data, and will communicate with the various agencies, and help with the work.

We appreciate the sustained interest of our Congressman Charles Russell. He has listened most attentively to the various discussions here today.

We are wondering if you would like to comment, Congressman Russell, on our meeting, and if you would favor us, in closing.

CONGRESSMAN RUSSELL: Mr. Smith, I have come through about six weeks of somewhat similar meetings, starting out the latter part of
in August and I spent most of my time confined in a hospital bed recovering from an automobile accident. I was given the opportunity to explore the ground except from the existing literature.

However, I have been able to conduct reconnaissance trips into White River Valley in which we are planning quite a detailed investigation, and where the possibilities of the development of water and development of good land seem to be quite favorable.

I have also been able to look briefly at Harlin Valley, a large part of which lies in Utah, but certain areas of which may prove to be quite productive lie over the State line in Nevada. I have been able to see Snake Valley, and have also spent a few days in Diamond Valley in Eureka County, and I have made one brief trip to Railroad Valley which lies, largely, in Nye County.

As I said before, the most optimistic conditions I have seen in eastern Nevada, so far, in my brief trips, have been the conditions in White River Valley where there are at least four large springs of the type Mr. Peterson and Mr. Phoenix and others have mentioned.

I believe it was Mr. Munson who brought up, or it might have been someone else, who asked Mr. Robinson if ground water developments in the White River Valley might possibly affect the yield of these large springs.

Apparently, from what little bit of study has been made, ground water development will not affect, particularly, the yield of these springs, for the ground water development that will be done, certainly in the near future, will be at considerably lower elevations than where the springs come out, and it is quite probable that the springs afford, in large part, recharge to ground water that will be developed. This is particularly true around Preston and Land in the central part of White River Valley. In this area, and south of Land, for approximately five miles, I would roughly estimate, there is as much as three or four thousand acres and possibly a good deal more good land available for cultivation providing ground water can be placed on it, and over considerable areas of that three or four thousand acres and the ground water level is close to the surface, within 40 feet.

Such conditions, certainly justify further detailed investigation, and with the possibility that, if deemed necessary, wells be drilled to determine what the materials are and how that will yield water to wells.

In Diamond Valley, in Eureka County, north of Eureka, there are considerable areas of what is apparently good land. I might say one of our great difficulties in this investigation is proving to be that of determining just which areas to investigate where ground water is obviously available, because we are not soils men and very little is known of the soils in these valleys. One of the big helps would be soil studies, of course as detailed as possible, but even brief soil studies would be of great help in certain portions of these valleys to outline, more or less, the soils that would be usable, providing water could be supplied to them. Diamond Valley is one such valley. As far as I know no soil studies have been made there and, as far as I know, there is no way to determine the value of soils except by rule of thumb, or guesswork. And I am not confident that...
Probably when I get home tonight I will think of a lot of things I could have said.

Mr. Smith: Would you suggest some procedure that might be taken by this group, or perhaps you already have?

Mr. Miller: I don’t think it is a matter of procedure for the group. I think the Engineer’s office could handle it by sending a representative over to meet with Mr. Gorman, President Moliney, Wayne Adams, and myself; and I think the thing can be laid out for you for your purpose. I think a suitable laboratory setup there would be more comprehensive and suitable than the State Analytical Laboratory. There is no criticism of the State Analytical Laboratory, whatever. It is functioning well, within its limits, but now I think is the time to expand it. I think it can be expanded with a great deal of benefit.

Mr. Rafter: We have here Carl Gehnsteil, Secretary of the Walker River Irrigation District these many years, and we would like to hear from Carl.

Mr. Gehnsteil: Mr. Smith and Gentlemen: I came to learn. I don’t believe I have anything to offer that would be of interest to you. The importance of the comments of the representatives of these various agencies have been very interesting and instructive, and I deeply appreciate the invitation to be present.

Mr. Smith: Well, this will be the last call. We are yet early in the evening and if any of you gentlemen here would like to ask some more questions, propound a problem, or suggest something that will help us in our future procedure, now is the time to do it.

Mr. H. W. Lindley: Mr. Smith, Gentlemen: My name is Lindsey from Winnemucca. I don’t know if you will remember that, or not, but I have been very happy to attend this session today and see everybody so very interested in the development of the State. I can take back some information now I have been looking for. Thank you.

Ms. Shannon: May I say, Mr. Lindsey, after the meeting we would like Senator Tallman and you to meet with Mr. Robinson and me for a few minutes, to arrange probably a future meeting either up there or later on today.

Mr. Lindsey: Thank you.

Mr. Smith: Anyone else?

Mr. Peterson: I would like to make a suggestion, Mr. Smith, and that is that everybody has been asked for suggestions as to how you might improve the State program. Now I would like to see if the State Engineer’s office has any suggestions as to how the agencies might improve their programs.

Ms. Shannon: We will take that up next year, Mr. Peterson.

Mr. Smith: These meetings, you must know, gentlemen who are experts in your particular line, are a great aid to us. We gain our ideas and our hope of progress and good results from you people. That is why we don’t want you to be bashful when you are at a meeting like this. Don’t be modest or have any inhibitions; please get up on your two feet and tell us what we should do.
things have got to be taken into consideration, along with the quantity and amount available. The land on which the water can be applied in the vicinity of such springs will, very often, eliminate them immediately from further investigation, unless for exploitation as mineral water.

Mr. Shamberger: Your statement shows the great need for a State Laboratory.

Mr. Miller: That's why I put that plug in.

Mr. Shamberger: Thank you, Mr. Miller.

We have the Chief Engineer of the Sierra Pacific Power Company, Mr. George Devore, here today, and I am sure he would like to make a few remarks regarding what he has heard this afternoon.

Mr. Devore: I came here to be a blatherer—-and absurb, not to give forth. I am afraid I might presume on your time as I have not given any thought to making any remarks. But it has been most interesting to hear the thoughts the speakers are giving today.

As a power company and water department over here, we try to apply some of the ideas you bring out at these meetings. We are especially interested in the Truckee River and Carson and, potentially, in Walker. In snow surveys we take quite an active part. And the regulation of the Truckee River—it might be interesting to you to know that in the Truckee River this year I think we have had a loss of a major quarter of one percent, or one-tenth of one percent of water, due to accidents on the Fallon-Truckee Canal more than any other season. In Carson River there's been not a drop of water wasted, as far as I know, this year. Any waste in the upper part of the valley has been taken care of by the Lahontan storage.

Our storage in the Truckee this year is not over 40 percent of the normal storage, although we were able to go through with the normal supply, having carry over from previous years.

I think we might benefit in some of our future meetings if we can get somebody to give us a talk on the economics of some of these subjects. I had in mind a paper at Tahoe, a beautiful reservoir, 750,000 acre-feet, and yet if you start thinking of the economics of Tahoe it is probably irrigating about 45,000 acres instead of the 150,000 acres that amount of stored water could irrigate.

Then we have Washoe Lake. I suppose others have had the same idea. Its evaporation, roughly, would irrigate 1,000 or 2,000 acres of land. There might be a solution. Our State Engineer may be able to devise a way of making a tule lake out of Washoe, cultivate the land after pumping the water out for irrigation of the adjacent higher dry areas.

The Army Engineers and the Reclamation Bureau are both working on studies of the development of the Truckee River and the Carson and Walker. We have those dry years, such a year as this where there is no storage at all, on the Truckee and Carson. That involves an economic problem which is, presumably, our baby to look after, but I think we are all interested in how to take care of the development of the crop, to take care of the irrigable areas when they are not permitted, according to law, to store water. Adversely, there is no water to store in such a year as this.

I don't know of anything special I could add to the discussions here, but I will say I have enjoyed very much hearing the remarks you made.

Mr. Shamberger: Thank you, Mr. Devore.

Mr. Petersen says next year we might have bankers and architects here also, but this year we have the Secretary of the Reno Chamber of Commerce. Hello, you have been here listening today, will you give us a few comments?

Mr. E. H. Walker: Mr. Chairman, Gentlemen, I know very well I am no expert on water. I can't offer anything regarding the technicalities of the situation, but I do appreciate very much the invitation I had to attend this meeting. I have learned a whole lot about the work that is going on. I don't think the public generally realized what the State Engineer's office and the Government agencies are doing in the interest of the conservation and development of water. I can assure you that the Reno Chamber of Commerce is interested and realizes the importance of the development and conservation of water; and if we can be of cooperation in any way possible in the development problems, you can count on us; I assure you of that.

Mr. Shamberger: If there is anyone else I have not called upon who would like to give us a few words, I would like for him to stand up. If not, I am going to turn the meeting back to Mr. Smith, the State Engineer. Tom, if you please.

Mr. Smith: I wanted to get out of this entirely. I guess Hugh and I have worked together so much that when he can shoulder off something on me, he does it, and I, having the whip hand most of the time, shoulder most of it off on him because I know he can do it thoroughly, and better than I.

I think there are several men here who could add substantially to our story, but who have not been called on. Mr. Ross was to have added something in regard to the interest of the Federal Power Commission in our set-up, inasmuch as they are engaged in making a comprehensive power market survey for the entire State, but he felt that, inasmuch as Mr. Lesher was not here, he had but little to add, for the reason that ground water was somewhat out of his field. He has taken advantage of his time here to confer with Mr. du Braver who has been employed by the Colorado River Commission of Nevada especially to work on the power market survey, and he has, also, found time to confer with the Public Service Commission, also with Mr. Jay Carpenter of the State Bureau of Mines, so it is hardly likely he will get back in time to add anything to our meeting.

I note that Mr. Miller had something to say while I was called out of the meeting. He brought up the matter of the necessity of having a water analysis laboratory at the University of Nevada, or for the establishment of a branch of one of the existing laboratories for the exclusive work of water analysis, which is growing in importance, and, in connection with this work, is of the greatest importance.

Do you have anything further to say on that, Mr. Miller?

Mr. Miller: I don't think there is anything I can add to it, at present, Mr. Smith. There's nothing that occurs to me right now.
things have got to be taken into consideration, along with the quantity and amount available. The land on which the water can be applied in the vicinity of such springs will, very often, eliminate them immediately from further investigation, unless for exploitation as mineral water.

Mr. Shamberger: Your statement shows the great need for a State Laboratory.

Mr. Miller: That's why I put that plug in.

Mr. Shamberger: Thank you, Mr. Miller.

We have the Chief Engineer of the Sierra Pacific Power Company, Mr. George Devore, here today, and I am sure he would like to make a few remarks regarding what he has heard this afternoon.

Mr. Devore: I came here to be a bluffer—and absorb, not to give forth. I am afraid I might presume on your time as I have not given any thought to making any remarks. But it has been most interesting to hear the thoughts the speakers are giving today.

As a power company and water department over there, we try to apply some of the ideas you bring out at these meetings. We are especially interested in the Truckee River and Carson and, potentially, in Walker. In snow surveys we take quite an active part, and the regulation of the Truckee River—it might be interesting to you to know that in the Truckee River this year I think we have had a loss of a major quarter of one percent, or one-tenth of one percent of water, due to accidents on the Palomino-Truckee Canal more than any other season. In Carson River there's been no drop of water wasted, as far as I know, this year. Any waste in the upper part of the valley has been taken care of by the Lahontan storage.

Our storage in the Truckee this year is not over 40 percent of the normal storage, although we were able to go through with the normal supply, having carry over from previous years. I think we might benefit in some of our future meetings if we can get somebody to give us a talk on the economics of some of these subjects. I had in mind to add at Tahoe, a beautiful reservoir, 750,000 acre-feet, and yet if you start thinking of the economics of Tahoe it is probably irrigating about 45,000 acres instead of the 150,000 acres that amount of stored water could irrigate.

Then we have Washoe Lake. I suppose others have had the same idea. Its evaporation, roughly, would irrigate 1,000 or 2,000 acres of land. There might be a solution. Our State Engineer may be able to devise a way of using a lake just north of Washoe, cultivate the land after pumping the water out for irrigation of the adjacent higher dry areas.

The Army Engineers and the Reclamation Bureau are both working on studies of the development of the Truckee River and the Carson and Walker. We have those dry years, such as this year, where there is no storage at all, in the Truckee and Carson. That involves an economic problem which is, presumably, our baby to look after, but I think we are all interested in how to take care of the development of stable power, to take care of the irrigable lands where they are not permitted, according to law, to store water. Adversely, there is no water to store in such a year as this.

Mr. Shamberger: I don't know of anything special I could add to the discussion here, but I will say I have enjoyed very much hearing the remarks you made.

Mr. Shamberger: Thank you, Mr. Devore.

Mr. Petersen says next year we might have bankers and architects here also, but this year we have the Secretary of the Reno Chamber of Commerce. Hi, you been here listening today, will you give us a few comments?

Mr. E. H. Walker: Mr. Chairman, Gentlemen, I know very well I am no expert on water. I can't offer anything regarding the technicalities of the situation, but I do appreciate very much the invitation I had to attend this meeting. I have learned a whole lot about the work that is going on. I don't think the public generally realizes what the State Engineer's office and the Government agencies are doing in the interest of the conservation and development of water. I can assure you that the Reno Chamber of Commerce is interested and realizes the importance of the development and conservation of water; and if we can be of cooperation in any way possible in the development problems, you can count on us; I assure you of that.

Mr. Shamberger: If there is anyone else who has not called upon who would like to give us a few words, I would like for him to stand up. If not, I am going to turn the meeting back to Mr. Smith, the State Engineer. Tom, if you please.

Mr. Smith: I was going to get out of this entirely. I guess Hugh and I have worked together so much that when he can shoulder off something on me, he does it, and I, having the whiphand most of the time, shoulder most of it off on him because I know he can do it thoroughly, and better than I.

I think there are several men here who could add substantially to our story, but who have not been called on. Mr. Roes was to have added something in regard to the interest of the Federal Power Commission in our set-up, as much as they are engaged in making a comprehensive power market survey for the entire State, but he felt that, inasmuch as Mr. Lesher-Wing could not be here, he had but little to add, for the reason that ground water was somewhat out of his field. He has taken advantage of his time here to confer with Mr. du Brasse who has been employed by the Colorado River Commission of Nevada especially to work on the power market survey, and he has, also, found time to confer with the Public Service Commission, also with Mr. Jay Carpenter of the State Bureau of Mines, so it is hardly likely he will get back in time to add anything to our meeting.

I note that Mr. Miller had something to say while I was called out of the meeting. He brought up the matter of the necessity of having a water analysis laboratory at the University of Nevada, or for the establishment of a branch or some of the existing laboratories for the exclusive work of water analysis, which is growing in importance, and, in connection with this work, is of the greatest importance.

Do you have anything further to say on that, Mr. Miller?

Mr. Miller: I don't think there is anything I can add to it, at present, Mr. Smith. There's nothing that occurs to me right now.
Probably when I get home tonight I will think of a lot of things I could have said.

Mr. Smith: Would you suggest some procedure that might be taken by this group, or perhaps you already have?

Mr. Miller: I don't think it is a matter of procedure for the group. I think the Engineer's office could handle it by sending a representative over to meet with Mr. Zerema, President Moneley, Wayne Adams, and myself; and I think the thing could be laid out for use for your purpose. I think a suitable laboratory up there would be more comprehensive and suitable than the State Analytical Laboratory. There is no criticism of the State Analytical Laboratory, whatever. It is functioning well, within its limits, but now I think the time is the time to expand it. I think it can be expanded with a great deal of benefit.

Mr. Rath: We have here Carl Gehmuth, Secretary of the Walker River Irrigation District these many years, and we would like to hear from Carl.

Mr. Gehmuth: Mr. Smith and Gentlemen: I came to learn. I don't believe I have anything to offer that would be of interest to you. The importance of the comments of the representatives of these various agencies have been very interesting and instructive, and I deeply appreciate the invitation to be present.

Mr. Smith: Well, this will be the last call. We are yet early in the evening and if any of you gentlemen here would like to ask some more questions, propound a problem, or suggest something that will help us in our future procedure, now is the time to do it.

Mr. H. W. Lindsey: Mr. Smith, Gentlemen: My name is Lindsey from Winnemucca. I don't know if you will remember that, or not, but I have been very happy to attend this session today and see everybody so very interested in the development of the State. I can take back some information now I have been looking for. Thank you.

Ms. Shimmensky: May I say, Mr. Lindsey, after the meeting we would like Senator Tallman and you to meet with Mr. Robinson and me for a few minutes, to arrange probably a future meeting either up there or later on today.

Ms. Lindsey: Thank you.

Mr. Smith: Anyone else?

Ms. Peterson: I would like to make a suggestion, Mr. Smith, and that is that everybody has been asked for suggestions as to how you might improve the State program. Now I would like to see if the State Engineer's office has any suggestions as to how the agencies might improve their programs.

Ms. Shimmensky: We will take that up next year, Mr. Peterson.

Mr. Smith: These meetings, you must know, gentlemen who are experts in your particular line, are a great aid to us. We gain our ideas and our hope of progress and good results from you people. That is why we don't want you to be bashful when you are at a meeting like this. Don't be modest or have any inhibitions; please get up on your two feet and tell us what we should do.

The investigation of a ground water problem in such a valley is particularly valuable to the State if the soils are not capable of being used. Apparently Diamond Valley offers considerable opportunity for development. There is a high water table, that is, one within 56 feet of the surface over a large area, and apparently there is a large amount of water available for recharge. I managed to visit Spring Valley in two brief trips. There again large quantities of ground water undoubtedly are available and will not be utilized in the most efficient way. Here again, the problem of whether it is worthwhile investigating such water supplies because of our lack of knowledge of where favorable soils are so limited. Apparently areas of good soils are quite limited in Spring Valley.

In Snake Valley, along the eastern bounds of the State there undoubtedly is a large quantity of ground water available. There is considerable loss by transpiration; and one of the finest recharge areas in the State of Nevada is tributary to this valley. However, I have not had an opportunity to look very deeply into the details.

I have no other remarks now.

Ms. Shimmensky: You have supplied much information, George.

Ms. Maxey: I would like to ask a question. I am particularly interested in that Hot Creek Springs down below us—a very large spring surrounded by almost worthless land. Would it be possible to tap that source some place, trace it, and tap it at some other place where there is good land, and then abandon the present use of the water?

Mr. Maxey: I am pipe-dreaming now, but I have an alternative suggestion. Hot Creek Spring has, for years, flowed into the old Adams-McGilli reservoir, which originally was constructed, I believe, to irrigate the land below the spring. Apparently either the land was not of good value or it was in some financial difficulty. Apparently, the water cannot be utilized that way. However, to the west of Hot Creek Spring there is a considerable area of good land which should be surveyed and investigated at the earliest opportunity because the Hot Creek Springs does represent one of those small areas concerning which I was questioning Mr. Mead about this morning, in relation to development. There apparently is good land there. I know there is ground water available in small quantities, but it is believed Hot Creek Spring can be diverted and swung back around. In other words, it is quite possible a considerable amount of land can be developed and a little farming community could grow up there.

As I say, I am pipe-dreaming, as many of the engineering details, and the soil details, have not been gone into, but Hot Creek Springs certainly represents a problem in White River Valley, and, at the present time, very little use is made of approximately 18 second-feet of water.

Ms. Miller: Mr. Chairman, I might suggest in connection with this subject, that the water of some of these Hot Springs should be analyzed. Some of them are dynamic. Steamboat Springs for example, throws out a little water but it is not suitable for agricultural use. Some hot waters have too much chlorine in them.
in August and I spent most of my time confined in a hospital bed recovering from an automobile accident. I have been able to conduct reconnaissance trips into White River Valley in which we are planning quite a detailed investigation, and where the possibilities of the development of water and development of good land seem to be quite favorable.

I have also been able to look briefly at Hamlin Valley, a large part of which lies in Utah, but certain areas of which may prove to be quite productive if water is made available to them. I have been able to see Snake Valley, and have also spent a few days in Diamond Valley in Eureka County, and I have made one brief trip to Railroad Valley which lies, largely, in Nye County.

As I said before, the most optimistic conditions I have seen in eastern Nevada, so far, in my brief trips, have been the conditions in White River Valley where there are at least four large springs of the type Mr. Peterson and Mr. Phoenix and others have mentioned.

I believe it was Mr. Munson who brought up, or it might have been someone else, who asked Mr. Robinson if ground water developments in the White River Valley might possibly affect the yield of these large springs.

Apparently, from what little bit of study that has been made, ground water development will not affect, particularly, the yield of these springs, for the ground water development that will be done, certainly in the near future, will be at considerably lower elevations than where the springs crop out; and it is quite probable that the springs afford, in large part, recharge to ground water that will be developed. This is particularly true around Preston and Land in the central part of White River Valley. In this area, and south of Land, for approximately five miles, I would roughly estimate, there is as much as three or four thousand acres and possibly a good deal more good land available for cultivation providing ground water can be placed on it, and over considerable areas of that three or four thousand acres the ground water level is close to the surface, within 40 feet.

Such conditions certainly justify further detailed investigation, and with the possibility that it deemed necessary, vast wells be drilled to determine what the materials are and how that will yield water to wells.

In Diamond Valley, in Eureka County, north of Eureka, there are considerable areas of what is apparently good land. I might say one of our great difficulties in this investigation is growing to be that of determining just which areas to investigate where ground water is obviously available, because we are not soils men and very little is known of the soils in these valleys. One of the big helps would be soil studies, of course as detailed as possible, but even brief soil studies would be of great help in certain portions of these valleys to outline, more or less, the soils that would be available, providing water could be supplied to them. Diamond Valley is one such valley. As far as I know no soil studies have been made there and, as far as I know, there is no way to determine the value of the soils except by rule of thumb, or guesswork. And I am not confident that

Mr. Phoenix: Mr. Smith.

Mr. Smith: Mr. Phoenix.

Mr. Phoenix: That's an invitation.

The chief handicap to all work in the State has been the lack of maps. I suggest something be done about that. I can't make any concrete suggestion, but I do know there are many incompletely maps and inaccessible maps in the files of the various government organizations throughout the State. Perhaps we do not have access to some of them, I would like to see a compilation of maps made in the State of Nevada so we can more easily pursue our work throughout the State.

We have been slowly compiling maps in our office, but I believe there are other compilations which we do not have and if there are we would certainly like to obtain them.

Mr. Smith: Thank you for the suggestion, Dave; and I think we all know we need a closer and more active coordination of the mapping program, and that you people would like to have maps to use in your work right now. We will see what we can do regarding your suggestion. We have already done something along that line, but our progress has been slow; perhaps we can do more.

Mr. Phoenix: It occurs to me, Mr. Smith, that is certainly the most basic thing we are dealing with and it seems to me the most important thing we have to contend with—this lack of maps throughout the State.

Mr. Smith: Yes, I agree with you, Mr. Phoenix.

Mr. Chandler: You have in mind that all the government agencies make an inventory of the maps they have in Nevada, as well as the State Engineer's office, the Highway Department, and have that information available so they know where to go to get maps?

Mr. Phoenix: Yes. As a matter of fact, this suggestion was brought up last year. It seems to me it would be advisable not only that maps be assembled, but also factual data that has been assembled, but put in a common pool so it can be obtained, without too much delay, by the different agencies interested in obtaining the information, thinking more of geological data and its associated information, hydrological data, and soil information enumerated by the Soil Conservation in the forms of small reports. I realize it would be rather difficult, but it occurs to me we might be able to create some central point where you could go for information and find out quickly whether there is information in a given area where we are now or will be working.

Mr. Morrison: I suppose that Mr. Phoenix also refers to aerial photos.

Mr. Phoenix: Certainly.

Mr. Morrison: I know that is growing by leaps and bounds. If you look at a map of this region, aerial topography of the United States, this is certainly a white spot in the country. I know there are rather small areas this summer where they are planning to have it done in many districts, by oil companies in one or two cases, and some by the Geological Survey and other government bureaus.
Mr. MAXEY: I don't know how much good it will do, but I would like to carry Dave's suggestion a little further on a little different line. I don't know if it is possible or not, but I feel that Congress and some of our Government agencies should be apprised of the fact that Nevada does not have many maps; and, not only that, but large sums of money could be saved by having mapping done. I know they have been apprised of the fact by other agencies, but this is just one more agency to add to the list. Possibly we could make some kind of resolution here. This conference might feel the need to make a resolution to suggest that more areas in Nevada be mapped.

I think it is vital to the operation of every agency concerned that they have good maps. The maps do not exist actually. They should be made.

And back in 1878 the Geological Survey was organized to map the United States in a period of fifty (50) years. I believe the law read, and the only reason they were not mapped was because the money was not appropriated. Probably the reason no money was appropriated was because there was no pressure put on it. I think if each organization adds its voice to the whole, eventually Congress will hear of a broader map program for this State.

Maybe I'm out of line, but after working along without a map you get rather radical.

Mr. PERMEN: Mr. Smith, I am wondering if there isn't one other step we might pursue further in that line. There are quite a number of agencies working in this State in various localities. I am wondering if it would not be possible to get those agencies together and possibly by each contributing something, get a map made. Thinking particularly of our own program, we plan this coming spring to make a rather detailed geological map for development of range purposes in the northeastern part of Nevada, northeast of Wells. We certainly would be willing to contribute considerable to get an adequate mapping of that area. There may be other agencies in the same position, maybe not in a position at this time to contribute toward the cost of mapping, but possibly in their future budgets or something of the sort. If they could be brought together and each of us contribute something it might be possible to get maps of the kind desired with not too much cost to any one agency.

Mr. SMITH: I hardly think it is necessary, in view of our universal interest in this matter, to pass a resolution. We are all interested; and you can be assured that the Department of the State Engineer will do all it can to promote a better mapping program and get the data, and will communicate with the various agencies, and help with the work.

We greatly appreciate the sustained interest of our Congressman, Charles Russell. He has listened most attentively to the various discussions here today.

We are wondering if you would like to comment, Congressman Russell, on our meeting, and if you would favor us, in closing.

CONGRESSMAN RUSSELL: Mr. Smith. I have come through about six weeks of somewhat similar meetings, starting out the latter part of...
on irrigation problems that is accomplished is pretty hard to see, but we do hope at least to get out a comprehensive report on our reconnaissance inventories of land and water resources in Nevada which has been held up pretty much during the War. We have not done much with it during that period. However, the material in this study has been made available to a good many agencies, but the report will spread it much wider.

I want to take this opportunity to reiterate a little of what I said last year, that our findings, our conclusions, are that there is not a great opportunity for expansion—that is, the spreading of our major water supplies over or more land. I was glad to hear this morning several speakers mention possibilities for developing small streams, small supplies of water. There is very considerable opportunity for both extensive development, that is, spread over more acreage, but also more water on the same acreage that is being irrigated at the present time, and greater production per acre. These small-scale developments have been retarded by two conditions. One is the absorption of most of our irrigation engineers and other technical people by the large projects. There is no great amount of relief for this situation in sight. The other condition I have in mind is the association of most of our small to medium irrigation water supplies with stock-ranch operation using public grazing lands. There are a few apparent exceptions to the general rule. In these the water supplies have been very materially improved by storage reservoirs or pipe line transportation. When examined these prove to be special cases in which the water development corrects a previous lack of balance in the ranch organization. The present price inflation may result in some development which would not otherwise occur, and more might be stimulated by land policies designed to secure more complete use of resources.

I think that’s all I have to say.

Mr. SHAMSHEER: Thank you, Mr. Mason.

We have another member of the Geological Survey we have not heard from. Mr. H. B. Morrison of Fallon, who is with the geological branch, and is carrying on this special study in the Lahontan Basin.

I think a part of his work is studying the whole of Lake Lahontan, and while it is not directly connected with the ground water program, his findings will, no doubt, be of great help to the men carrying on the ground water investigations. I am sure we would all be interested in having Mr. Morrison tell us a little about his work over there. Mr. Morrison.

Mr. MORRISON: Mr. Chairman, and Gentlemen of the Conference: I don’t know whether you realize that only 70 percent of the land area has been mapped. That is the reason for the detail on that geological map, in order to get accurate information on underground water supplies, adequate geological maps are very essential, and no more true than here in Nevada. There are large gaps in our geological knowledge, particularly in this State. We have a lack of determination on Tertiary and Quaternary deposits, materials that fill our basins between the mountain ranges. These deposits are the big yielders of ground water, but we do not have much information about them as yet, only knowledge of a general character, by and large.

August, in which I visited, I believe, all the major dams and water projects of the Western States.

You know it is funny for a person who has lived and was reared in the State of Nevada to go back to the eastern coast where they have so much water they are trying to get rid of it instead of saving it.

Last spring I spent three days making a more or less complete coverage of the Tennessee Valley Authority Project where their problem is flood control and getting rid of the water. After going over that project and then coming West and seeing what has been done in other States, how water has been developed, land been reclaimed, has been intensely interesting to me; and then to follow through in Nevada where we realize the one source of water we have left and must utilize is the underground water.

Most other States have their large rivers. We followed the Snake River through Idaho, from its inception in the Jackson Hole country, followed it down, and the Columbia River, and the Sacramento River in California, and also followed for many miles the Colorado River and the dam development, and how the water could be used from that great river in the southern part.

I know that the storage of underground water has been tried in a number of places. I visited one place in Davis County, Utah, where floods in the upper reaches are being stored to be utilized in irrigating later, and in building up water tables.

This meeting has been very interesting to me. It is a phase we did not cover in any of the other States. I have listened with interest, and if there is any way I know that I can cooperate, or the two Nevada Senators, we will be very pleased to do so.

Mr. SMITH: Thank you, Mr. Russell.

To go off on a slight tangent, there has been some discussion here and it comes up in various meetings, the fact that we have in this State a large number of hot springs, and, so far as I know, the tremendous amount of energy created by these hot springs is wasted. It may have occurred to some of you engineers, that in some manner we should take advantage of this energy now going to waste.

I have in mind one hot spring, absolutely a geyser in the southern end of Smoky Valley. It is pouring out thousands of gallons of water every day, boiling hot water. There are many others, such as Steamboat Springs near Reno. Probably a good many of such hot springs are not good for irrigation, but have a lot of heat energy, and they should be used, and, no doubt, sometime in the future, will be used for the heat they contain. It was freshly brought to my mind recently at a meeting of the Western States Engineers I attended in Boise. In that city there are a number of houses that have for many years been heated by waters from hot springs. They are free from the expense of heating with fuel. They not only utilize hot water for heating, but for all other purposes hot water is used for. That is one example of what may be done with this resource where the water is free from chemicals or mineral ingredients that would render it deleterious.

I am wondering if anyone here has ideas as to how we might do something about that? Probably we are overlooking a substantial resource by passing it over and waiting too long for future development. Does anyone have anything to say on this topic.
Mr. Devore, water and power is right up your alley. Do you think there is any possible future utilization of Steamboat Springs for example?

Mr. Devore: Well, they tried out something along the lines of Steamboat Springs in Lake County, California, at some steel plant, but, as far as I know, the efforts were not very successful, probably due to the chemicals in the water they had to combat with. I have never heard the details, but anyway the plan was given up. I think the General Electric Company had something to do with that.

That does not mean, however, that somebody is not going to find, sometime, the answer to the puzzle. I think probably it is more in the chemical engineers' field than in the hydraulic.

Mr. Slattery: What do you think about that, Mr. Slattery?

Mr. Slattery: I don't know. Klamath Falls, Oregon, has practically used some hot water from springs, but they are not contaminated with any minerals, no residue or anything like that.

Mr. Mason: I believe, of course, I am not an engineer, I believe there are some new developments in extraction of heat by investigating the same process used in chemical refrigeration, where the quality of the water would not affect its usefulness at all. You take the heat out of it and throw it away. Probably some of the engineers here are more familiar with that than I am.

Mr. Smith: I just threw this subject into the hopper while we had you men here, as something to think about. It is possible there is something here now going to waste that will be of great future value. We have many hot springs in Nevada.

I think Mr. Miller here has given thermal waters some attention. Have you any thought on that?

Mr. Miller: I think the extraction of the energy, in many cases, is from pretty large springs that put out a good deal of heat energy. Many of our mineral springs in this State would be negligible in other parts of the West. It's been said Lake County, California, has more springs than all of Europe. I don't doubt Nevada has more springs than Lake County, California, and there are very few medicinal resorts, rest cures, in this State. There might be some opportunity for the development of that. Of course that would be along Ed Walker's line, the Reno Chamber of Commerce, but, nevertheless, it would be utilization of the springs. And, of course, there is the old perennial outlet—put it up into bottles, and advertise it for medicine and get suckers to buy it.

Mr. Robinson: Nevada has the second largest number of hot springs in the United States, topped only by California. That census was made about ten years ago, and it was not complete for Nevada at the time because I have found three or four hot springs not listed for Nevada. Nevada ranks second in the Union for hot springs.

Mr. Smith: Anything further?

If not, I declare our meeting adjourned; and wish to thank you all very much for coming here, and for your valuable contributions to this work.

(Adjourned at 4:35 o'clock p.m.)
once your water has been determined to be present, it is then a question of drilling wells, installing machinery, bringing that to the surface, to the ground, where it can be put into production.

You also need to have considerably more work done by such agencies as the Soil Conservation Service, in planning forms, and things of that kind.

I am always interested in western development. Possibly a year from now there will be a very decided need for men of this kind, possibly a need for architects who have some ideas of how farm houses should be built on these newly developed areas. It is very satisfactory to me, as one interested in conservation and development of this western country, very satisfactory to me to see some progress being made.

My particular interest in Nevada is not closely associated with the development as you have heard it outlined here. Our work is largely in the public domain development, water for range purposes, and other work that is connected with the development of the range. By doing that work, I have had an opportunity to get over a large part of the State. Some of the things I have watched have been touched upon here today, and one of those has been the development of water in a great number of valleys that occur in the State of Nevada.

Due to its peculiar geographic setup the waters that occur in Nevada belong strictly to the State; there is no chance they will be transferred out. Nevada has internal drainage waters from the mountains in those valleys and are confined there. The question of whether that water is used, or not, does not become an interstate question at all, it becomes strictly a question of the State of Nevada. If those waters are allowed to waste, it is entirely Nevada’s loss. If it is put to land development, it is going to be Nevada’s gain.

One thing that has been touched upon here today which possibly deserves consideration for future studies of this kind, has to do with many large springs in the State of Nevada.

I think the Bureau of Reclamation mentioned this morning that the Bureau recognized a need for some kind of storage to hold waters in the Moapa Springs which irrigate lower Moapa Valley. We have, particularly in the eastern and southeastern part of Nevada a great number of springs, ranging in size from five second feet to maybe thirty or forty, even larger. These springs have a constant flow. During the convivious season water is wasted in most localities. I think as the study goes along, serious consideration should be given to conserving that water that is wasted during the convivious season. It is possible that storage dams can be developed for some of them to conserve that water in surface reservoirs. In others, it might be well, too, for that terrain immediately surrounding to see if it could be put into some sort of basin during the off-season period, if possible, to see if it cannot be repumped when it is needed next season.

There are many other problems connected with the State water development that probably deserve some consideration. I am particularly cognizant of that, seeing what occurred in the northeastern part of the State. That area, as you recall, was formerly under the
Magnesium Project can receive Nevada energy under the General Regulations governing the Boulder Canyon Project Adjustment Act. A number of reports ordered by the commission are also appended.

The commission wishes to gratefully acknowledge the use of the chambers of the Las Vegas City Council, and the offices of the Las Vegas Chamber of Commerce, for various meetings. We also thank the engineers of the Bureau of Reclamation, Regions Nos. 2 and 3, for helpful advice on many occasions, and the contribution of engineering and hydrological data. We also thank our Senators and our Congressman in Washington, who have been untiring and ceaseless in their sympathetic work upon the problems of the commission.

ALFRED MERRITT SMITH
Secretary.

COLORADO RIVER COMMISSION MEETINGS
Las Vegas, Nevada, June 28, 1946

The provisions of a proposed contract between Edison Company and Defense Plant Corporation to supply demand energy for losses at Basic Magnesium Project were reviewed and agreed to as presented, with suggestions as to minor changes. Mr. H. H. Gillings was present at the meeting, representing J. H. Montgomery Company, operators of the Basic Magnesium Project for Reconstruction Finance Corporation, and he also had been employed by the commission as an advisory engineer. Gillings stated that he was leaving at once for Washington to confer with upper level War Assets Administration officials, and hoped to have the contract ready for execution by Edison Company on his return.

The State of Nevada and its Colorado River Commission were a party to the said proposed contract only to the extent of agreeing not to supply energy to the Basic Magnesium Project until the contract with Edison Company terminates in 1951. This contract was eventually executed and is in effect at the date this is written and under its terms energy is being supplied to all operators at Basic Magnesium Project. The full text of the contract is given at the end of this chapter as Appendix No. 1.

A proposal to establish an experimental farm for Clark County under the auspices of the State Department of Agriculture was considered. It had been suggested that the commission cooperate in such work, but no decision was made. An opinion prevailed among the members that probably the limited supply of water that could be pumped into Las Vegas Valley through the existing pumps and pipe line might as well or better be used for rapidly increasing municipal and suburban developments in and adjacent to Las Vegas, as a higher beneficial use.

Las Vegas, Nevada, August 10, 1946

It was decided that conferences with the California allottees should be continued regarding additional generating capacity for Nevada, standby service, and equipment made idle by Nevada's energy withdrawals. The details of the City's proposal to generate and supply energy for Basic Magnesium Project are given in full by the City in the following letter:

about the Nevada water problems, and I know they will have some interesting observations to make.

First, I want to call on Mr. H. O. Petersen, Mr. Petersen is with the Water Facilities Branch of the United States Geological Survey from Los Angeles. While he is not directly connected with our ground-water study, he is a highly qualified hydrologist and has been interested in a great number of occasions in locating well sites for the Bureau of Land Management and Indian Service, and has been of assistance to us. I know he has some interesting remarks to make. Mr. Petersen.

Mr. Petersen: Mr. Shamberger, Gentlemen: I didn't come up here with any idea of making a talk, although Mr. Shamberger, in his invitation, did ask that I be prepared to participate in the discussion.

First of all, I think the State Engineer, who is connected with this conference, deserves our commendation. I do work in a great many States in the West and come in contact with a great number of officials, and I don't know of any place where the water problems of the entire State are so well summarized and so widely disseminated as they are in conferences of this kind; and, therefore, I consider Nevada is to be commended in starting this sort of conference, held annually, or less often, or more often, if need be; and I think the practice might very well be adopted in a good many other States where the water problems are perhaps just as acute as they are in this State.

In speaking of that, it is interesting to see the progress that has been made in the few years these conferences have been occurring. I think it was only possibly three years ago, maybe less, that I attended the first conference of this kind. That was held here, when the proposed program of investigation of ground water resources of the State was brought up. At that time it was sort of a nebulous plan. The State Engineer's office and those who had traveled around the State realized there were underground resources of ground water and other types of water in this State, but just how to get at it and bring that water in, how to develop new land and water and make them produce, was something that had not been decided upon. At that meeting, there were certain phases of the program that were outlined, but I did not consider the program was to start.

Last year I missed the conference, but I understand that considerable progress has been made. Today we have reached a point where, as I listened to the various speakers, we are coming to a determination of how much water is available and how much land we have to put under irrigation and put into production. If we go along in this fashion, I think that in a year from now, or possibly two years from now, this group of engineers and other men interested in the primary development of the water, will be augmented by another group. Then we will begin to wonder how to acquire title, or how to transfer title of these various lands we have determined can be placed under irrigation from the present ownership, or State ownership, into private ownership. I think the conference will probably want to have some bankers present who will give some ideas as to how actual financing can be taking place, because
underwrite the installation of a half-size generating unit, 45,000 kw, under certain conditions, outlined as follows:

Southern Nevada Power Company would pay $15,000 per month in advance and in excess of its energy bills to the commission for a period of four years, which would total $78,000. In return they asked that their present public power rates be undisturbed for the four-year period, by the Public Service Commission, until after the machinery had been installed and was in operation. They would also agree to hold in reserve certain capacity for Lincoln County Power District and Overton Power District.

Compton was informed by Chairman Pittman that the Colorado River Commission could not and would not use any pressure or influence upon the Public Service Commission with respect to public power rates. Compton's proposal was received with considerable favorable comment, although the advisability of the commission "paddling its own canoe" with respect to getting a generator was not lost sight of. Inclination to look with favor on Southern Nevada Power Company's proposal was in part due to the fact that under the State Constitution the commission could not assume the financial obligation to pay for a generator without first having resale contracts for energy in amount equivalent to the obligation to pay for such machinery.

Eventually, on May 6, 1948, a contract between the commission and Southern Nevada Power Company was agreed to and executed, but having various additions and changes from what had been originally proposed by the power company. This contract represented an obligation to underwrite a full unit, 15,000 kw, but reserving 31,000 kw, to Southern Nevada Power Company, and 14,000 kw, to Lincoln County District and Overton District. The contract is designed as Appendix No. 2, at the end of this chapter.

On May 16 the commission again convened to hear Senator McCarran. The Senate complimented Commissioner Mueller on the work he had done in Washington, with War Assets Administration, looking toward Nevada's control of Basic Magnesium Project. He said they had learned that War Assets Administration was running behind at an enormous rate at Basic, and very much wanted to get rid of that cost, fearing Congress would soon "raise hell" with them for sustaining an unnecessary public expense.

The commission suggested that Mueller return to Washington for further work on the problem. The sum of $800 was voted for the support of the Colorado River Water Users Association.

CARSON CITY, NEVADA, JUNE 25, 1947

A resolution was passed authorizing the withdrawal of an additional 18,000,000 kilowatt-hours from Hoover Dam Power Plant at no additional horsepower demand, to be designated Withdrawal No. 47. This was necessary because of requests to the commission by Southern Nevada Power Company for equivalent additional energy.

The chairman stated he had received a telegram from Senator McCarran and requested that it be included in the minutes of this meeting. The telegram is as follows:

WATER AND POWER
THE CITY OF LOS ANGELES
207 S. Broadway, Box 3669 Terminal Annex,
Los Angeles, 54

May 16, 1946.

Hon. Vail Pittman, Governor of the State of Nevada, Carson City, Nevada.

Dear Governor: This is written in compliance with your request that I give you in brief the new basis formulated by the City of Los Angeles and Southern California Edison Company for furnishing, after May 31, 1946, electrical energy for use at Basic Magnesium plant. Since the last meeting relative to this matter further study has been given to the possibility of fixing the rate for the energy, exclusive of the demand charge, at 2½ mills per kilowatt-hour, as suggested by you. The new formula arrived at by the City and Edison Company results in a kilowatt-hour rate for the energy approximately equal to that suggested by you so long as the Boulder firm rate does not increase substantially and the cost of fuel oil is the same as it was at the time you made the suggestion, namely, $1.10 per barrel.

You will recall that the original rate suggested by the City and Edison Company, exclusive of the demand charge, was 2½ mills per kilowatt-hour, and provision was made in the proposal for an incremental fuel charge of two-tenths of a mill per kilowatt-hour for every 10 cents per barrel increase in the cost of fuel, such incremental fuel cost to be applied to one-half the energy being supplied.

The new formula, briefly stated, is as follows:

1. During such years as there shall be available to the Boulder allottees at the Boulder project under the General Regulations, by declaration of the Integrating Committee, or otherwise, energy in the amount of 5,750,000,000 kilowatt-hours or more, the rate per kilowatt-hour to the State of Nevada for the energy supplied shall be the then Boulder firm energy rate plus one mill.

Note—Our studies have indicated that during a normal Boulder water year, making available 5,750,000,000 kilowatt-hours of energy, probably all the energy for Nevada will not be generated by steam.

2. During such years as there shall be available to the Boulder allottees at the Boulder Project under the General Regulations, declaration of the Integrating Committee, or otherwise, less than 5,750,000,000 kilowatt-hours of energy, the rate per kilowatt-hour to the State of Nevada for the energy supplied to Nevada shall be an amount equal to the aggregate of the then Boulder firm rate and one mill, an incremental fuel charge at the rate of one-tenth of a mill for each 10 cents per barrel increase in the cost of fuel oil above $1.10 per barrel, and an incremental fuel charge at the rate of two-tenths of a mill for each increase of 10 cents per barrel in the cost of fuel oil above $1.25.

Note—This provision is designed to cover increases or decreases in the cost of energy generated by steam plants in Los Angeles as affected by increases or decreases in the price of fuel oil. The significance of the one-tenth of a mill incremental fuel charge between the fuel cost of $1.10 and $1.25 per barrel is that the California agencies will apply the proposed two-tenths of a mill incremental fuel cost to one-half of the energy supplied while the fuel cost is less than $1.25 per barrel.
You will note that the application of the formula set forth in the two numbered paragraphs above, with the present Boulder firm rate, results in a per kilowatt-hour charge to Nevada of 2.344 mills as long as the cost of fuel oil is not in excess of $1.10 per barrel, and such a rate also prevails, irrespective of the cost of fuel oil, during normal water years at Boulder when 5,750,000,000 kilowatt-hours of energy, or more, are available. However, under low water conditions at Boulder when less than 5,750,000,000 kilowatt-hours of energy are available, and the price of oil increases above $1.10 per barrel, the per kilowatt-hour charge to Nevada increases at the rate of one-tenth of a mill for each 10 cents increase between $1.10 and $1.20 per barrel for fuel oil, and at the rate of two-tenths of a mill for each 10 cents per barrel increase in fuel oil cost over $1.20 per barrel. Under this formula the rate to Nevada per kilowatt-hour will be, if the present Boulder firm rate is in effect and the price of fuel oil is $1.25 per barrel, 1.544 mills (the present Boulder firm rate) plus one mill, plus 15-thousandths of a mill, or 2.794 mills per kilowatt-hour. If, however, the price of fuel oil should go to $1.35 per barrel and the present Boulder firm rate is in effect, then the kilowatt-hour rate to Nevada would be 2.344 mills, plus one mill, plus 15-thousandths of a mill, plus two-tenths of a mill, or 2.594 mills per kilowatt-hour.

Besides the formula for arriving at the per kilowatt-hour charge for the energy, the City and Edison Company have likewise agreed that the contract, when and if consummated, should provide:

(1) In addition to the energy charge, Nevada to pay monthly 50 cents for each kilowatt of 90-minute maximum demand created by Nevada for Basic Magnesium Project up to 35,000 kilowatts, with a minimum monthly payment of $12,500 and a monthly charge of $1 per kilowatt for demands in excess of 35,000 kilowatts if created by Nevada, with no obligation on the part of the City or Edison Company to supply such excess demands;

(2) A weighted average monthly power factor of 85 percent;

(3) A term of five years with Nevada retaining the right to terminate after three years, with six months' notice;

(4) Nevada to agree not to withdraw energy from the Boulder Project for use at Basic Magnesium Plant during the five-year period from June 1, 1946;

(5) Both the City and Edison Company to have the right to reduce or discontinue service to the State of Nevada without penalty to the extent that it may be necessary to maintain service to the consumers of either of them.

I trust that the above, which should be regarded not as a proposal to Nevada but as a suggested basis for negotiations, provides a plan upon which an agreement mutually satisfactory to all concerned may be worked out.

Sincerely,

SAMUEL B. MORRIS,
General Manager and Chief Engineer.

The "oil escalator" clause in this proposal was subject to much subsequent study and discussion, but was eventually agreed to with minor changes, at a later date, and after further conferences with the City.

A desire was expressed by the commission to know more of the status

Robt. E. Hummert, Asst. Administrator, War Assets Administration, had come out to Henderson from Washington to look into the affairs and to assist Nevada in its work to hold the complete project intact. Mueller was positive in stating that the State should be able to operate its own magnesium project at a profit, although Reconstruction Finance Corporation and War Assets Administration had been continuously operating at a heavy loss.

There was much discussion concerning availability of Boulder power, both for the State's present contractors, as well as for Basic Magnesium Project in the future. During the war a major unit 82,500 kw. generator had been installed by Reconstruction Finance Corporation to generate additional power for the manufacture of magnesium metal at Basic. A contract had been made whereby the Metropolitan Water District of Southern California could take over this generator and its appurtenant transformers and switching machinery (designated as Secs. 6-7 and 7-7) by giving two years advance notice, also, that the District must take over the generator in 1966. At the end of the war and shut-down of the magnesium plant, War Assets Administration was left with this generating machinery, upon which it had to pay the annual charges, amounting to some $35,000. To get relief from this financial burden War Assets Administration had leased N-7 to Edison Company until June 30, 1951. Edison and the City had for some time previously been endeavouring to arrive at an agreement with War Assets Administration to use N-7. Nevada also wanted N-7 if it could be freed from restrictions, for three main reasons: First, the amortization costs were definitely fixed, and probably lower than what they would be on a new generator if it should be installed by the State, due to rising prices. Second, the generator would be available on July 1, 1951, while another might take a year longer to install a new generator. Third, the costs on the generator being known, an accurate energy rate could be quoted to Nevada contractors.

Objectionable features to the State taking N-7 were: First, Metropolitan Water District might recall it on two years' notice, which would not give the State time in which to install another generator, at least three years being necessary. Second, in any event Metropolitan Water District's contract required it to take over N-7 for its own use in 1966, at which time the State must have another generator or a contract for generating capacity on machines installed for the use of other allottees.

Eventually, in 1948, Metropolitan Water District agreed to give the State four years advance notice prior to taking over N-7, but stated at a conference, that so far as they could foresee, they would definitely require N-7 generator in 1966. Meanwhile, the commission ordered 82,500 kw of additional generating capacity from the Bureau of Reclamation but did not order the installation of a generator, or at this time request the allocation of N-7 in 1951.

There was much discussion at this meeting as to whether or not the commission should provide for standby service before requesting additional generating capacity but no action was taken.

Compton, speaking for Southern Nevada Power Company, then submitted a proposal of great interest. He stated that his company would
Representatives of the U. S. Mining, Smelting, and Refining Company were present and tentatively stated their power and plant needs and a desire to operate a branch plant at Basic Magnesium Project if conditions were favorable. Their preliminary power requirement would be 15,000 kw., expanding to 20,000 kw. The company was interested in the State’s procedure of selling power at cost. They agreed to look into the situation again a few months later, but until this time, August 1948, nothing further has developed.

LAS VEGAS, NEVADA, APRIL 9, 1947

The chairman, Governor Pittman, presented letters written by Senator McCarran to General R. H. Littledohn, Administrator, War Assets Administration, and to John R. Steelman, Assistant to the President, and the replies received by the Senator from these men were read and commented upon. The correspondence was in regard to the desire of Nevada to preserve the Basic Magnesium Plant and to take control of the same if a satisfactory plan could be worked out.

At the time of this meeting it seemed that no definite plan or proposal had yet been developed in response to Senator McCarran’s request, and it appeared that probably Nevada would be placed in the same category as other bidders for the project or for parts of it, but with a priority as a public municipality, although a guarantee might be required that the property would not be disposed of for monopolistic purposes.

Commissioner Mueller was authorized to investigate all phases of the Basic Magnesium Plant sale or salvage proposal and if necessary go to Washington, D. C., for personal conferences with War Assets Administration officers and others, the contacts to be arranged by Senator McCarran. Commissioner Smith and Engineers Advisors Shaver and Compton were designated to assist Mueller in Nevada.

Compton on behalf of Southern Nevada Power Company requested that his company be allowed to purchase from War Assets Administration the north transmission line of two lines extending from Boulder to Basic. The request was left to Mueller for further examination. Discussion indicated rejection of the request, as a Federal order freezing Basic Magnesium Project plant was being contemplated pending the negotiations for a take-over of the entire plant by the State.

LAS VEGAS, MAY 16, 1947

Commissioner Mueller had returned from Washington and reported upon his work looking to acquisition of Basic Magnesium Project by Nevada. The delay in Washington in getting out the Edison—War Assets Administration contract for Basic Magnesium Project energy had been due to an objection by War Assets Administration to the oil escavator claims. (See contract, Appendix No. 1.)

He said Hon. John R. Steelman, Assistant to the President, and also others in official capacity, wished to make a plan under which Nevada could take over the Basic Magnesium Project. The War Assets Administration was anxious to have the State take the operation in charge for it had been running heavily in the red since the time the government ceased manufacturing magnesium metal. Mueller had been given authority to examine the War Assets Administration accounts.

of J. M. Montgomery Company and its operations at Basic Magnesium Plant, and to obtain copies of their agreements with leases operating at the former magnesium plant. A committee was appointed by Chairman Pittman for this purpose.

This committee learned and reported that J. M. Montgomery Company was a reliable company and its operations at Basic Magnesium Plant had been reasonably satisfactory.

The advisability of Nevada remaining on the Committee of Colorado River Basin States was also been recognized at Salt Lake City on July 29, 1946, following the withdrawal of California from the Committees of Fourteen and Sixteen of the Colorado River Basin States, was carefully considered. It was the opinion of the chairman, occurred in by all members that Nevada had nothin to contribute or to gain by continuing as a member of the reorganized committee, and would be in a weak position as a downstream State without the support of California. Furthermore, Nevada was in agreement with California on the controversy over the volume of water to be delivered to Mexico from the Colorado River which had resulted in the split and demise of the Committees of Fourteen and Sixteen, long representative of the Colorado River Basin States. The commission decided that the Committee of Fourteen in this very important treaty legislation had represented neither the established water users, use U. S. water rights upon the Colorado River system, and had defeated the desires and damaged the rights of said United States water users by urging and securing a firm allocation and delivery of excessive water to Mexico by international treaty. The commission had given active assistance to the newly organized Colorado River Water Users Association, which had vigorously opposed the Mexican water treaty prior to its ratification by the U. S. Senate.

A motion was passed that Nevada, as represented by the Commission, withdraw from the Colorado River Basin States Committee. The commission voted to supply $500 from its funds to assist in publishing the transcript of proceedings of the second annual meeting of the Colorado River Water Users Association at Salt Lake City held on February 11, 12, and 13, 1946.

CARSON CITY, NEVADA, SEPTEMBER 24, 1946

This meeting was called to act upon an application to the Bureau of Reclamation for withdrawal of an additional 23,000,000 kilowatt-hours of energy annually from Boulder Dam Plant, to be designated Withdrawal No. 15. The order was to supply a request for 20,000,000 kilowatt-hours by Southern Nevada Power Company at a demand of 875 horsepower, and 3,000,000 by Lincoln County Power District No. 1. The request was for no additional horsepower, that district having previously had sufficient generating capacity allocated to meet its additional withdrawal in kilowatt-hours. The application was approved.

LAS VEGAS, NEVADA, OCTOBER 24, 1946

The commission voted to request Attorney General Alan Bible to draw up the form of legislation that would give the commission authority to order and install a generator and necessary additional machinery at Boulder Dam power plant.
In response to a former request by the commission, A. J. Shaver had written and published in various Nevada newspapers a series of interesting and instructive articles describing the chemical manufacturing industries located at Basic Magnesium Project. The commission ordered that these articles be combined and published in pamphlet form. The order was carried out and the pamphlet was given wide distribution throughout the State.

Favorable comment was made upon the Compiled Reports of the Colorado River Commission, September 3, 1935, to June 1, 1946. Attorney General Bible suggested that all members of the Legislature be supplied with copies of the 276-page report which had been prepared and published by the Secretary.

The status of a request by Nevada for an allocation of power from Davis Dam upon its completion was considered. The commission had formally requested of the Bureau of Reclamation, an allotment of 45,000 kilowatts of capacity (being one of the five generators to be installed) or 200,000,000 kilowatt-hours annually. The request had been acknowledged by the Bureau, and it was believed that by this order Nevada had established equal priority on the output of Davis with Arizona and California. The allocation and sale of power from Davis Dam is under entirely different laws than that governing Boulder Dam. Power allotted from Davis must be taken at once when made available, otherwise it will be sold to other applicants by contract. Power for Nevada from Boulder Dam, up to 70 per cent, is allotted to Nevada in perpetuity, subject to regulation regarding withdrawal, and installation of generating machinery by the State.

Subsequently the commission increased its order to one-third of the total energy to be developed at Davis. On June 3, 1948, the allocations were fixed by the Department of the Interior, by which Nevada will receive one-fourth of the total energy to be generated. It is anticipated that the dam and power plant will be completed sometime in 1950. The power allocations and an analysis of the same are given in Appendix No. 10.

At this meeting of the commission in 1948, trading Davis power for Boulder power was considered quite possible, which would make it more feasible for Nevada to meet some of its power needs. A difference of opinion as to the minor controversy had arisen with California allottees concerning Nevada withdrawals of energy under the government regulations. Nevada's contracted generating capacity, limited to 44,000 kilowatts on the city of Los Angeles' generators A-1 and A-2, was being tested up, and yet no new capacity had been applied for or was in sight for the reasons that (a) Nevada was unable under the State law to financially obligate the State for new machinery, and (b) three years were required to install a generator, and the present power demand had developed so rapidly that it had created an emergency. The Bureau of Reclamation could no longer supply energy to Nevada for use at Basic Magnesium Project as it had during the war, at which time waivers on notice of withdrawal were granted by all other allottees. Hence, the necessity of conserving present generating capacity in the face of growing demands upon it, as well as obtaining energy for lessees at Basic Magnesium Project became urgent.
Power Company had requested the commission to look into this. Transmission from Boulder by way of existing line to Pioche from there on to Ely and Rureka was gone into and reports of examinations of the commission's engineer had been made were quoted. One investigation had been made by the Nevada Farm Bureau, desirous of rural electrification in remote districts. It was clearly evident that the expense of such long lines and service would be too excessive to be justifiable under present conditions.

HENDERSON, NEVADA, DECEMBER 13-13, 1946

By arrangement this meeting was held with representatives of Reconstruction Finance Corporation, War Assets Administration, J. M. Montgomery Company, and Guy F. Atkinson Co., in order to clarify to the commission the status of Basic Magnesium Project.

By motion passed at a meeting of the commission at Carson City, February 4, 1947, this record is made a part of the minutes of the meeting of December 11, 1946.

The Reconstruction Finance Corporation representative explained that Reconstruction Finance Corporation was turning over the operations and liabilities of the Basic plant to War Assets Administration. He stated that there had been rumors of various and varying text regarding the plant and that they wanted to spout any of these rumors and tell our group the whole story. The speaker stated: "We are here to answer your questions and to let you know what is going on."

He stated that the Reconstruction Finance Corporation has relinquished properties as "disposal agency" and Reconstruction Finance Corporation is now transferring these various properties to War Assets Administration with recommendation that they be disposed of, or operated, as they suggest—this recommendation of operating the properties being particularly applicable to the Basic properties.

He stated that Basic Magnesium Project had been declared surplus to war needs in 1945, but that War Assets Administration was not ready at that time to pick this property up and run it, so Reconstruction Finance Corporation decided to make a "multitenancy" unit at Basic Magnesium Project with J. M. Montgomery Company as their agent, to secure leases, arrange for rentals, power supply and all facilities and utilities necessary to keep the project going as an abovementioned "multitenancy" operation.

War Assets Administration had been vested with the authority to continue the operations at Basic. After 1945, Reconstruction Finance Corporation was to continue to operate until such time as War Assets Administration could take charge of the operations, which is the present time. The transfer of these properties will be made as of February 1, 1947, with the Guy F. Atkinson Company then acting as agent for War Assets Administration.

Reconstruction Finance Corporation will retain J. M. Montgomery Company after February 1, long enough to complete inventories, etc. In arranging for the transfer from Reconstruction Finance Corporation to War Assets Administration, the Reconstruction Finance Corporation called for bids for operation of the facilities, and the successful bidder was the Guy F. Atkinson Company.

Governor Pittman stated that he and the commission were gratified to know that War Assets Administration would continue to operate organizations that occupy part of the plant have invested large sums of money and each of them, as I am advised, contemplate the investment of additional sums of money to carry on and expand their industrial activities at the plant. These private concerns are much perplexed and appear to be rather bewildered as to what their present or future status may be.

I am reliably advised, by reason of many months of personal attention to this plant, that within a very short time the entire plant could be leased out to private industry of various kinds if the policy was established for continuation, and if private interests could know that they were sure of their investment. This plant is being run now at a serious loss to the Government. In my judgment, it could be run in a way to meet all of its expenses and to bring in a profit to some agency having the right to establish policy, fix tenures, issue leases, and curtail expenses.

I find that the Reconstruction Finance Corporation, which now really controls the plant, has no policy for the future. I find that the War Assets Administration which appears to have a tentative control of the plant, or perhaps it might be termed a dual control with the Reconstruction Finance Corporation, has no policy for the future.

The War Assets Administration makes known to the public that it is not an agency to carry on or to build, but it is rather an agency to dispose of or destroy. These latter expressions naturally cause considerable turmoil in the minds of those who wish to invest large sums of money to occupy the plant for industrial purposes.

I have discussed with Governor Pittman and members of the Colorado River Commission in the State of Nevada, the plan and feasibility of utilizing the priority that rests in the State of Nevada, to take over this entire plant if, as, and when we can induce the Government, acting through its agencies (Reconstruction Finance Corporation, War Assets Administration, Bureau of the Budget) to announce their readiness or establish their policy to dispose of the plant, giving priority where it properly rests.

In order to bring about the establishment of a policy and in order to set at ease the unhappy situation that prevails at Basic Magnesium, as is indicated in the notes that I left with you this morning, I respectfully suggest as follows: That Reconstruction Finance Corporation designate one or two of its members with authority to speak for the Corporation, that War Assets Administration designate some of its organization with authority to speak for that Administration, and that the Bureau of the Budget designate one or more persons from the Bureau to speak for the Bureau, and that in each instance the representatives of the respective governmental agencies be clothed with the authority to formulate policy.

I further suggest that these designated officials meet at a specified time in the very near future, at Henderson, Nevada, with representatives of the Legislature of the State of Nevada now in session, the Governor of the State of Nevada, and such officials of the State of Nevada as the Governor may designate, at which time and place I would hope to present to them and to discuss with them a plan or policy for the State of Nevada, exercising its priority, to take over the
employees, and in addition to their compensation they shall be entitled to mileage and per diem at the statutory rate. Upon completion of said survey, the commission shall cause to be filed with the secretary of the commission, in its office at Carson City, Nevada, the written findings and recommendations of the study made hereunder. Such written report shall be given as wide publicity as possible and shall, at all times, be open to the inspection of the public.

Sec. 3. Power conferred by this act are in addition to the present powers and duties imposed upon the commission.

Sec. 4. For the purpose of carrying out the provisions of this act, there is hereby appropriated out of the general funds of the state treasury, not otherwise appropriated, the sum of five thousand ($5,000) dollars to be expended by the said commission on or before June 30, 1949.

Sec. 5. This act shall be effective from and after its passage and approval.

At this meeting progress toward stabilizing industries at Basic Magnesium Project was reviewed and Senator McCarran’s work on his proposal that the State assume control for a time until the project could be absorbed by private interest was favorably discussed, and the next measures for that purpose were decided upon. Realizing that at this date the State could only take over the vast project if it were first underwritten by private interests, the commission arranged for talks and correspondence with some of the present lessors at Basic, some of whom had already been approached.

Some members of the Legislature, which was in session at the time, were present. Clifford Jones, Lieutenant Governor, stated that legislation should be passed without delay to enable the commission to act in regard to assuming control of Basic Magnesium Project.

A copy of a letter addressed to President Truman by Senator McCarran was read, as follows:

THE HONORABLE HARRY S. TRUMAN, President of the United States,
The White House, Washington, D. C.

Mr. DEAR Mr. President: With reference to the subject of our discussion at the Executive Office this morning, and which you said you would probably submit to Mr. Steelman, I would like to reiterate some of my suggestions made to you this morning and expand somewhat on them.

From the notes that I left with you this morning it can be readily seen that there is great confusion as to the present or future status of the Basic Magnesium Plant, so-called, located at Henderson, Nevada.

Six industrial organizations now occupy space in the plant and are actively operating. These six are named in the notes that I left with you this morning.

These industrial organizations have no agreement as to tenure or leasehold. They occupy entirely under a Letter of Intention issued by the Reconstruction Finance Corporation and there exists in the War Assets Administration no authority to issue such Letter or instrument.

As stated in the notes left with you this morning, the industrial

the site, and that every attempt would be made to keep the industries going at Henderson.

Leases—It was stated that no leases at the plant at present had a signed lease, with one small exception. All others have Letters of Intent. The Stauffer Company has such letter, but a long-term lease is being drawn up which provides for allocation of profits, etc.—this to be done after a full year of operation, through which figures may be available on costs, operations, etc. It is expected that this lease will be signed shortly. Others are being worked on. No lease will be for less than five years, with option of renewal.

The Governor asked, “Where is the proposed agreement with Edison Company under which power was to be supplied to the Basic enterprise?” Sullivan stated that he did not believe the contract was yet signed by War Assets Administration. He stated that the Washington office said that the agreement was being sent to the San Francisco office for further handling. Gillings stated that the allottees had not yet signed the agreement as it had not been sent out by the War Assets Administration from their Washington office. Gillings further stated that he thought the allottees would want some arrangement made on the use of N-7 before they would sign the proposed contract, and believed the agreement on N-7 would be separate and apart from this agreement on concern energy. He stated that he thought they had an understanding on the use of N-7 but a signed agreement must be entered into before allottees would sign. Sullivan said this was a complicated problem, and had been handled by Mr. Marshall of the War Assets Administration.

Mr. Gillings stated that after the 11th of this month he would no longer be general manager for the Montgomery Company at Henderson. Mr. Hancock will take over the duties on that date formerly held by Gillings.

Governor Pittman stated that he felt the War Assets Administration should sign the agreement immediately and get the allottees to sign in order to have a feeling of security for this commission and for the public on this problem which so vitally affects Henderson and the Basic Magnesium Project.

The Governor then asked what assurance could the War Assets Administration give that this agreement would be signed. Mr. Walter Sullivan stated that he would call Washington, D. C. and would let the Governor know Friday morning before he (the Governor) left for Carson City by plane.

On December 16, 1946 a conference was held at El Cortez Hotel, Las Vegas, Nevada, at the request of the Governor.

At this meeting, which Senator McCarran attended, and which had been called at the Senator’s request, Mr. Walter Sullivan, Regional Director, War Assets Administration, stated that he had talked with Washington officials, and that Mr. Marshall, director in charge, of the War Assets Administration, would be out to Henderson the following week with the agreement under which Edison Company would supply War Assets Administration with power. Mr. Marshall would then continue on to Los Angeles to obtain signatures of the allottees. The Governor was to be notified, so that he could have representatives of
the commission at Henderson to confer further with Mr. Marshall when he arrived.

Senator McCarren outlined a plan he had been working on whereby he hoped the State could take over Basic Magnesium Project without cost. He briefed various discussions he had had with the Federal departments, and urged a procedure for the commission. This was the first in a series of steps which led to the State assuming ownership and control of Basic Magnesium Project on May 3, 1948.

CARSON CITY, NEVADA, JANUARY 17, 1947

This meeting was called to vote on an application for more energy by Southern Nevada Power Company, which had requested an additional 25,000,000 kilowatt-hours per year at a maximum demand of 3,800 horsepower. The request was granted, and an application to the Secretary of the Interior for this energy was submitted by the commission, designated Withdrawal No. 16.

LOS ANGELES, CALIFORNIA, JANUARY 31, 1947

Honorable J. A. Krug, Secretary of the Interior, by letter addressed to Governor Fitzmaur had asked that a conference be arranged between representatives of the Boulder Canyon Project allottees and the Bureau of Reclamation to consider certain modifications of the existing system for administration of Colorado River power, particularly with respect to the Boulder Canyon Project. The subjects he wished to bring up were:

(a) Full integration of Boulder Power Plant with any and all sources of power on the Colorado River so as to permit the Bureau of Reclamation to supply power to satisfy present Boulder contracts from any source it might have available.

(b) Assumption of operation of the Boulder Power Plant directly by the Bureau of Reclamation to facilitate full integration and to effect the reduction of personnel and other economies possible through such operation.

(c) Establishment of a definite rate for power delivered to allottees at Boulder and the elimination of any further interest of such allottees in the operating costs of the project.

Opportunity would also be afforded for a discussion of the possibility of a lower rate of interest for the Boulder Canyon Project.

Commissioner Michael Strauss of the Bureau of Reclamation had written each allottee of power from Boulder Dam plant suggesting that this conference be scheduled for January 31, 1947 in Los Angeles. This was agreed to and the conference was held in the directors' room of the Metropolitan Water District Building. It was well attended by one or more representatives from each of the interested organizations. The Secretary of the Interior was represented by H. F. McFaul, Chief of Power Utilization, Bureau of Reclamation, and also by other Bureau of Reclamation officials.

The Secretary's proposals were for the most part received in silence. All present said the proposals were entirely new, and none were ready to discuss them. In general, the reaction was negative on the part of all California allottees, with Arizona and Nevada neutral. One direc-

tor of Metropolitan Water District said the proposal seems to contemplate a Colorado River "TV.A." and did not think it had enough merit to warrant serious consideration.

It was decided to have the group convene again at some later date after some concrete plan had been worked out and presented by the Bureau. R. A. Moritz, Regional Director of Region No. 3, who had arranged the conference at the request of the Secretary of the Interior, thanked the group for attending, especially before a definite proposal had been worked out for their consideration. It was the opinion of the Nevada group that the meeting was in the nature of a "trial balloon" to obtain the allottees' reaction to the Secretary's desires with respect to the Boulder Project as well as future Colorado River power development. To date, nothing further has been heard of the proposal.

CARSON CITY, NEVADA, FEBRUARY 4, 1947

The advisability of a State-wide power market survey was debated. One member said he favored the commission conducting such a survey so far as it affected the field to which Boulder power could be transmitted. It was decided to have a report on the subject made at the next meeting by engineers Shaver and Compton. State Senator C. D. Baker who was present, suggested that an Act to cover the survey be presented to the Legislature, and that an engineer's estimate of the cost would be of value in securing an appropriation for the work.

The 1947 session of the Legislature thereafter passed an Act direct-
the commission at Henderson to confer further with Mr. Marshall when he arrived.

Senator McFarlen outlined a plan he had been working on whereby he hoped the State could take over Basic Magnesium Project without cost. He briefed various discussions he had had with the Federal departments, and urged a procedure for the commission. This was the first in a series of steps which led to the State assuming ownership and control of Basic Magnesium Project on May 3, 1948.

CARSON CITY, NEVADA, JANUARY 31, 1947

This meeting was called to vote on an application for more energy by Southern Nevada Power Company, which had requested an additional 25,000,000 kilowatt-hours per year at a maximum demand of 3,890 horsepower. The request was granted, and an application to the Secretary of the Interior for this energy was submitted by the commission, designated Withdrawal No. 16.

LOS ANGELES, CALIFORNIA, JANUARY 31, 1947

Hon. J. A. Krug, Secretary of the Interior, by letter addressed to Governor Pitzman had asked that a conference be arranged between representatives of the Boulder Canyon Project allottees and the Bureau of Reclamation to consider certain modifications of the existing system for administration of Colorado River power, particularly with respect to the Boulder Canyon Project. The subjects he wished to bring up were:

(a) Full integration of Boulder Power Plant with any and all sources of power on the Colorado River so as to permit the Bureau of Reclamation to supply power to satisfy present Boulder contracts from any source it might have available.

(b) Assumption of complete operation of the Boulder Power Plant directly by the Bureau of Reclamation to facilitate full integration and to effect the reduction of personnel and other economies possible through such operation.

(c) Establishment of a definite rate for power delivered to allottees at Boulder and the elimination of any further interest of such allottees in the operating costs of the project.

Opportunity would also be afforded for discussion of the possibility of a lower rate of interest for the Boulder Canyon Project.

Commissioner Michael Strauss of the Bureau of Reclamation had written each allottee of power from Boulder Dam plant suggesting that this conference be scheduled for January 31, 1947 in Los Angeles. This was agreed to and the conference was held in the directors' room of the Metropolitan Water District Building. It was well attended by one or more representatives from each of the interested organizations.

The Secretary of the Interior was represented by H. F. McHale, Chief of Power Utilization, Bureau of Reclamation, and also by other Bureau of Reclamation officials.

The Secretary's proposals were for the most part received in silence. All present said the proposals were entirely new, and none were ready to discuss them. In general, the reaction was negative on the part of all California allottees, with Arizona and Nevada neutral. One direc-

tor of Metropolitan Water District said the proposal seems to contemplate a Colorado River 'TVA,' and did not think it had enough merit to warrant serious consideration.

It was decided to have the group convene again at some later date after some concrete plan had been worked out and presented by the Bureau. R. A. Moritz, Regional Director of Region No. 3, who had arranged the conference at the request of the Secretary of the Interior, thanked the group for attending, especially before a definite proposal had been worked out for their consideration. It was the opinion of the Nevada group that the meeting was in the nature of a "trial balloon" to obtain the allottees' reaction to the Secretary's desires with respect to the Boulder Project as well as future Colorado River power development. To date, nothing further has been heard of the proposal.

CARSON CITY, NEVADA, FEBRUARY 4, 1947

The advisability of a State-wide power market survey was debated. One member said he favored the commission conducting such a survey as far as it affected the field to which Boulder power could be transmitted. It was decided to have a report on the subject made at the next meeting by engineers Shaver and Compton. State Senator C. D. Baker who was present, suggested that an Act to cover the survey be presented to the Legislature, and that an engineer's estimate of the cost would be of value in securing an appropriation for the work.

The 1947 session of the Legislature thereafter passed an Act directing the Colorado River Commission to make a State-wide power survey, and appropriated $5,000 toward the expense thereof. The survey is being made by the Federal Power Commission in cooperation with the State Engineer and the Colorado River Commission, and it is contemplated that it will be completed and published in November 1948. Following is the text of the law under which the survey is being made:

Page 92, Chap. 53—An Act authorizing the Colorado River Commission of Nevada to make a state-wide power survey, defining its duties in connection therewith, and providing an appropriation therefor.

(Approved March 15, 1947)

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

SECTION 1. The Colorado River Commission of Nevada is hereby authorized, empowered, and directed to make a state-wide power survey, to collect and arrange all data and information pertaining to the development and use of power from all sources, and to determine the economic feasibility of the extension of power to the various mining, industrial, and agricultural areas of the state. The commission is further empowered to cooperate with federal, state, and private agencies and, if deemed advisable, is specifically authorized to contract and enter into agreements with such agencies for the purpose of conducting the necessary comprehensive state-wide power survey.

SECTION 2. The commission shall have the power to employ such engineers and technical experts as it may find necessary to carry into effect the purposes of this act. The commission shall fix the salaries of said
employees, and in addition to their compensation they shall be entitled to mileage and per diem at the statutory state rate. Upon completion of said survey, the commission shall cause to be filed with the secretary of the commission, in its office at Carson City, Nevada, the written findings and recommendations of the study made hereunder. Such written report shall be given as wide publicity as possible and shall, at all times, be open to the inspection of the public.

Sec. 3. Power conferred by this act are in addition to the present powers and duties imposed upon the commission.

Sec. 4. For the purpose of carrying out the provisions of this act, there is hereby appropriated out of the general funds of the state treasury, not otherwise appropriated, the sum of five thousand ($5,000) dollars to be expended by the said commission on or before June 30, 1949.

Sec. 5. This act shall be effective from and after its passage and approval.

At this meeting progress toward stabilizing industries at Basic Magnesium Project was reviewed and Senator McCarran's work on his proposal that the State assume control for a time until the project could be absorbed by private interest was favorably discussed, and the next measures for that purpose were decided upon. Realizing that at this date the State could only take over the vast project if it were first underwritten by private interests, the commission arranged for talks and correspondence with some of the present lessees at Basic, some of whom had already been approached.

Some members of the Legislature, which was in session at the time, were present. Clifford Jones, Lieutenant Governor, stated that legislation should be passed without delay to enable the commission to act in regard to assuming control of Basic Magnesium Project.

A copy of a letter addressed to President Truman by Senator McCarran was read, as follows:

THE HONORABLE HARRY S. TRUMAN, President of the United States, The White House, Washington, D. C.

Mr. Dear Mr. President: With reference to the subject of our discussion at the Executive Office this morning, and which you said you would probably submit to Mr. Steelman, I would like to reiterate some of my suggestions made to you this morning and expand somewhat on them.

From the notes that I left with you this morning it can be readily seen that there is great confusion as to the present or future status of the Basic Magnesium Plant, so-called, located at Henderson, Nevada. Six industrial organizations now occupy space in the plant and are actively operating. These six are named in the notes that I left with you this morning.

These industrial organizations have no agreement as to tenure or leases which they occupy entirely under a Letter of Intention issued by the Reconstruction Finance Corporation and there exists in the War Assets Administration no authority to issue such letter or instrument.

As stated in the notes left with you this morning, the industrial

the site, and that every attempt would be made to keep the industries going at Henderson.

Leases—It was stated that no leases at the plant at present had a signed lease, with one small exception. All others have Letters of Intent. The Stauffer Company has such letter, but a long-term lease is being drawn up which provides for allocation of profits, etc.—this to be done after a full year of operation through which figures may be available on costs, operations, etc. It is expected that this lease will be signed shortly. Others are being worked on. No lease will be for less than five years, with option of renewal.

The Governor asked, "Where is the proposed agreement with Edison Company under which power was to be supplied to the Basic enterprise?" Sullivan stated that he did not believe he had been told by War Assets Administration. He stated that the Washington office had that the agreement was being sent to the San Francisco office for further handling. Gillings stated that the allottees had not yet signed the agreement as it had not been sent out by the War Assets Administration from their Washington office. Gillings further stated that he thought the allottees would want some arrangement made on the use of N-7 before they would sign the proposed contract, and believed the agreement on N-7 would be separate and apart from this agreement concerning energy. He stated that he thought they had an understanding on the use of N-7 but a signed agreement must be entered into before allottees would sign. Sullivan said this was a complicated problem, and had been handled by Mr. Marshall of the War Assets Administration.

Mr. Gillings stated that after the 15th of this month he would no longer be general manager for the Montgomery Company at Henderson. Mr. Hancock will take over the duties on that date formerly held by Gillings.

Governor Pittman stated that he felt the War Assets Administration should sign the agreement immediately and get the allottees to sign in order to have a footing of security for this commission and for the public on this problem which so vitally affects Henderson and the Basic Magnesium Project.

The Governor then asked what assurance could the War Assets Administration give that this agreement would be signed. Mr. Walter Sullivan stated that he would call Washington, D. C. and would let the Governor know Friday morning before he (the Governor) left for Carson City by plane.

On December 12, 1948 a Conference was held at El Cortez Hotel, Las Vegas, Nevada, at the request of the Governor.

At this meeting, which Senator McCarran attended, and which had been called at the Senator's request, Mr. Walter Sullivan, Regional Director, War Assets Administration, stated that he had talked with Washington officials, and that Mr. Marshall, director in charge, of the War Assets Administration, would be out to Henderson the following week with the agreement under which Edison Company would supply War Assets Administration with power. Mr. Marshall would then continue on to Los Angeles to obtain signatures of the allottees. The Governor was to be notified, so that he could have representatives of
Power Company had requested the commission to look into this. Transmission from Boulder by way of existing line to Lovelock was no more, and the commission's engineer had made were quoted. One investigation had been made by the Nevada Farm Bureau, desirous of rural electrification in remote districts. It was clearly evident that the expense of such long lines and service would be too excessive to be justified under present conditions.

HENDERSON, NEVADA, DECEMBER 13-14, 1946

By arrangement this meeting was held with representatives of Reconstruction Finance Corporation, War Assets Administration, J. M. Montgomery Company, and F. Kenyon Co., in order to clarify to the commission the status of Basic Magnesium Project.

By motion passed at a meeting of the commission at Carson City, February 4, 1947, this record is made a part of the minutes of the meeting of December 11, 1946.

The Reconstruction Finance Corporation representative explained that Reconstruction Finance Corporation was turning over the operation of the Basic Magnesium Project to War Assets Administration. He stated that there had been rumors of various and varying text regarding the plant and that they wanted to nip any of these rumors and tell the group the whole story. The speaker stated: "We are here to answer your questions and to let you know what is going on."

He stated that the Reconstruction Finance Corporation has relinquished properties as "disposal agency" and Reconstruction Finance Corporation is now transferring these various properties to War Assets Administration with recommendation that they be disposed of, or operated, as they suggest—this recommendation of operating the properties being particularly applicable to the Basic properties.

He stated that Basic Magnesium Project had been declared surplus to war needs in 1945, but that War Assets Administration was not ready at that time to pick up the property and run it, so Reconstruction Finance Corporation decided to make a "multitenancy" unit at the Basic Magnesium Project with J. M. Montgomery Company as its agent, to secure leases, arrange for rentals, power supply and all facilities and utilities necessary to keep the project going as an abovementioned "multitenancy" operation.

War Assets Administration had been vested with the authority to continue the operation at Basic. After 1945, Reconstruction Finance Corporation was to continue to operate until such time as War Assets Administration could take charge of the operations, which is the present time. The transfer of the properties will be made as of February 1, 1947, with the Guy F. Atkinson Company then acting as agent for War Assets Administration.

Reconstruction Finance Corporation will retain J. M. Montgomery Company after February 1, long enough to complete inventories, etc. In arranging for the transfer from Reconstruction Finance Corporation to War Assets Administration, the Reconstruction Finance Corporation called for bids for operation of the facilities, and the successful bidder was the Guy F. Atkinson Company.

Governor Pittman stated that he and the commission were gratified to know that War Assets Administration would continue to operate organizations that occupy part of the plant have invested large sums of money and each of them, as I am advised, contemplate the investment of additional sums of money to carry on and expand their industrial activities at the plant. These private concerns are much perplexed and appear to be rather bewildered as to what their present or future status may be.

I am reliably advised, by reason of my many months of personal attention to this plant, that within a very short time the entire plant could be leased out to private industry of various kinds if the policy was established for continuation, and if private interests could know that they were secure in their investment. This plant is being run now at a serious loss to the Government. In my judgment, it could be run in a way to meet all of its expenses and to bring in a profit to some agency having the right to establish policy, fix tenures, issue leases, and curtail expenses.

I find that the Reconstruction Finance Corporation, which now really controls the plant, has no policy for the future. I find that the War Assets Administration which appears to have a tentative control of the plant, or perhaps it might be termed a dual control with the Reconstruction Finance Corporation, has no policy for the future.

The War Assets Administration makes known to the public that it is not an agency to carry on or to build, but is rather an agency to dispose of or destroy. These latter expressions naturally cause considerable turmoil in the minds of those who wish to invest large sums of money to occupy the plant for industrial purposes.

I have discussed with Governor Pittman and members of the Colorado River Commission of the State of Nevada, the plan and feasibility of utilizing the priority that rests in the State of Nevada, to take over this entire plant if, as, and when we can induce the Government, acting through its agencies (Reconstruction Finance Corporation, War Assets Administration, Bureau of the Budget) to announce their readiness or establish their policy to dispose of the plant, giving priority where it properly rests.

In order to bring about the establishment of a policy and in order to set at ease the unhappy situation that prevails at Basic Magnesium, as is indicated in the notes that I left with you this morning, I respectfully suggest as follows: That Reconstruction Finance Corporation designate one or two of its members with authority to speak for the Corporation, that War Assets Administration designate one of its members, and that in each instance the representatives of the respective governmental agencies be clothed with the authority to formulate policy.

I further suggest that these designated officials meet at a specified time in the very near future, at Henderson, Nevada, with representatives of the Legislature of the State of Nevada now in session, the Governor of the State of Nevada, and such officials of the State of Nevada as the Governor may designate, at which time and place I would hope to present to them and to discuss with them a plan of policy for the State of Nevada, exercising its priority, to take over the
entire Basic Magnesium plant together with all domestic water facilities, power facilities, and housing facilities connected therewith. As I stated to you this morning, I am most anxious to encourage and promote industry at the site of this great plant and I feel certain that we can accomplish this result if the burden is not made too great on the State of Nevada and if a definite policy is established for future use of the plant by the State of Nevada, taking over the same under its priority. I believe that such a meeting as I have suggested, on the location of this property, will readily show the need for immediate action of some nature. I am convinced that as the matter now stands the potential value of this great plant is being seriously impaired by disposal of component parts which are essentially necessary to the operation of any industry which might acquire the same for the purpose of continued operation.

I know of no agency or department of the (government) other than the ones referred to above, which might have an interest in the matter or have authority to act in the matter. However, if there are such, I assure you, that it has been an oversight on my part not to have mentioned the same, and I respectfully suggest that such agency which I may have overlooked be also represented at the meeting.

Inasmuch as I understood that this matter would be referred by you to Mr. Steelman for consideration, may I respectfully suggest that you likewise refer this letter to him.

I am grateful for your kind expression of concern in this matter and for the opportunity given me to discuss these problems with you today.

Very respectfully,

MD McCarran.

The Secretary was instructed to write to the Nevada Congressional delegation urging them to sponsor and try to obtain enactment of legislation for payment of revenue to Nevada in lieu of taxes at Davis Dam, similar to that in effect at Boulder Dam. This was done and Senator McCarran prepared and presented appropriate legislation in December 1947, but it met with too strong opposition, and was not successful.

The Secretary was ordered to write the Nevada Congressional delegation and urge on behalf of the Commission that the appropriation to carry on work at Davis Dam include funds for the construction of a power transmission line from Davis Dam to Boulder Dam.

The Commission at this meeting amended its former request for Davis Dam energy, increasing the order to one-third of the total plant output. As formerly stated, Nevada was eventually granted one-fourth of the total Davis power, to be taken and used when made available.

CARSON CITY, NEVADA, MARCH 24, 1947

Present by invitation were representatives of the power division of Region No. II, U. S. Bureau of Reclamation, to discuss Nevada’s interest in Shasta Dam power, also H. P. McPhail, Director, Branch of Power Utilization, Bureau of Reclamation. McPhail’s presence was due to the following letter from the Secretary:

The City contends that each Nevada withdrawal in kilowatt-hours should not exceed a maximum demand of 100 percent in kilowatts or horsepower. The Nevada engineers held that so long as the total of all withdrawals made in the past have a combined demand of less than 100 percent, for the total State’s load, the State is entitled under the General Regulations to some kilowatt-hours from its total allocated generating capacity, or a total of up to 100 percent. The present total State system load factor being only 36 percent, which is very low, the commission’s engineers held that the commission had considerable generating capacity already withdrawn upon which to generate additional kilowatt-hours, and until this capacity had been used up, they should be permitted to withdraw kilowatt-hours without designating any, or at least a very low additional demand. The California allottees were inclined to the view that each separate withdrawal should be based on a demand not to exceed 100 percent regardless of the total system load demand.

The Bureau of Reclamation at a later date upheld the position of the State, and withdrawals in kilowatt-hours are now being made on the capacity allotted in the past to each contractor, until such capacity has been exhausted on the basis of 100 percent load factor.

LAS VEGAS, NEVADA, OCTOBER 24, 1946

The commission and the City had been negotiating a proposal suggested by the commission to have the State install generators and generate and supply all of Nevada’s energy at agreed charges. Apprehension at delay by the City in preparing a contract to supply the State with said generating capacity was expressed, also delay on all sides in working out a settlement on the Nevada energy withdrawals question. Ultimately the withdrawals situation was cleared up.

During this time the commission, through Senator McCarran, had initiated studies looking to acquisition of Basic Magnesium Project, which tentatively entailed the commission taking over major unit generator designated as No. 1, which had been installed for the magnesium plant during the war, and upon which War Assets Administration was still obligated for annual charges amounting to about $250,000 per year. While this was under consideration, the City withdrew its proposal to install machinery and generate energy for the State. This did not inconvenience the State, but it rendered useless the great amount of time and expense that had been incurred by both the State and City in working on the proposal with the City.

War Assets Administration had succeeded Reconstruction Finance Corporation in the management of Basic Magnesium Project, and H. J. Atkinson Company had succeeded J. M. Montgomery Company as agent for War Assets Administration at Basic. The commission had experienced some difficulty in obtaining copies of the “Letters of Intent” under which lessees were operating at Basic, due to reluctance of both Reconstruction Finance Corporation and War Assets Administration to send them out prior to making firm contracts.

Several matters of far-reaching importance were discussed, but no action was taken. These included possibility of exchange of energy whereby California allottees would receive Boulder power in exchange for Shasta Dam power for use in northern Nevada. The Sierra Pacific
In response to a former request by the commission, A. J. Shaver had written and published in various Nevada newspapers a series of interesting and instructive articles describing the chemical manufacturing industries located at Basic Magnesium Project. The commission ordered that these articles be combined and published in pamphlet form. The order was carried out and the pamphlet was given wide distribution throughout the State.

Favorable comment was made upon the Compiled Reports of the Colorado River Commission, September 1, 1935, to June 1, 1946. Attorney General Bible suggested that all members of the Legislature be supplied with copies of the 276-page report which had been prepared and published by the Secretary.

The status of a request by Nevada for an allocation of power from Davis Dam upon its completion was considered. The commission had formally requested of the Bureau of Reclamation, an allotment of 45,000 kilowatts of capacity (being one of the five generators to be installed) or 200,000,000 kilowatt-hours annually. The request had been acknowledged by the Bureau, and it was believed that by an order Nevada had established equal priority on the output of Davis with Arizona and California. The allocation and sale of power from Davis Dam is under entirely different laws than that governing Boulder Dam. Power allotted from Davis must be taken at once when made available, otherwise it will be sold to other applicants by contract. Power for Nevada from Boulder Dam, up to 17,625/kw, is allotted to Nevada in perpetuity, subject to regulations regarding withdrawal, and installation of generating machinery by the State.

Subsequently the commission increased its order to one-third of the total energy to be developed at Davis. On June 3, 1946, the allocations were fixed by the Department of the Interior, by which Nevada will receive one-fourth of the total energy to be generated. It is anticipated that the dam and power plant will be completed sometime in 1950. The power allocations and an analysis of the same are given in Appendix No. 10.

At this meeting of the commission in 1946, trading Davis power for Boulder power was considered quite possible, which would make its use more flexible for Nevada. The possibility to still be open.

A difference of opinion amounting to minor controversy had arisen with California allottees concerning Nevada withdrawals of energy under the government regulations. Nevada's contracted generating capacity, limited to 44,000 kilowatts on the City of Los Angeles' generators A and B, was being used to its capacity, and, as yet, no new capacity had been applied for or was in sight for the reasons that (a) Nevada was unable under the State law to financially obligate the State for new machinery, and (b) the time required to install a generator, and the present power demand had developed so rapidly that it had created an emergency. The Bureau of Reclamation could no longer supply energy to Nevada for use at Basic Magnesium Project as it had during the war, at which time waivers on notice of withdrawals by Nevada were granted by all other allottees. Hence, the necessity of conserving present generating capacity in the face of growing demands upon it, as well as obtaining energy for lessees at Basic Magnesium Project became urgent.

Mr. George Devore, Assistant Manager of Sierra Pacific Power Company, informs me that his company has a contract with Pacific Gas and Electric Company of California to purchase firm energy to the extent of a minimum of $75,000 per year, plus $30,000 a year for standby service. This is approximately 90 percent of all energy presently sold by the Sierra Pacific Power Co. It is being supplied under a 20-year contract, which will not expire for another ten years.

The ability of Sierra Pacific Power Company to serve customers depends upon this contract. Mr. Devore states that for the 20-year contract, in order to meet its increasing obligations, is installing a heavier copper transmission line from their Drum Station to Donner Summit. Sierra Pacific Company is likewise now installing a heavy copper line from Truckee to Donner Summit.

If Nevada should now request a block of energy from Shasta Dam for delivery to Sierra Pacific Company at Shasta Dam switchboard, a new contract would have to be negotiated between P. G. & E. and S. P. P. Companies for use of the P. G. E. transmission facilities, which might not be favorable to S. P. P. Co., or perhaps be impossible to work out if P. G. & E. Company should object. It might develop that the over-all price of energy to S. P. P. Co., would be no lower than now, and lower rates to the consumers could not therefore be fairly made. Reduced rates to the consumer is one of our objectives.

If power from Shasta Dam should prove to be uneconomical and impractical, can we consider delivering power from either Boulder or Davis Dam by exchange through the California transmission grid system as at first suggested? The Colorado River Commission of Nevada anticipates immediately requesting the installation of a major unit generator at Boulder Dam. Sierra Pacific Power Company's present contracts with P. G. & E. Company may take care of its needs until one or both of these Nevada sources of Colorado River energy becomes available. We would like for you to analyze this situation before we embark upon a program that might result in no cheaper energy for northern Nevada.

We will appreciate your writing to us on this subject.

Very truly yours,

Alfred Merritt Smith
Secretary.

cc: Members Colorado River Commission

Attorney General Alan Bible.
Representatives of the U. S. Mining, Smelting, and Refining Company were present and tentatively stated their power and plant needs and a desire to operate a branch plant at Basic Magnesium Plant if conditions were favorable. Their preliminary power requirements would be 15,000 kw, expanding to 20,000 kw. The company was interested in the State's procedure of selling power at cost. They agreed to look into the situation again a few months later, but until this time, August 1948, nothing further has developed.

**Las Vegas, Nevada, April 2, 1947**

The chairman, Governor Pittman, presented letters written by Senator McCarran to General R. H. Littlejohn, Administrator, War Assets Administration, and to John R. Steelman, Assistant to the President, and the replies received by the Senator from these men were read and commented upon. The correspondence was in regard to the desire of Nevada to preserve the Basic Magnesium Plant and to take control of the same if a satisfactory plan could be worked out.

At the time of this meeting it seemed that no definite plan or proposal had yet been developed in response to Senator McCarran's request, and it appeared that probably Nevada would be placed in the same category as other bidders for the project or for parts of it, but with a priority as a public municipality, although a guarantee might be required that the property would not be disposed of for monopolistic purposes.

Commissioner Muller was authorized to investigate all phases of the Basic Magnesium Plant sale or salvage proposal and if necessary go to Washington, D. C. for personal conference with War Assets Administration officers and others the contacts to be arranged by Senator McCarran. Commissioner Smith and Engineers Advisors Shever and Compton were designated to assist Muller in Nevada.

Compton on behalf of Southern Nevada Power Company requested that his company be allowed to purchase from War Assets Administration the north transmission line of two lines extending from Boulder to Basic. The request was left to Muller for further examination. Discussion indicated rejection of the request, as a Federal order freezing Basic Magnesium Project plant was being contemplated pending the negotiations for a take-over of the entire property by the State.

**Las Vegas, Nevada, May 16, 1947**

Commissioner Muller had returned from Washington and reported upon his work looking to acquisition of Basic Magnesium Project by Nevada. The delay in Washington in getting out the Edison—War Assets Administration contract for Basic Magnesium Project has been due to an objection by War Assets Administration to the oil escalator clause. (See contract, Appendix No. 1.)

He said Hon. John R. Steelman, Assistant to the President, and others in official authority, wished to make a plan under which Nevada could take over the Basic Magnesium Project. The War Assets Administration was anxious to have the State take the operation in charge for it had been running heavily in the red since the time the government ceased manufacturing magnesium metal. Muller had been given authority to examine the War Assets Administration accounts.

of J. M. Montgomery Company and its operations at Basic Magnesium Plant, and to obtain copies of their agreements with lessees operating at the former magnesium plant. A committee was appointed by Chairman Pittman for this purpose.

This committee learned and reported that J. M. Montgomery Company was a reliable company and its operations at Basic Magnesium Plant had been reasonably satisfactory.

The advisability of Nevada remaining on the Committee of Colorado River Basin States as it had been, was discussed at Salt Lake City on July 29, 1946, following the withdrawal of California from the Committee of Fourteen and Sixteen of the Colorado River Basin States, was carefully considered. It was the opinion of the chairman, occurred in by all members that Nevada had nothing to contribute or to gain by continuing as a member of the reorganized committee, and would be in a weak position as a downstream State without the support of California. Furthermore, Nevada was in agreement with California on the controversy over the volume of water to be delivered to Mexico from the Colorado River which had resulted in the split and demise of the Committee of Fourteen and Sixteen, long representative of the Colorado River Basin States. The committee decided that the Committee of Fourteen in this very important treaty legislation had represented neither the established water users, nor U. S. water rights upon the Colorado River system, and had defeated the desires and damaged the rights of said United States water users by urging and securing a firm allocation and delivery of excessive water to Mexico by international treaty. The commission had given active assistance to the newly organized Colorado River Water Users Association, which had vigorously opposed the Mexican water treaty prior to its ratification by the U. S. Senate.

A motion was passed that Nevada, as represented by the Commission, withdraw from the Colorado River Basin States Committee. The Commission voted to supply $700 from its funds to assist in publishing the transcript of proceedings of the second annual meeting of the Colorado River Water Users Association at Salt Lake City held on February 11, 12, and 13, 1946.
You will note that the application of the formula set forth in the two numbered paragraphs above, with the present Boulder firm rate, results in a per kilowatt-hour charge to Nevada of $2.344 mills so long as the cost of fuel oil is not in excess of $1.10 per barrel, and such a rate also prevails, irrespective of the cost of fuel oil, during normal water years at Boulder when 5,750,000,000 kilowatt-hours of energy, or more, are available. However, under low water conditions at Boulder when less than 5,750,000,000 kilowatt-hours of energy are available, and the price of oil increases above $1.10 per barrel, the per kilowatt-hour charge to Nevada increases at the rate of one-twentieth of a mill for each 10 cents increase between $1.10 and $1.20 per barrel for fuel oil, and at the rate of two-tenths of a mill for each 10 cents per barrel increase in fuel oil cost over $1.20 per barrel. Under this formula the rate to Nevada per kilowatt-hour will be, if the present Boulder firm rate is in effect and the price of fuel oil is $1.25 per barrel, 1.544 mills (the present Boulder firm rate) plus one mill, plus 15-thousandths of a mill, or 2.694 mills per kilowatt-hour. If, however, the price of fuel oil should go to $1.35 per barrel and the present Boulder firm rate is in effect, then the kilowatt-hour rate to Nevada would be 1.344 mills, plus one mill, plus 15-thousandths of a mill, plus two-tenths of a mill, or 2.594 mills per kilowatt-hour.

Besides the formula for arriving at the per kilowatt-hour charge for the energy, the City and Edison Company have likewise agreed that the contract, when and if consummated, should provide:

(1) In addition to the energy charge, Nevada to pay monthly 50 cents for each kilowatt of 90-minute maximum demand created by Nevada for Basic Magnesium Project up to 35,000 kilowatts, with a minimum monthly payment of $12,500 and a monthly charge of $1 per kilowatt for demands in excess of 35,000 kilowatts if created by Nevada, with no obligation on the part of the City or Edison Company to supply such excess demands;

(2) A weighted average monthly power factor of 85 percent;

(3) A term of five years with Nevada having the right to terminate after three years, with six months’ notice;

(4) Nevada to agree not to withdraw energy from the Boulder Project for use at Basic Magnesium Plant during the five-year period from June 1, 1946;

(5) Both the City and Edison Company to have the right to reduce or discontinue service to the State of Nevada without penalty to the extent that it may be necessary to maintain service to the consumers of either of them.

I trust that the above, which should be regarded not as a proposal to Nevada but as a suggested basis for negotiations, provides a plan upon which an agreement mutually satisfactory to all concerned may be worked out.

Sincerely,

SAMUEL B. MORRIS,
General Manager and Chief Engineer.

The “oil escalator” clause in this proposal was subject to much subsequent study and discussion, but was eventually agreed to with minor changes, at a later date, and after further conferences with the City.

A desire was expressed by the commission to know more of the status

Robt. E. Hummelott, Asst. Administrator, War Assets Administration, had come out to Henderson from Washington to look into the affairs and to assist Nevada in its work to hold the complete project intact. Mueller was positive in stating that the State should be able to operate Basic Magnesium Project at a profit, although Reconstruction Finance Corporation and War Assets Administration had been continuously operating at a heavy loss.

There was much discussion concerning availability of Boulder power, both for the State’s present contractors, as well as for Basic Magnesium Project in the future. During the war a major unit 82,500 kw. generator had been installed by Reconstruction Finance Corporation to generate additional power for the manufacture of magnesium metal at Basic. A contract had been made whereby the Metropolitan Water District of Southern California could take over this generator and its appurtenant transformers and switching machinery (designated as Secs. G-7 and E-7, the generator alone as N-7) by giving two years advance notice, also, that the District must take over the generator in 1946. At the end of the war and shut-down of the magnesium plant, War Assets Administration was left with this generating machinery, upon which it had to pay the annual charges, amounting to some $35,000. To get relief from this financial burden War Assets Administration had leased N-7 to Edison Company until June 30, 1951. Edison and the City had for some time previously been endeavoring to arrive at an agreement with War Assets Administration to use N-7. Nevada also wanted N-7 if it could be freed from restrictions, for three main reasons: First, the amortization costs were definitely fixed, and probably lower than what they would be on a new generator if it should be installed by the State, due to rising prices. Second, the generator would be available on July 1, 1951, while it might take a year longer to install a new generator. Third, the costs on the generator being known, an accurate energy rate could be quoted to Nevada contractors.

Objectionable features to the State taking N-7 were: First, Metropolitan Water District might recall it on two years notice, which would not give the State time in which to install another generator, at least three years being necessary. Second, in any event Metropolitan Water District’s contract required it to take over N-7 for its own use in 1946, at which time the State must have another generator or a contract for generating capacity on machinery installed for the use of other allottees.

Eventually, in 1948, Metropolitan Water District agreed to give the State four years advance notice prior to taking over N-7, but stated at a conference, that so far as they could foresee, they would definitely require N-7 generator in 1946. Meanwhile, the commission ordered 82,500 kw. of additional generating capacity from the Bureau of Reclamation but did not order the installation of a generator, or at this time request the allocation of N-7 in 1951. There was much discussion at this meeting as to whether or not the commission should provide for stand-by service before requesting additional generating capacity but no action was taken.

Compton, speaking for Southern Nevada Power Company, then submitted a proposal of great interest. He stated that his company would
underwrite the installation of a half-size generating unit, 45,000 kw under certain conditions, outlined as follows:

Southern Nevada Power Company would pay $15,000 per month in advance and in excess of its energy bills to the commission for a period of four years, which would total $720,000. In return they asked that their present public power rates be unaltered for the four-year period, by the Public Service Commission, until after the machinery had been installed and was in operation. They would also agree to hold in reserve certain capacity for Lincoln County Power District and Overton Power District.

Compton was informed by Chairman Pittman that the Colorado River Commission would not and would not use any pressure or influence upon the Public Service Commission with respect to public power rates. Compton's recommendation was received with considerable favorable comment, although the advisability of the commission "paddling its own canoe" with respect to getting a generator was not lost sight of. Inclination to look with favor on Southern Nevada Power Company's proposal was in part due to the fact that under the State Constitution the commission could not assume the financial obligation to pay for a generator without first having a resale contract for energy in amount equivalent to the obligation to pay for such machinery.

Eventually, on May 6, 1948, a contract between the commission and Southern Nevada Power Company was agreed to and executed, but having various additions and changes from what had been originally proposed by the power company. This contract represented an obligation to underwrite a half unit, 4.7, but reserving 33,300 kw to Southern Nevada Power Company, and 14,000 kw. to Lincoln County District and Overton District. The contract is designed as Appendix No. 2 at the end of this chapter.

On May 16 the commission again conferred with Senator McCarran. The Senate complimented Commissioner Mueller on the work he had done in Washington with War Assets Administration, looking toward Nevada's control of Basic Magnesium Project. He said they had learned that War Assets Administration was running behind at an enormous rate at Basic, and very much wanted to get rid of that cost, fearing Congress would see "raise hell" with them for sustaining an unnecessary public expense.

The commission suggested that Mueller return to Washington for further work on the project.

The sum of $300 was voted for the support of the Colorado River Water Users Association.

CARSON CITY, NEVADA, JUNE 25, 1947

A resolution was passed authorizing the withdrawal of an additional 36,000,000 kilowatt-hours from Hoover Dam Power Plant at no additional powerhouse demand, to be designated Withdrawal No. 37. This was necessary because of requests to the commission by Southern Nevada Power Company for equivalent additional energy.

The chairman stated he had received a telegram from Senator McCarran and requested that it be included in the minutes of this meeting. The telegram is as follows:

WATER AND POWER
THE CITY OF LOS ANGELES
207 So. Broadway, Box 3699 Terminal Annex,
Los Angeles, 54

May 16, 1946.

HON. VAIL PITTMAN, Governor of the State of Nevada, Carson City, Nevada.

DEAR GOVERNOR: This is written in compliance with your request that I give you in brief the new basis formulated by the City of Los Angeles and Southern California Edison Company for furnishing, after May 31, 1946, electrical energy for use at Basic Magnesium plant. Since the last meeting relative to this matter further study has been given to the possibility of fixing the rate for the energy, exclusive of the demand charge, at 2½ mills per kilowatt-hour, as suggested by you. The new formula arrived at by the City and Edison Company results in a kilowatt-hour rate for the energy approximately equal to that suggested by you as long as the Boulder firm rate does not increase substantially and the cost of fuel oil is the same as it was at the time you made the suggestion, namely, $1.10 per barrel.

You will recall that the original rate suggested by the City and Edison Company, exclusive of the demand charge, was 2½ mills per kilowatt-hour, and provision was made in the proposal for an incremental fuel charge of two-tenths of a mill per kilowatt-hour for every 10 cents per barrel increase in the cost of fuel, such incremental fuel cost to be applied to one-half the energy being supplied.

The new formula, briefly stated, is as follows:

1. During such years as there shall be available to the Boulder allottees at the Boulder project under the General Regulations, by declaration of the Integrating Committee, or otherwise, energy in the amount of 5,750,000,000 kilowatt-hours or more, the rate per kilowatt-hour to the State of Nevada for the energy supplied shall be the then Boulder firm energy rate plus one mill.

Note—Our studies have indicated that during a normal Boulder water year, making available 5,750,000,000 kilowatt-hours of energy, probably all the energy for Nevada will be generated by steam.

2. During such years as there shall be available to the Boulder allottees at the Boulder project under the General Regulations, declaration of the Integrating Committee, or otherwise, less than 5,750,000,000 kilowatt-hours of energy, the rate per kilowatt-hour to the State of Nevada for the energy supplied to Nevada shall be an amount equal to the aggregate of the then Boulder firm rate, one mill, an incremental fuel charge at the rate of one-tenth of a mill for each 10 cents per barrel increase in the cost of fuel oil above $1.10 per barrel up to a per barrel cost of $1.25, and an incremental fuel charge at the rate of two-tenths of a mill for each increase of 10 cents per barrel in the cost of fuel oil above $1.25.

Note—This provision is designed to cover increases or decreases in the cost of energy generated by steam plants in Los Angeles as affected by increases or decreases in the price of fuel oil. The significance of the one-tenth of a mill incremental fuel charge between the fuel cost of $1.10 and $1.25 per barrel is that the California agencies will apply the proposed two-tenths of a mill incremental fuel cost to one-half of the energy supplied while the fuel cost is less than $1.25 per barrel.
to the question of Senator Malone and Senator McCarthy at the hearing, had not been well considered and his answers did not convey his thoughts; that he had no idea what the plant might be worth; and did not wish to interfere with the objective of the State to acquire the property, and that he had no plans or objectives for himself and associates when he had been called before the senators. He agreed, however, to appear before a War Assets Administration board, including Wm. Godman, in Washington, D. C., the following week, but repeated his statement that he would not interfere with any proposal made by the State.

Irving Gombel, Chief of the Light Metals Division, War Assets Administration, informed Walsh that any proposal that might be offered Walsh would contain the same terms that had been offered to the State, and if the project is offered for private sale it would have to be put up for bids. The State will take over and operate the plant at no profit, as all the profits from operations would apply on the purchase price, whereas, it is assumed that private capital would not be interested unless it paid profits to the stockholders.

Upon further questioning Walsh declined to reveal his associates or backers.

E. T. R OTHERWISE Chemical Company, stated that his company, a large electric power user, could not get power at a low cost without the help of the State, and if a private concern should take over the plant, they could not operate without very low-priced power. He is not in favor of private operation of Basic Magnesium Project, and said that Walsh's proposal had only served to “muddy the waters” of an orderly and reasonably rapid procedure for the State to assume the control, and to operate at cost, at least until a number of industries had been established.

Harvey McPhail, Chief of Power Utilization, U. S. Bureau of Reclamation, stated to the commission the reasons for the Bureau of Reclamation's desire to own the two transmission lines from Boulder Dam to Basic Magnesium Project. He said it would effect a great economy in the interchange hook-up between Boulder Dam and Davis Dam, perhaps $1,000,000 in construction costs, which would be reflected in lower generation charges for Davis Dam power, of benefit to Nevada and all users of Davis Dam power, and would also be relieved of the responsibility of operating and maintaining the two lines. Some objection to the plan was expected from the City of Los Angeles as the proposed hook-up would permit exchange of energy with the Metropolitan Water District's system which City engineers say is up to the City's operation because the City's energy which is subject to great fluctuations of load beyond safe capacity of Metropolitan's transmission line.

Lloyd Compton stated that upon his own initiative he had gone alone to Phoenix, Arizona, to confer with the Arizona Power Authority, in an effort to secure a more economical and satisfactory proposal or agreement, for a generating capacity and stand-by set-up than the one that had been submitted to the commission by the Los Angeles Department of Water and Power. He had outlined the basis of an agreement with Arizona which he read to the commission. Mr. M. J. Dougherty, Chairman of the Arizona Power Authority, and N. Pike, Governor Pittman, Carson City, Nevada: There has just been delivered to me and to Congressman Russell and to the Junior Senator from Nevada a letter over the signature of Major General Robert M. Littlejohn. A similar letter is being transmitted to you. The full text of the letter is as follows: "The War Assets Administration recently made a contract with the Industrial Research Corporation of Detroit, Michigan, to secure an Industrial Survey of the Basic Magnesium Plant at Las Vegas, Nevada, with a view to disposing of this plant to the best interest of the Federal Government and the State of Nevada. We are currently involved in paying out monthly a substantial sum of money for plant maintenance and operation. The best interest of the Government necessitates eliminating these fixed charges through disposal of this plant at the earliest practicable date. It will take the industrial engineers sixty to ninety days to complete their survey. There are a number of major problems involved in finding a proper solution to the disposal problem and both the United States and the State of Nevada are involved. In order that the time in preparing plans may be reduced to a minimum and in order that the best interest of the State of Nevada be fully considered it seems to me that the War Assets Administration and the State of Nevada should work jointly in perfecting a workable disposal plan. Currently the major problems requiring an immediate solution are: (1) Completion of a physical inventory of personal property, (2) Completion of industrial survey, (3) Finding a permanent solution to the water and power problem. Report of State Engineer (3) Filling the property with tenants as a result of action taken above, (4) The final disposal of the entire property. We need the continued advice of the State of Nevada in developing an over-all disposal program and in finding a solution to the problems set forth above. Therefore, I request the appointment of a single individual to represent the State of Nevada to work with this administration continuously for the next few months and assist us in developing programs and in solving problems in which the United States and the State of Nevada are mutually concerned. I am addressing a similar letter to Senator Malone, Representative Russell, and Governor Pittman of Nevada. I should like to ask further that you, Senator Malone, Representative Russell, and Governor Pittman, agree on the individual who is to represent the State of Nevada. May I further suggest that the individual selected by you four gentlemen be an outstanding business man who is thoroughly familiar with both the local economic problems in your State. Cordially yours, signed Robert H. Littlejohn." On receipt of this letter I have wired General Littlejohn here in Washington designating John V. Mueller as my choice of the individual to represent the State of Nevada to work with the War Assets Administration. Congressman Russell was present in my offices when I received the letter from General Littlejohn, and today also communicated with the General and he too is designating John Mueller as the choice to represent the State of Nevada. I hope that it will be in keeping with your best judgment that you also wire General Littlejohn designating Mueller to represent the State of Nevada to work with the War Assets Administration. Kindest regards.

Pat McCarran
Governor Pittman wired his reply as follows:

HON. PAT MCAHAN, Washington, D. C.: I am in receipt of wire from Senator McCarthy setting forth contents of letters written to Nevada’s Representatives in Congress, and to me, in connection with the working out of plans for the disposal of Basic Magnesium Plant and facilities. In connection therewith I note that you suggest that we agree upon some competent man to represent Nevada in dealing with War Assets Administration. You are hereby advised that my selection is John V. Mueller, member of Nevada Colorado River Commission. Mueller was appointed some months ago to deal with the War Assets Administration, looking to Nevada’s taking over Basic Magnesium Plant together with transmission lines and water facilities. Mueller in my opinion is the proper person to represent Nevada in this matter. Regards.

VAIL PITTMAN, Governor of Nevada.

CARSON CITY, NEVADA, AUGUST 6, 1947

Copies of a “Letter of Intent” (Appendix No. 3) with respect to the State taking control of certain utilities at Basic Magnesium Project were distributed by the secretary. Mueller detailed his work in Washington, and said he expected an early agreement upon a plan for Nevada to take over and operate the entire project.

An interesting point came up with respect to water supply. Mueller said the Letter of Intent contains a provision for the commission to supply water to Las Vegas if it is available, but that there would be very little water for that purpose. The War Department had requested four million gallons per day, after which, inclusive of the necessary water for Basic Magnesium Project, there would be little left.

There was much discussion as to the terms of the Letter of Intent and other matters relating to the proposed State operation of the utilities at Basic Magnesium Project, apart from operation of the entire Basic Magnesium Project.

On September 16, 1947, this agreement for the State to take over all utilities at Basic Magnesium Project was signed by the Colorado River Commission and by War Assets Administration. (Appendix No. 3.)

LAS VEGAS, NEVADA, AUGUST 20, 1947

Mr. Compton analyzed the company’s proposal to underwrite the installation of a so-called half-unit generator (45,000 kw). At this time it was agreed to give it further study, but no action to be taken until the proposal by Los Angeles Department of Water and Power to supply all energy, including stand-by, for Nevada had been received. Meanwhile the City of Los Angeles had agreed to submit its detailed proposal by September 15, 1947.

The commission decided to sign the Letter of Intent (Appendix 3) when War Assets Administration had entered into a satisfactory contract with Edison and the city for energy during the time that would elapse before the State could either install or acquire generating equipment. The commission engineers and War Assets Administration representatives were asked to do all they could to hasten the execution of such an interim power contract.
Tillman declared that it was the common feeling of his group that, if the interest rate is reduced in general from 3 to 2 percent, the same reduction should be applied in connection with Hoover Dam power, but that the Bureau of Reclamation has consistently refused to support that view and the committee has refused to add such a provision in a bill.

Governor Warren inquired whether the Army projects and the Reclamation projects would be on the same footing if the bill (H. R. 2874) were enacted into law. Dowd replied that generally they would, although under the Flood Control Act there is no interest set out. Governor Warren thought that the bill at least had some merits if it can aid in doing away with this outrageous situation whereby turmoil is created in the minds of people of a State or region. Mr. Dowd stated that a national power policy is actually needed.

Matthew said that the Rockwell bill had been referred to the Bureau of the Budget for a report, and that information has been received that it cannot understand how this one-half of one percent interest collected as a part of the power revenue can be properly applied to the repayment of capital.

Franklin Thomas, California attorney, asked Tillman whether, if the Rockwell bill were adopted in present form, it would apply to the Central Arizona Project. Tillman was of the opinion that the last bill by Congress would control the situation and anything it chose to do in the way of additional subsidies for the Central Arizona Project would not be affected by this bill. Hewes pointed out that the bill (H. R. 2874) did break down present standards of feasibility and was fundamentally unsound.

The chairman brought up for discussion the matter of interstate relations. He stated that J. H. Stoebler, president of the Colorado River Water Users Association, was at the Las Vegas meeting and it was agreed to see to what extent support might develop among the other States, particularly on the Treaty Administrative Bill, in an effort to work with any of the people in any or all of the Colorado River Basin States where there is a common ground upon which to meet to oppose harmful legislation and propose sound principles.

Governor Pitman, Smith and Shauer of the Nevada delegation pointed out various ways in which mutuality of interests might be developed and followed through with the other States of the Colorado River Basin. Governor Warren added his views in this connection and stated that it was desirable for every door to be left open whereby the western States could stand together in order to progress.

Shaw related that Matthew and he had made during the summer to secure cooperation from the Upper Basin States on the Treaty Administrative Bill, the Irrigation Bill, and other objectives, and how assurances made at the time had been recently nullified by actions taken at a meeting of the Upper Basin States committee. At the same time he expressed a willingness to keep trying whenever the other States were willing to get together. Dowd told of the experience in connection with the treaty bill provisions and the difficulties inherent in trying to get agreement. He felt that we should be and are working along to improve conditions regardless of the kind and type of opposition met.

The secretary read a letter from Jess Larson, General Counsel, W.A.A., dated August 13, 1947, asking the commission to expedite consideration of the letter of Intent to assume control of the utilities at BMP and also to take steps to withdraw power for use at BMP. Following is the letter:

War Assets Administration
Washington 25, D. C.
August 13, 1948.
COLORADO RIVER COMMISSION, Carson City, Nevada.

Gentlemen: On June 19, 1947, this Administration authorized the execution of an agreement with your commission for the lease of certain utility facilities located at the Basic Magnesium Project, Henderson, Nevada. Acting on this authority, a Letter of Intent, dated July 2, 1947, was prepared and submitted for your acceptance. To date, this Administration has received no official information as to the approximate date that your commission will accept the above-mentioned Letter of Intent and assume operation of the utility facilities and services covered thereby.

The assurance of a supply of firm power at reasonable rates is of paramount importance if the Basic Magnesium Project is to continue operations, and such operation we believe is of utmost importance, both to the State of Nevada and the Federal Government. The State of Nevada, through your commission, appears to be the only logical source of such a supply of power. This is true whether your commission accepts the Letter of Intent and assumes the obligation to supply power, or if this Administration continues to operate the facilities and supply the power requirements.

The State of Nevada is an elector of power from the Hoover Dam project. As such it has certain rights with respect to the withdrawal of energy generated at Hoover Dam, which energy, if so withdrawn, could be made available to the Basic Project at what are thought would be reasonable rates.

In order that the long-term power situation at the Basic Magnesium Project may be cleared up as rapidly as possible, it is suggested that your commission expedite consideration of the above-mentioned Letter of Intent. However, regardless of the outcome of such consideration, it is requested that you proceed with whatever steps are necessary for the State of Nevada to exercise its rights of withdrawals of energy from the Hoover Dam Project, such energy to be made available for use at the Basic Magnesium Project.

After detailed exploration of the problem of an adequate power supply for the Basic project we have come to the conclusion that the only means by which the continued operation and development of this project can be assured, is through the exercise of the withdrawal rights of the State of Nevada, and we are prepared to cooperate with your commission to the extent necessary to accomplish this result.

Cordially yours,
Jess Larson, General Counsel.

The commission thought these points would be clarified for W.A.A. at a Senate special committee hearing then being conducted in Las
Las Vegas on BMP affairs by Senators Joseph R. McCarthy, George W. Maloney, and John L. McClellan. Secretary Smith said he would thereafter write Mr. Larson. The Senate Committee continued its hearing through August 20 and 21, and approved the measures taken by the Colorado River Commission, complimenting the commissioners upon their vigorous activity in preserving the great project intact for Nevada.

On August 25 the secretary wrote Mr. Larson as follows in regard to obtaining power for the project.

COLORADO RIVER COMMISSION OF NEVADA
August 25, 1947

John Larson, General Counsel War Assets Administration, Washington 25, D.C.


Dear Sir: Receipt of your letter dated August 23, 1947, is acknowledged.

Your letter refers to two separate subjects: 1st, a Letter of Intent which was submitted by War Assets Administration to the Colorado River Commission of Nevada which when signed by the proper representatives of the Colorado River Commission conveys the information to War Assets Administration that it will enter into a contract to take over the power, water and sewerage facilities at Basic Magnesium Project, Henderson, Nevada.

This Letter of Intent dated July 3, 1947, was reviewed at a meeting of the Colorado River Commission on August the 20th at which time by unanimous vote the secretary was requested to inform War Assets Administration that it is the intention of the commission to sign the said Letter of Intent if and when a satisfactory contract is entered into by the War Assets Administration and Southern California Edison Company for the delivery of electrical energy to present lessees operating at Basic Magnesium Project for a period of time which will be necessary for Nevada to install a generator for Nevada’s use, and for withdrawals of energy by War Assets Administration and/or its lessees to become effective under the General Regulations governing the use of energy from Hoover Dam, and also according to the laws of Nevada.

A committee appointed by the commission, which has been working on this Interim Contract, and which has heretofore made contact with the Edison Company and the City of Los Angeles and representatives of War Assets Administration was requested to again immediately proceed to Los Angeles and endeavor to have this contract executed by War Assets Administration and Edison Company. The committee will meet with said representatives in Los Angeles tomorrow, August 26, and endeavor to expedite the interim contract, under which lessees now at B.M. Project will continuously receive low-priced energy. As stated before, the Colorado River Commission’s signature to the Letter of Intent to take over the facilities at BMP will depend upon the consummation of a satisfactory contract.

The second subject in your letter is a request that the State of Nevada, which would be made available to the Governors of the affected States, and he asked Governor Warren if he would consider having the Central Arizona Report handled in the same way that the Comprehensive Report for the entire Basin was handled. Governor Warren stated that all such reports would go to Mr. Purell, Director of Public Works, and that the same procedure would be followed as was the Comprehensive Report.

Chairman Hennes then called upon Gilmore Tillman, Chief Counsel, Los Angeles Department of Water and Power, to lead the discussion on item 4 of the agenda, which concerned pending legislation to amend the Reclamation Law with respect to feasibility standards and repayment provisions.

Tillman explained that under the Reclamation Act of 1939 the Secretary of the Interior could first determine the total cost of any proposed project, then determine the amount which power could repay, and the amount water could repay. If these balanced out and could repay the cost, that project stood authorized by the findings of the Secretary of the Interior without action necessarily by Congress. He said it was the understanding of Congress apparently, that included within the charges against commercial power, would be interest at 3 percent. He pointed out that a recent decision of the Solicitor of the Interior held squarely that they did not have to fix power rates to repay to the United States the capital charge to power, plus interest. The net effect of that was a bookkeeping arrangement by the Department of Interior by the terms of which they show a single dollar from power revenues as representing the repayment of 3 percent interest, and at the same time, that same dollar as representing a full dollar of capital repayment, so that a single dollar does double duty. Mr. Tillman stated that when the Reclamation Association as a whole, took the matter up at its last session and endorsed the Rockwell Bill (H.R. 2878), making various changes in the Reclamation Project Act of 1939. This bill, which is now pending before Congress provides that power rates must be fixed at an amount sufficient to repay in 78 years the capital allocated to power, with 24 percent interest. Two percent as interest and one-half of one percent toward the repayment of water capital. Governor Warren questioned Tillman regarding use of the 2 percent by the Bureau of Reclamation under this bill. Mr. Tillman stated that it now goes into the Reclamation Fund and can be used only by subsequent congressional appropriation.

Governor Warren then commented on the specific situation of Polson Dam to the effect that the War Department had been authorized by Congress to construct this dam, and, for the last month, the Bureau of Reclamation has taken the position that if the Army is permitted to build the dam, it will be obliged to put the interest from power back into the general treasury, whereas if the Bureau builds it, interest of 3 percent or 2 percent, or whatever it is, can be used to subsidize other phases of the project that couldn’t pay their own way.

Dowd stated that the Bureau may contend that, but that was one reason the Bureau was asked in its appropriation last year. He added that the House Appropriations Committee favored the holding in abeyance, the application for any interest for repayment of capital as proposed by the Bureau under the solicitor’s opinion.
was of the opinion that the general violation was only 2 or 3 percent. Mr. Hyatt, State Engineer of California, was asked for his opinion and indicated that a careful study showed a 2 or 3 percent violation, but in the Salt River Valley Project the percentage was about 15 percent. Mr. Hewes stated that it was his personal knowledge that the Bureau of Reclamation, all through the 30’s and up to 1943, sold lands taken over, subject to nonpayment to landowners in the Yuma Valley, irrespective of the acreage limitations.

Mr. Matthew continued the discussion by explaining the Bureau of Reclamation estimates of power revenue and inaccuracies of the estimates. He also explained evaporation losses and chargeability thereof to the Upper or Lower Basins, with reference to the Bridge Canyon and Glen Canyon reservoirs. He pointed out that there were two alternative plans for the Central Arizona Project; the one a plan of pumping water, and the other a gravity diversion through an 80-mile tunnel. The former was estimated by the Bureau of Reclamation to cost about $600,000,000, and the latter about $1,000,000,000. If either of the alternatives were followed there would be a drastic change in the operation of the Hoover Dam under the proposals made by the Bureau of Reclamation.

Mr. G. H. Arnold, Attorney for San Diego, stated that when the point of diversion of water to San Diego was transferred as a result of a merger with the Metropolitan Water District, the Bureau of Reclamation made San Diego subsidize the power loss that would have developed and amortize it at a cost of $300,000. He said that he understood that the Bureau of Reclamation was not doing that in the Central Arizona plan.

In reply to an inquiry, Matthew explained the effect of the Central Arizona Project on California as relating to the Seventy-Party Agreement of 1931, required by the Secretary of the Interior as a part of his contracts with the California agencies. The assignment of priorities under the Seventy-Party Agreement, and the contracts in addition to the Limitation Act, gave California reason to believe it had annual rights to 5,952,000 acre-feet of water. Matthew said that if the Central Arizona Project were built it would divert 1,200,000 acre-feet from the Colorado River and have the effect or threat of infringing upon the later priorities in the California agreement which would affect the metropolitan areas in Southern California and the City of San Diego.

At the conclusion of Matthew’s remarks, Chairman Hewes recalled the agreement of Nevada and California at the Las Vegas meeting to oppose authorization of the Central Arizona Project prior to a determination of the rights of these States to the waters of the Colorado. Governor Pittman stated that Hewes was correct and that he saw no reason why Nevada should not go along with California in any way that is designed to prevent Arizona from diverting the water.

Smith agreed with Governor Pittman and said that the water simply was not available for all these projects, and if the legislation for them goes through, it will siphon us in our power, and our future water.

Hewes thanked Governor Pittman and State Engineer Smith for their expressions of the attitude of Nevada toward the Central Arizona project legislation. He commented on the probable submission of a report on the project by the Bureau of Reclamation within a month or two.

Nevada exercises its right of withdrawal of energy from the Hoover Dam power plant, for use at the Basic Magnesium Project. It has been explained in considerable detail on various occasions to representatives of the Defense Plant Corp., and again more recently to War Assets Administration that the State of Nevada can withdraw power from its allotment at Hoover Dam power plant only in accordance with a fixed plan and schedule conforming both to the General Regulations set up by the Department of the Interior and, also, according to the laws of Nevada. It appears to us that the only manner in which effective cooperation to accomplish such withdrawals can be rendered by War Assets Administration for this purpose will be for War Assets Administration or its lessees to submit a request to the State of Nevada for a definite amount of energy according to the following requirements:

1. A request to the secretary of the Colorado River Commission of Nevada for a definite amount of energy in kilowatt-hours at a definite maximum demand in horsepower. The schedule of time necessary to make such a request effective will depend upon the amount of horsepower withdrawn as fixed by the regulations and varies from six months for 5,000 horsepower to three years for 20,000 horsepower or more.

2. Agreement to enter into a contract with the State to take and/or pay for said energy and posting of a bond by War Assets Administration or its lessees in sufficient amount, according to decision of the Colorado River Commission, to safeguard the State in payments to the United States.

Upon receipt of such a request for energy in kilowatt-hours, and entering into a contract and bond, the Secretary of the Interior and the Director of Power at Hoover Dam are informed that the State wishes to make the withdrawal. If necessary, the Generating Agents for the Government at Hoover Dam plant will be requested to supply additional generating capacity. If generating capacity is not then available it will be installed by the Bureau of Reclamation and charged to the State of Nevada.

This in brief is the method by which power may be obtained from Nevada’s allotment. The initial procedure depends upon the applicant and not upon the State. If War Assets Administration is in a position to make such an application to the Colorado River Commission, the commission can thereupon proceed with the withdrawal, but not otherwise.

All of this and other details regarding the Nevada power allotment were brought out and discussed in much detail at the hearing held by the Senate Investigating Committee in Las Vegas on August 23 and 22. Various witnesses under War Assets Administration at Henderson were present, and also officials of WAA; all of whom should now be fully acquainted with the procedure Nevada must follow, and the restrictions and regulations governing power withdrawals.

Very truly yours,

ALFRED MERTHY SMITH, Secretary.

The commission engineering committee was instructed to go to Phoenix, Arizona, in compliance with a recommendation made by the
Mr. Tillman replied that he felt the same way about the matter, but that the reclamation commissioner, Mr. Strass, had told him that he didn't believe Arizona would join with California in authorizing a power project apart from the Central Arizona Project.

Governor Pittman asked whether power conditions at Hoover Dam would be adversely affected in the event Bridge Canyon Dam is built and Arizona gets its Central Arizona project. Mr. Tillman said it would unquestionably affect power output and contracts at Hoover Dam, according to proposals set forth in the reports to the Bureau of Reclamation on the Central Arizona projects.

In the discussion of power capacity of Bridge Canyon and Glen Canyon dams, Mr. Shaver pointed out that if Glen Canyon Dam is not built, it would rapidly render Bridge Canyon Dam useless.

Mr. Hovenstine asked Mr. Smith, State Engineer of Nevada, had a very concise water budget of the Colorado River which he would explain prior to Mr. Mathew's discussion in order to clear up some points which the chair felt were not properly clarified in the morning session, and also prove useful in connection with Mr. Mathew's remarks.

Mr. Smith presented figures on the Colorado River water budget and concluded that the figures which originated from certain sources in Arizona but had been revised to some extent by him in collaboration with Mr. Dowd and Mr. Mathew, indicated that there would be a minus quantity of 1,871,000 acre-feet of water a year available for the Central Arizona Project after meeting the requirements of existing and authorized projects and the Mexican Water Treaty.

It was brought out by Mr. Smith in the discussion that certain individuals in Arizona would admit that there would be the above stated shortage and that some of the representatives of the upstream States are becoming worried about what might eventually happen. An indication of this concern came from State Engineer Bishop of Wyoming who favored including a limitation on the exportation of water of not more than 25 percent of the total amount allotted to each of the upstream States.

Mr. Raymond Mathews, Chief Engineer, Colorado River Board of California, pointed out the difference between the Central Arizona Project (S. 1175), and the proposed power project described by Mr. Mathews in the morning session. He described the nature of the hearings on S. 1175 as well as subsequent developments. He referred to Colorado River Report submitted by the Secretary of the Interior in July 1947 to the Congress, which presented an inventory of 134 potential new projects. Mr. Mathews stated that the Secretary of the Interior, and the Bureau of the Budget, were quoted as not being prepared to recommend any of the 134 new projects until there had been a determination of the respective rights of the States to the water of the Colorado River system.

There followed a discussion of power costs, rates, and value of land in the Central Arizona area. It was brought out in the discussion that land limitation practices in Central Arizona disregarded the 160 acre limitation of the Reclamation Law. When questioned by Governor Warren how this condition was justified, Mr. Mathews said that no explanation was made, and he added that farmers of the Central Arizona area admit there are flagrant violations. Governor Warren
under the treaty. It was generally agreed upon that as a result of the treaty, Mexico would receive 1,560,000 acre feet each year, but according to American negotiators, water delivered would be without regard to quality and might include return flow of high salinity from Arizona, estimated by witnesses at the treaty hearings to amount to 900,000 acre feet annually. It was also agreed that since the intention of those who made the treaty was very clear as to what they were doing, and many of the same Senators who supported the treaty are still in Congress, it is now important that legislation be considered to clarify the treaty and guide its administration during the present Congress, which would be likely to act more favorably than might some future Congress.

Chairman Hewes called on Mr. Roy Martindale, Chief Engineer, Los Angeles Department of Water and Power, to discuss Item 5, "Additional projects for storage and power development on the Lower Colorado River."

Mr. Martindale presented figures on the use of electric power in the Nation and in California, as well as the increased needs by 1930. He outlined the power potential represented in the proposed Glen Canyon and Bridge Canyon dams and compared the costs with generation by fuel oil consuming plants.

Questions were put to Mr. Martindale by Governor Pittman and Governor Warren dealing with silt and flood control, evaporation losses, use of power generated, and the relation of various projects to over-all power development. It was pointed out that there is no material controversy between the States of Nevada, California, and Arizona as far as power is concerned.

Governor Pittman remarked that all of the power was allocated prior to the building of Hoover Dam and he asked what policy would be followed in case the proposed Bridge Canyon and Glen Canyon dams were built. Mr. Martindale stated that this was a part of the strategy to be worked out in the joint meeting and he asked Mr. Tillman to explain legislation under consideration to authorize the power development of these dams.

Mr. Tillman explained that the legislation is still in the discussion stage and when it is determined that a fair bill has been drawn up it will be taken up with all agencies concerned, including the State of Nevada. He indicated that Arizona would probably regard such a bill to be inconsistent with the Central Arizona Project bill. However, he stated that Arizona would likely favor power development at Bridge and Glen Canyon dams provided it was coupled with the Central Arizona water development and California and Nevada paid for the Central Arizona project by using the power. Governor Warren inquired regarding the fixing of power rates by the Department of Interior after the project is constructed. Mr. Tillman replied that a part of the report of the Department of Interior would deal with rates at which power can or would be sold, but that he didn't believe there would be any suggestion that the Central Arizona project can pay its own way and reimburse the costs.

Governor Warren expressed the opinion that at the outset there was no reason why California would be in conflict with Arizona since both would want a dam that would produce a maximum amount of power.

Chief Electrical Engineer of Metropolitan Water District, formerly in the employ of the commission at Los Angeles for a time after the death of C. E. DeArmond, had been consulted and had agreed to review and comment on the City's proposal. He would also consider separately a plan for the State to install a generator and go on its own, and endeavor to determine which procedure would be the better for Nevada. Rockwell's report had been received and was read.

The report by E. W. Rockwell is attached as Appendix No. 4.

A request by Southern Nevada Power Company for the withdrawal of 7,000,000 additional kilowatt hours at a maximum demand for 1,170 horsepower. This was approved and designated Withdrawal No. 18.

JOINT MEETING OF THE COLORADO RIVER BOARD OF CALIFORNIA AND COLORADO RIVER COMMISSION OF NEVADA AT SACRAMENTO, CALIFORNIA, DECEMBER 8, 1927.

Thirty-four people were present, including Governor Earl Warren of California, and Governor Vail Pittman of Nevada, and representatives of various departments and companies in both States. Seven press representatives attended the meeting.

The purpose of the meeting was to discuss several subjects in which the interests of the two States seem to correspond and upon which there was a common meeting ground.

Governor Vail Pittman expressed the hope that the meeting would be productive of much good and that California and Nevada could formulate plans whereby their position and strategy for justice would be advanced to prevent Arizona from taking additional water from the Colorado River which would leave the two States with an insufficient supply. He expressed the conviction that there should be an equitable division of the water and it appeared at this time that the only solution is to have Congress enact legislation directing litigation to determine the rights of each State.

Chairman Euan T. Hewes, of Colorado River Board of California, in presenting the agenda for the meeting, recalled that at the last joint meeting in Los Angeles it was felt desirable to meet again after finding what position was taken on several subjects at the National Reclamation Association in Phoenix and the meeting of the Colorado River Water Users Association.

Hewes announced as No. 1 item on the agenda: "The proposed legislation to provide for litigation in the Supreme Court of the United States to determine respective rights of the Lower Basin States to the use of Colorado River water." At the request of the chairman, Mr. Shaw lead the discussion and stated that as a result of correspondence and exchange of views between the two Governors last March, it was concluded that the advisable thing to do was to proceed in Congress to obtain authorization for commencing litigation. As a result of this decision a resolution was introduced by the Nevada and California Senators, as well as several Congressmen independently, to initiate action in the form of an interpleader.

Mr. Arvin B. Shaw, Jr., Assistant Attorney General of California, indicated that the resolution was assigned to the Public Lands Committee in the Senate, and the Judiciary Committee in the House, and discussed the prospects of the resolution being favorably reported by
of this impasse, he declared he was in agreement with this plan whereby California representatives are going to work out strategy and methods of approach so that the bill will be passed to authorize this work.

When asked for his comments, Mr. A. J. Shaver, Engineer for the Nevada Colorado River Commission, said that he felt as did Governor Pittman and Mr. Smith. He also observed that when he attended the National Reclamation Association meeting in Phoenix, he had noticed a vigorous publicity campaign being conducted by Arizona which placed the blame on California for drying up and starving Arizona. Mr. Shaver felt that the right kinds of publicity on behalf of the California-Nevada point of view would offset the opposition.

Mr. M. J. Dowd, Engineer, California, was asked to speak on the next item of the agenda, The Treaty Administrative Bill. He was of the opinion that a Treaty Administrative Bill is necessary to fix the responsibility for the amount of water to be delivered, to guard against arbitrary change of policy, and to set up guidelines whereby the American section of the International Boundary and Water Commission would be able to make proper decisions under the treaty. He stated that the language of the treaty is very loose, that it sets up no criteria by which surplus or drought could be determined and is silent with regard to the quality of the water. He briefly reviewed the sections of the bill and explained the reasons and necessity thereof.

Governor Warren and Governor Pittman questioned Mr. Dowd about the provisions of The Treaty Administrative Bill relating to quality of water. Mr. Dowd explained these provisions in detail and stated that although the Upper Basin States and Texas would probably object, he felt that a solution of the problems is essential to a determination of the actual amount of water which will be required to fulfill the Mexican demands under the treaty.

Chairman Hewes asked Mr. Dowd to advise the Governors regarding the status of this legislation and the conference that took place between the officials of the Imperial Irrigation District of the Departments of Interior, Justice, and State, and the American section of the International Boundary and Water Commission.

Mr. Dowd said that a hearing had not been set on this bill but that for the past year and a half the Imperial Irrigation District had proposed a conference on the problems which might involve its properties in Mexico. When this discussion was finally held the Department of Justice also had representatives present. It was apparent to Mr. Dowd that these departments had not given much thought to the treaty or was litigation. He felt that if California is going to be limited to less water than it honestly believes it is entitled to, it would be better to know it now and be able to plan accordingly, rather than to be at loggerheads with Arizona, and for another quarter of a century have the plans of both States frustrated and feeling intimidated.

Chairman Hewes then asked Mr. Smith if he had any comments, to which Mr. Smith replied that he was convinced that only by judicial procedure could this matter be settled. He pointed to the fact that over the years the people of Nevada had acted more or less as neutrals in an effort to bring injection, but that each meeting seemed to find them further and further apart. As a result he believed a possible solution would be to inject the meeting.
of the impasse, he declared he was in agreement with this plan whereby California representatives are going to work out a strategy and method of approach so that the bill will be passed to authorize this war.

When asked for his comments, Mr. A. J. Shaver, Engineer for the Nevada Colorado River Commission, said that he felt as did Governor Pittman and Mr. Smith. He also observed that when he attended the National Reclamation Association meeting in Phoenix, he had noticed a vigorous publicity campaign being conducted by Arizona which placed the blame on California for drying up and starving Arizona. Mr. Shaver felt that the right kind of publicity on behalf of the California-Nevada point of view would offset the opposition.

Mr. M. J. Dowd, Engineer, California, was asked to speak on the next item of the agenda, The Treaty Administrative Bill. He was of the opinion that a Treaty Administrative Bill is necessary to fix the responsibility for the amount of water to be delivered, to guard against arbitrary change of policy, and to set up guidelines whereby the American section of the International Boundary and Water Commission would be able to make proper decisions under the treaty. He stated that the language of the treaty is very loose, that it sets up no criteria by which surplus or drought could be determined and is silent with regard to the quality of the water. He briefly reviewed the sections of the bill and explained the reasons and necessity therefor.

Governor Warren and Governor Pittman questioned Mr. Dowd about the provisions of The Treaty Administrative Bill relating to quality of water. Mr. Dowd explained these provisions in detail and stated that although the Upper Basin States and Texas would probably object, he felt that a solution of the problem is essential to a determination of the actual amount of water which will be required to fulfill the Mexican demands under the treaty.

Chairman Hewes asked Mr. Dowd to advise the Governors regarding the status of this legislation and the conference that took place between the officials of the Imperial Irrigation District of the Departments of Interior, Justice, and State, and the American section of the International Boundary and Water Commission.

Mr. Dowd said that a hearing had not been set on the bill but that for the past year and a half the Imperial Irrigation District had proposed a conference on the problems which might involve its properties in Mexico. When this discussion was finally held the Department of Justice also had representatives present. It was apparent to Mr. Dowd that these departments had not given much thought to the treaty or was litigation. He felt that if California is going to be limited to less water than it honestly believes it is entitled to, it would be better to know it now and be able to plan accordingly, rather than to be at loggerheads with Arizona, and for another quarter of a century have the plans of both States frustrated and feel this intensified.

Chairman Hewes then asked Mr. Smith if he had any comments, to which Mr. Smith replied that he was convinced that only by judicial procedure could this matter be settled. He pointed to the fact that over the years the people of Nevada had acted more or less as neutrals in an effort to bring the parties together, but that each meeting seemed to find them further and further apart. As a result
under the treaty. It was generally agreed upon that as a result of the treaty, Mexico would receive 1,500,000 acre feet each year, but according to American negotiators, water delivered would be without regard to quality and might include return flow of high salinity from Arizona, estimated by witnesses at the treaty hearings to amount to 900,000 acre feet annually. It was also agreed that since the intention of those who made the treaty was very clear as to what they were doing, and many of the same Senators who supported the treaty are still in Congress, it is now important that legislation be considered to clarify the treaty and guide its administration during the present Congress, which would be likely to act more favorably than might some future Congress.

Chairman Hewes called on Mr. Roy Martindale, Chief Engineer, Los Angeles Department of Water and Power, to discuss Item 5, "Additional projects for storage and power development on the Lower Colorado River."

Mr. Martindale presented figures on the use of electric power in the Nation and in California, as well as the increased needs by 1950. He outlined the power potential represented in the proposed Glen Canyon and Bridge Canyon dams and compared the costs with generation by fuel oil consuming plants.

Questions were put to Mr. Martindale by Governor Pittman and Governor Warren dealing with silt and flood control, evaporation losses, use of power generated, and the relation of various projects to over-all power development. It was pointed out that there is no material controversy between the States of Nevada, California, and Arizona as far as power is concerned.

Governor Pittman remarked that all of the power was allocated prior to the building of Hoover Dam and he asked what policy would be followed in case the proposed Bridge Canyon and Glen Canyon dams were built. Mr. Martindale stated that this was a part of the strategy to be worked out in the joint meeting and he asked Mr. Tillman to explain legislation under consideration to authorize the power development of these dams.

Mr. Tillman said that the legislation is still in the discussion stage and when it is determined that a fair bill has been drawn up it will be taken up by all agencies concerned, including the State of Nevada. He indicated that Arizona would probably regard such a bill to be inconsistent with the Central Arizona Project bill. However, he stated that Arizona would likely favor power development at Bridge and Glen Canyon dams provided it was coupled with the Central Arizona water development and California and Nevada paid for the Central Arizona project by using the power. Governor Warren inquired regarding the fixing of power rates by the Department of Interior after the project is constructed. Mr. Tillman replied that a part of the report of the Department of Interior would deal with rates at which power can or would be sold, but that he didn't believe there would be any suggestion that the Central Arizona project can pay its own way and reimburse the costs.

Governor Warren expressed the opinion that at the outset there was no reason why California would be in conflict with Arizona since both would want a dam that would produce a maximum amount of power.
Mr. Tillman replied that he felt the same way about the matter, but that the reclamation commissioner, Mr. Strand, had told him that he didn’t believe Arizona would join California in authorizing a power project apart from the Central Arizona Project.

Governor Pittman asked whether power conditions at Hoover Dam would be adversely affected in the event Bridge Canyon Dam is built and Arizona gets its Central Arizona project. Mr. Tillman said it would unquestionably affect power output and contracts at Hoover Dam, according to proposals set forth in the reports to the Bureau of Reclamation on the Central Arizona projects.

In the discussion of power capacity of Bridge Canyon and Glen Canyon dams, Mr. Shaver pointed out that if Glen Canyon Dam is not built the silt would rapidly render Bridge Canyon Dam useless.

Mr. Heves stated that Mr. Smith, State Engineer of Nevada, had a very concise water budget of the Colorado River which he would explain prior to Mr. Mathew’s discussion, in order to clear up some points which the chair felt were not properly clarified in the morning session, and also prove useful in connection with Mr. Mathew’s remarks.

Mr. Smith presented figures on the Colorado River water budget and concluded that the figures which originated from certain sources in Arizona but had been revised to some extent by him in collaboration with Mr. Dowd and Mr. Mathew, indicated that there would be a minus quantity of 1,571,000 acre-feet of water a year available for the Central Arizona Project after meeting the requirements of existing and authorized projects and the Mexican Water Treaty.

It was brought out by Mr. Smith in the discussion that certain individuals in Arizona would admit that there would be the above stated shortage and that some of the representatives of the upstream States are becoming worried about what might eventually happen. An indication of this concern came from State Engineer Bishop of Wyoming who favored including a limitation on the exportation of water of not more than 25 percent of the total amount allotted to each of the upstream States.

Mr. Raymond Matthews, Chief Engineer, Colorado River Board of California, pointed out the difference between the Central Arizona Project (S. 1175), and the proposed power project described by Mr. Mathew in the morning session. He described the nature of the hearings on S. 1175 as well as subsequent developments. He referred to Colorado River Board submitted by the Secretary of the Interior in July 1947 to the Congress, which presented an inventory of 134 potential new projects. Mr. Matthews stated that the Secretary of the Interior, and the Bureau of the Budget, were quoted as not being prepared to recommend any of the 134 new projects until there had been a determination of the respective rights of the States to the water of the Colorado River system.

There followed a discussion of power costs, rates, and value of land in the Central Arizona area. It was brought out in the discussion that land limitation practices in Central Arizona disregarded the 160 acre limitation of the Reclamation Law. When questioned by Governor Warren how this condition was justified, Mr. Matthews said that no explanation was made, and he added that farmers of the Central Arizona area admit there are flagrant violations. Governor Warren
was of the opinion that the general violation was only 2 or 3 percent. Mr. Hyatt, State Engineer of California, was asked for his opinion and indicated that a careful study showed a 2 or 3 percent violation, but in the Salt River Valley Project the percentage was about 15 percent. Mr. Hewes stated that it was his personal knowledge that the Bureau of Reclamation, all through the '30's and up to 1943, sold lands taken over, subject to nonpayment to landowners in the Yuma Valley, irrespective of the acreage limitations.

Mr. Matthew continued the discussion by explaining the Bureau of Reclamation estimates of power revenue and inaccuracies of the estimates. He also explained evaporation losses and chargeability thereof to the Upper or Lower Basins, with reference to the Bridge Canyon and Glen Canyon reservoirs. He pointed out that there were two alternative plans for the Central Arizona Project: the one a plan of pumping water, and the other a gravity diversion through an 80-mile tunnel. The former was estimated by the Bureau of Reclamation to cost about $600,000,000 and the latter about $1,000,000,000. If either of the alternatives were followed there would be a drastic change in the operation of the Hoover Dam under the proposals made by the Bureau of Reclamation.

Mr. G. R. Arnold, Attorney for San Diego, stated that when the point of diversion of water to San Diego was transferred as a result of a merger with the Metropolitan Water District, the Bureau of Reclamation made San Diego subsidize the power loss that would have developed and amortize it at a cost of $300,000. He said that he understood that the Bureau of Reclamation was not doing that in the Central Arizona plan.

In reply to an inquiry, Matthew explained the effect of the Central Arizona Project on California as relating to the Seven-Party Agreement of 1931, required by the Secretary of the Interior as a part of his contracts with the California agencies. The assignment of priorities under the Seven-Party Agreement, and the contracts in addition to the Limitation Act, gave California reason to believe it had annual rights to 5,982,000 acre-feet of water. Matthew said that if the Central Arizona Project were built it would divert 1,290,000 acre-feet from the Colorado River and have the effect or threat of infringing upon the later priorities in the California agreement which would affect the metropolitan area in Southern California and the City of San Diego.

At the conclusion of Matthew's remarks, Chairman Hewes recalled the agreement of Nevada and California at the Las Vegas meeting to oppose authorization of the Central Arizona Project prior to a determination of the rights of the States to the waters of the Colorado. Governor Pittman stated that Hewes was correct and that he saw no reason why Nevada should not go along with California in any way that is designed to prevent Arizona from diverting the water.

Smith agreed with Governor Pittman and said that the water simply was not available for all these projects, and if the legislation for them goes through, it will short us in our power, and our future water.

Hewes thanked Governor Pittman and State Engineer Smith for their expressions of the attitude of Nevada toward the Central Arizona project legislation. He commented on the probable submission of a report on the project by the Bureau of Reclamation within a month or

Nevada exercise its right of withdrawal of energy from the Hoover Dam power plant, for use at Basic Magnesium Project. It has been explained in considerable detail on various occasions to representatives of the Defense Plant Corp. and again more recently to War Assets Administration that the State of Nevada can withdraw power from its allotment at Hoover Dam power plant only in accordance with a fixed plan and schedule conforming both to the General Regulations set up by the Department of the Interior and, also, according to the laws of Nevada. It appears to us that the only manner in which effective cooperation to accomplish such withdrawals can be rendered by War Assets Administration for this purpose will be for War Assets Administration or its lessees to submit a request to the State of Nevada for a definite amount of energy according to the following requirements:

1. A request to the secretary of the Colorado River Commission of Nevada for a definite amount of energy in kilowatt-hours at a definite maximum demand in horsepower. The schedule of time necessary to make such a request effective will depend upon the amount of horsepower withdrawn as fixed by the regulations and varies from six months for 5,000 horsepower to three years for 20,000 horsepower or more.

2. Agreement to enter into a contract with the State to take and/or pay for said energy and posting of a bond by War Assets Administration or its lessee in sufficient amount, according to decision of the Colorado River Commission, to safeguard the State in payments to the United States.

Upon receipt of such a request for energy in kilowatt-hours, and entering into a contract and bond, the Secretary of the Interior and the Director of Power at Hoover Dam are informed that the State wishes to make the withdrawal. If necessary, the Generating Agents for the Government at Hoover Dam plant will be requested to supply additional generating capacity. If generating capacity is not then available it will be installed by the Bureau of Reclamation and charged to the State of Nevada.

This in brief is the method by which power may be obtained from Nevada's allotment. The initial procedure depends upon the applicant and not upon the State. If War Assets Administration is in a position to make such an application to the Colorado River Commission, the commission can thereafter proceed with the withdrawal, but not otherwise.

All of this and other details regarding the Nevada power allotment were brought out and discussed in much detail at the hearing held by the Senate Investigating Committee in Las Vegas on August 21 and 22. Various witnesses under War Assets Administration at Henderson were present, and also officials of WAA; all of whom should now be fully acquainted with the procedure Nevada must follow, and the restrictions and regulations governing power withdrawals.

Very truly yours,

ALPHEUS MERRELL SMITH, Secretary.

The commission engineering committee was instructed to go to Phoenix, Arizona, in compliance with a recommendation made by the
Vegas on BMP affairs by Senators Joseph R. McCarthy, George W. Malme, and John L. McClellan. Secretary Smith said he would thereafter write Mr. Larson. The Senate committee continued its hearings through August 20 and 21, and approved the measures taken by the Colorado River Commission, complimenting the commissioners upon their vigorous activity in preserving the great project intact for Nevada.

On August 25 the Secretary wrote Mr. Larson as follows in regard to obtaining power for the project:

COLORADO RIVER COMMISSION OF NEVADA

August 25, 1947

Jens Larson, General Counsel War Assets Administration, Washington, D.C.


Dear Sir: Receipt of your letter dated August 3, 1947, is acknowledged.

Your letter refers to two separate subjects: 1st, a Letter of Intent which was submitted by War Assets Administration to the Colorado River Commission of Nevada which when signed by the proper representatives of the Colorado River Commission conveys the information to War Assets Administration that it will enter into a contract to take over the power, water and sewerage utilities at Basic Magnesium Project, Henderson, Nevada.

This Letter of Intent dated July 3, 1947, was reviewed on August the 20th at which time by unanimous vote the Secretary was requested to inform War Assets Administration that it is the intention of the Commission to sign the said Letter of Intent if and when a satisfactory contract is entered into by the War Assets Administration and Southern California Edison Company for the delivery of electrical energy to present lessees operating at Basic Magnesium Project for a period of time which will be necessary for Nevada to install a generator for Nevada’s use, and for withdrawals of energy by War Assets Administration and/or its lessees to become effective under the General Regulations governing the use of energy from Hoover Dam, and also according to the laws of Nevada.

A committee appointed by the Commission, which has been working on the Interim Contract, and which has heretofore made contacts with the Edison Company and the City of Los Angeles and representatives of War Assets Administration was requested to again immediately proceed to Los Angeles and endeavor to have this contract executed by War Assets Administration and Edison Company. The Committee will meet with said representatives in Los Angeles tomorrow, August 26, and endeavor to expedite the interim contract, under which lessees now at B.M. Project will continuously receive low-priced energy. As stated before, the Colorado River Commission’s signature to the Letter of Intent to take over the facilities at BMP will depend upon the consummation of a satisfactory contract.

The second subject in your letter is a request that the State of Nevada, which would be made available to the Governors of the affected States, and he asked Governor Warren if he would consider having the Central Arizona Project handled in the same way that the Comprehensive Report for the entire Basin was handled. Governor Warren stated that all such reports would go to Mr. Purell, Director of Public Works, and that the same procedure would be followed as with the Comprehensive Report.

Chairman Norris then called upon Gilmore Tillman, Chief Counsel, Los Angeles Department of Water and Power, to lead the discussion on item 4 of the agenda, which concerned pending legislation to amend the Reclamation Law with respect to feasibility standards and repayment provisions.

Tillman explained that under the Reclamation Act of 1939 the Secretary of the Interior could first determine the total cost of any proposed project, then determine the amount which power could repay, and the amount water could repay. If these balanced out and could repay the cost, that project stood authorized by the finding of the Secretary of the Interior without action necessarily by Congress. He said it was the understanding of Congress apparently that included within the charges against commercial power, would be interest at 3 percent. He pointed out that a recent decision of the Solicitor of the Interior held squarely that they did not have to fix power rates to repay to the United States the capital charge to power, plus interest. The set effect of that was a bookkeeping arrangement by the Department of Interior by the terms of which they showed a single dollar from power revenue as representing the repayment of 3 percent interest, and at the same time that same dollar as representing a full dollar of capital repayment, so that a single dollar does double duty. Mr. Tillman stated that the Reclamation Association as a whole, took the matter up at its last session and endorsed the Rockwell Bill (H.R. 2878), making various changes in the Reclamation Project Act of 1939. The bill which is now pending before Congress provides that power rates must be fixed at an amount sufficient to repay in 78 years the capital allocated to power, with 24 percent interest. Two percent as interest and one-half of one percent toward the repayment of water capital.

Governor Warren questioned Tillman regarding use of the 2 percent by the Bureau of Reclamation under this bill. Mr. Tillman stated that it now goes into the Reclamation Fund and can be used only by subsequent congressional appropriation.

Governor Warren then commented on the specific situation of Possum Dam to the effect that the War Department had been authorized by Congress to construct this dam, and the last few months the Bureau of Reclamation has taken the position that if the Army is permitted to build the dam, it will be obliged to put the interest from power back into the general treasury, whereas if the bureau builds it, interest of 3 percent or 2 percent, or whatever it is, can be used to subsidize other phases of the project that couldn’t pay their own way.

Dowd stated that the bureau may contest that, but that was one reason the bureau was asked on its appropriation last year. He added that the House appropriations committee favored the holding in abeyance, the application of any interest for repayment of capital as proposed by the bureau under the solicitor’s opinion.
Tillman declared that it was the common feeling of his group that, if the interest rate is reduced in general from 3 to 2 percent, the same reduction should be applied in connection with Hoover Dam power, but that the Bureau of Reclamation has consistently refused to support that view and the committee has refused to add such a provision in a bill.

Governor Warren inquired whether the Army projects and the Reclamation projects would be on the same footing if the bill (H. R. 2873) were enacted into law. Dowd replied that generally they would, although under the Flood Control Act there is no interest set out. Governor Warren thought that the bill at least had some merits if it can aid in doing away with this outrageous situation whereby turmoil is created in the minds of people of a State or region. Mr. Dowd stated that a national power policy is actually needed.

Matthew said that the Rockwell bill had been referred to the Bureau of the Budget for a report, and that information has been received that it cannot understand how one-half of one percent interest collected as a part of the power revenue can be properly applied to the repayment of capital.

Franklin Thomas, California attorney, asked Tillman whether, if the Rockwell bill were adopted in present form, it would apply to the Central Arizona Project. Tillman was of the opinion that the last bill by Congress would control the situation and anything it chose to do in the way of additional subsidies for the Central Arizona Project would not be affected by this bill. Hewes pointed out that the bill (H. R. 2873) did break down present standards of feasibility and was fundamentally unsound.

The chairman brought up for discussion the matter of interstate relations. He stated that J. H. Stohler, president of the Colorado River Water Users Association, was at the Las Vegas meeting and it was agreed to see to what extent support might develop among the other States, particularly on the Treaty Administrative Bill, in an effort to work with any of the people in any of the States of the Colorado River Basin where there is a common ground upon which to meet to oppose harmful legislation and propose sound principles.

Governor Pettman, Smith and Shaver of the Nevada delegation pointed out various ways in which mutuality of interests might be developed and followed through with the other States of the Colorado River Basin. Governor Warren added his views in this connection and stated that it was desirable for every door to be left open whereby the western States could stand together in order to progress.

Shaw related that Mathews and he had made during the summer to secure cooperation from the Upper Basin States on the Treaty Administrative Bill, the Illumination Bill, and other objectives, and how assurances made at the time had been recently nullified by actions taken at a meeting of the Upper Basin States committee. At the same time, he expressed a willingness to keep trying whenever the other States were willing to get together. Dowd told of the experience in connection with the treaty bill provisions and the difficulties inherent in trying to get agreement. He felt that we should be and are working along to improve conditions regardless of the kind and type of opposition met.
Governor Pittman wired his reply as follows: June 23, 1947.

HON. PAT McCAHAN, Washington, D. C.: I am in receipt of wire from Senator McCarran setting forth contents of letters written to Nevada’s Representatives in Congress, and to me, in connection with the working out of plans for the disposal of Basic Magnesium Plant and facilities. In connection therewith I note that you suggest that we agree upon some competent man to represent Nevada in dealing with War Assets Administration. You are hereby advised that my selection is John V. Mueller, member of Nevada Colorado River Commission. Mueller was appointed some months ago to deal with the War Assets Administration, looking to Nevada’s taking over Basic Magnesium Plant together with transmission lines and water facilities. Mueller in my opinion is the proper person to represent Nevada in this matter. Regards.

VAIL PITTMAN, Governor of Nevada.

CARSON CITY, NEVADA, AUGUST 6, 1947

Copies of a “Letter of Intent” (Appendix No. 3) with respect to the State taking control of certain utilities at Basic Magnesium Project were distributed by the secretary. Mueller detailed his work in Washington, and said he expected an early agreement upon a plan for Nevada to take over and operate the entire project.

An interesting point came up with respect to water supply. Mueller said the Letter of Intent contains a provision for the commission to supply water to Las Vegas if it’s available, but that there would be very little water for that purpose. The War Department had requested four million gallons per day, after which, inclusive of the necessary water for Basic Magnesium Project, there would be little left.

There was much discussion as to the terms of the Letter of Intent and other matters relating to the proposed State operation of the utilities at Basic Magnesium Project, apart from operation of the entire Basic Magnesium Project.

On September 16, 1947, this agreement for the State to take over all utilities at Basic Magnesium Project was signed by the Colorado River Commission and by War Assets Administration (Appendix No. 3).

LAS VEGAS, NEVADA, AUGUST 20, 1947

Mr. Compton analyzed his company’s proposal to underwrite the installation of a so-called half-unit generator (45,000 kw). At this time it was agreed to give it further study, but Colorado had no action to be taken until the proposal by the Los Angeles Department of Water and Power to supply all energy, including stand-by, for Nevada had been received. Meanwhile, the City of Los Angeles had agreed to submit its detailed proposal by September 15, 1947.

The commission decided to sign the Letter of Intent (Appendix 3) when War Assets Administration had entered into a satisfactory contract with Edison and the city for energy during the time that would elapse before the State could either install or acquire generating equipment. The commission engineers and War Assets Administration representatives were asked to do all they could to hasten the execution of such an interim power contract.

The meeting concluded following remarks by several persons on the Litigation Bill and the statement by Governor Warren that differences could, and should be worked out for the mutual welfare of all the States involved. He pledged that every effort would be made to secure justice and harmony, but that at the present time he felt that only by a submission of the issue to the Supreme Court could settlement be accelerated and each State know upon what it had to plan for the future.

LAS VEGAS, NEVADA, JANUARY 6, 1948

Lawrence McNeil, President, McNeil Construction Company stated that he was ready to present his report on the Basic Magnesium Project. The chairman suggested that it be read aloud and discussed afterward.

Following the reading of the report, M. L. Godman stated that the War Department had now removed restrictions imposed under the National Securities Act regarding sale property at Basic Magnesium Project with the exception that in use by a Western Electro Chem. Co. McNeil said such removal of restrictions would be beneficial to the State’s operation as it would permit sale of parts of the plant by the State, subject to War Assets Administration approval, and also permit changes in buildings and more flexibility in operation by prospective lessees.

McNeil said his report had been completed before he had learned that the National Security Act had been lifted from the plant.

A summary of the report by McNeil Construction Company is attached as Appendix No. 9.

General discussion of the report ensued. The McNeil report indicates that a yearly profit of $29,814 will be made under the State operation if McNeil’s recommendations as to operations are carried out, as detailed in the attached report.

The fair value of the plant site property and the townsite facilities, including utility services and town facilities has been appraised at $11,817,648, according to McNeil’s report. The salvage value of the same is appraised at $12,447,910. The scrap value has been appraised at $5,654,069. These appraisals give no consideration to restrictions of sale under the National Security Act, existing at the time the report was prepared.

In arriving at a “fair use” value of the Henderson townsite property, and plant site, as determined by the revenue that can be produced during the life of the plant, in the light of present revenue, operating expense and potential additional revenue, the report recommends that the use value of the facilities be placed at not more than $2,500,000 payable over a period of fifteen years.

Kenneth Walsh came into the meeting at 11:15 a.m. and was asked by the chairman to expand upon and explain his statement before the Senate sub-committee on Basic Magnesium Project affairs in Las Vegas on January 9. The statement referred to indicated that Mr. Walsh and his associates would negotiate for the purchase of the plant for $25,000,000 and were prepared to pay $9,000,000 or $10,000,000 as a cash payment, pending agreement on a final price. Mr. Walsh was embarrassed by the chairman’s questioning, and said that his replies
to the question of Senator Malone and Senator McCarthy at the hearing, had not been well considered and his answers did not convey his thoughts; that he had no idea what the plant might be worth, and did not wish to interfere with the objective of the State to acquire the property, and that he had no plans or objectives for himself and associates whom he had been called before the senators. He agreed, however, to appear before a War Assets Administration board, including Wm. Godman, in Washington, D. C., the following week, but repeated his statement that he would not interfere with any proposal made by the State.

Irving Gombel, Chief of the Light Metals Division, War Assets Administration, informed Walsh that any proposal that might be offered Walsh would not contain the same terms that had been offered to the State, and if the project is offered for private sale it would have to be put up for bids. The State will take over and operate the plant at no profit, so all the profits from operations would apply on the purchase price, whereas, it is assumed that private capital would not be interested unless it paid profits to the stockholders.

Upon further questioning Walsh declined to reveal his associates or backers.

E. T. Ross of Stouffer Chemical Company, stated that his company, a large electric power user, could not get power at a low cost without the help of the State, and if a private concern should take over the plant, they could not operate without very low-priced power. He is not in favor of private operation of Basic Magnesium Project, and said that Walsh’s proposal had only served to “muddy the waters” of an orderly and reasonably rapid procedure for the State to assume the control, and to operate at cost, at least until a number of industries had been established.

Harvey McPhail, Chief of Power Utilization, U. S. Bureau of Reclamation, stated to the commission the reasons for the Bureau of Reclamation’s desire to own the two transmission lines from Boulder Dam to Basic Magnesium Project. He said it would effect a great economy in the interchange hook-up between Boulder Dam and Davis Dam, perhaps $1,000,000 in construction costs, which would be reflected in lower generation charges for Davis Dam power, of benefit to Nevada and all users of Davis Dam power, would also be relieved of the responsibility of operating and maintaining the two lines. Some objection to the plan was expected from the City of Los Angeles as the proposed hook-up would permit exchange of energy with the Metropolitan Water District’s system which City engineers say is the life of the City’s operation because the City’s energy which is subject to great fluctuations of load beyond safe capacity of Metropolitan’s transmission line.

Lloyd Compton stated that upon his own initiative he had gone alone to Phoenix, Arizona, to confer with the Arizona Power Authority, in an effort to secure a more economical and satisfactory proposal or agreement, for a generating capacity and stand-by set-up than the one that had been submitted to the commission by the Los Angeles Department of Water and Power. He had outlined the basis of an agreement with Arizona which he read to the commission. Mr. M. J. Dougherty, Chairman of the Arizona Power Authority, and N. Pike, Governor Pittman, Carson City, Nevada: There has just been delivered to me and to Congressman Russell and to the Junior Senator from Nevada a letter over the signature of Mayor General Robert M. Littlejohn. A similar letter is being transmitted to you. The full text of the letter is as follows: The War Assets Administration recently made a contract with the Industrial Research Corporation of Detroit, Michigan, to secure an Industrial Survey of the Basic Magnesium Plant at Las Vegas, Nevada, with a view to disposing of this plant to the best interest of the Federal Government and the State of Nevada. We are currently involved in paying out monthly a substantial sum of money for plant maintenance and protection. The best interest of the Federal Government necessitates eliminating these fixed charges through disposal of this plant at the earliest practicable date. It will take the industrial engineers sixty to ninety days to complete their survey. There are a number of major problems involved in finding a proper solution to the disposal problem and both the United States and the State of Nevada are involved. In order that the time in preparing plans may be reduced to a minimum and in order that the best interest of the State of Nevada be duly considered it seems to me that the War Assets Administration and the State of Nevada should work jointly in perfecting a saleable disposal plan. Currently the major problems requiring an immediate solution are: (1) Completion of a physical inventory of personal property, (2) Completion of industrial survey, (3) Finding a permanent solution to the water and power problem, (4) Filing the property with tenants as a result of action taken above, (5) The final disposal of the entire property. We need the continued advice of the State of Nevada in developing an over-all disposal program and in finding a solution to the problems set forth above. I therefore request the appointment of a single individual to represent the State of Nevada to work with this administration continuously for the next few months and assist us in developing programs and in solving problems in which the United States and the State of Nevada are mutually concerned. I am addressing a similar letter to Senator Malone, Representative Russell, and Governor Pittman of Nevada. I should like to ask further that you, Senator Malone, Representative Russell, and Governor Pittman, agree on the individual who is to represent the State of Nevada. May I further suggest that the individual selected by you four gentlemen be an outstanding business man who is thoroughly familiar with the local economic problems in your State. Cordially yours, signed Robert H. Littlejohn.” On receipt of this letter I have wired General Littlejohn here in Washington designating John V. Mueller as my choice of the individual to represent the State of Nevada to work with the War Assets Administration. Congressman Russell who was present in my office when I received the letter from General Littlejohn, is today also communicating with the General and he too is designating John Mueller as the choice to represent the State of Nevada. I hope that it will be in keeping with your best judgment that you also wire General Littlejohn designating Mueller to represent the State of Nevada to work with the War Assets Administration. Kindest regards.

PAT MCCAUSLAN.
and that would probably result in the destruction of the complete Basic Magnesium Project. The Governor also said:

"Your problems and ours are mutual, and we must earnestly want to work them out. Everyone of you may feel sure that we are going to do all we can to arrive at a good, fair, and practical solution of this question. But we cannot give you an answer now, for we do not know what it will be. We want to do all we can for the people out there at Henderson and we are working to that end with all the sincerity we have in our making."

Some members of the Nevada State Board of Control were present at this meeting. The law under which the commission had authority to acquire Basic Magnesium Project required the joint consent of the Board of Control and the Colorado River Commission. Some members of the Board of Control had felt they were not sufficiently familiar with the proposal to intelligently vote on it, and a few days prior to this meeting had asked the secretary of the commission in the absence of the Governor, who was out of the State at the time, to more fully acquaint them with the proposal and such steps as had been taken. Thereafter the secretary met with the Board of Control and detailed the measures taken up to that time and submitted copies of the Letter of Intent to take over the project.

The first and last draft of the Letter of Intent to take over Basic Magnesium Project was read and discussed by the Attorney General. It had been approved by the Administrator and the General Counsel of War Assets Administration. Approval as to form and legality by the Attorney General of Nevada was also required.

The Letter of Intent being an agreement for Nevada to take over control and operation of all utilities at Basic Magnesium Project, was formally approved by the commission. The text of this document as finally executed on October 6, 1947 is attached as Appendix No. 3.

A. J. Shaver, who had formerly been authorized and instructed to set up the utilities for the commission, made a brief report, and stated that payment of utility employees would have to be made out of present Colorado River Commission funds until the first returns came in from the utilities. Shaver was suggesting a complete reorganization of the utility organization so as to be ready when the commission took over the utilities on April 1.

At this meeting the commission voted to increase its application for Davis Dam power to one-third of the total plant output.

It was ordered that the State charge of one-tenth mill per kilowatt-hour be increased to two-tenths, as the Colorado River fund had decreased to about $600,000, and a further increase of expenses was expected.

Sustaining membership in the sum of $250 was voted for the Colorado River Water Users Association.
Edison and/or the City had agreed with them on a satisfactory plan for the use and payment of generator N-7.

Nevada—On January 22, 1948, your secretary was informed from Washington that the interim contract had been signed by the Secretary of the Interior.

Miner told his work in Washington with War Assets Administration in the preparation of a contract for Nevada to take control of Basic Magnesium Project.

A half-hour of discussion followed concerning the employment of a general manager for Basic Magnesium Project if the State takes control. Several names were discussed, but no action was taken.

A motion was passed to instruct A. J. Shaver to set up the operation of facilities and utilities at Basic Magnesium Project.

CARSON CITY, NEVADA, FEBRUARY 18, 1948

Shaver gave an account of work of the engineering committee in Los Angeles on February 9, 10, and 11. He said the committee first called on E. W. Rockwell, advisory engineer for the commission, on Monday morning, February 9, to whom Compton outlined a proposed new plan under which Southern Nevada Power Company would underwrite the cost of generator N-7 for the State. The plan would contemplate:

(a) acquisition of N-7 by Nevada on June 1, 1951;
(b) retention of our present interest and capacity in sec. 6-8, and
(c) acquisition of an allocation of Davis Dam energy, previously requested. The plan also provided for an extension of the Metropolitan Water District time of two years in which to exercise its option on N-7 time up to five years. The plan outlined would be in lieu of the City's proposal to Nevada. Rockwell thought the new proposal excellent and better than the City's proposal.

Shaver stated that in the afternoon the engineering committee met with representatives of the City in the Municipal Power and Light Building. Present for the City were Messrs. Vogel, Koldil, Marindale, Garman (at times) engineers, and John Mathews, attorney. The City was asked if they could reduce the kilowatt charge and the minimum obligation of their proposal. Marindale, spokesman, said they could make no reduction in the $7.50 per kilowatt charge. Before the conference ended on the following day, they said they would be willing to reduce or entirely eliminate the minimum obligation of 50,000 kilowatts and the kilowatt charge. Before the conference ended on the following day, he said they were willing to make additional suggestions. Both Shaver and Compton stated that at the time of this meeting there appeared to be no serious obstacles to the new plan.

Compton related his conference with the Arizona Power Authority on February 5 and 6. A Mr. Wingfield was chief representative for Arizona. Wingfield had formerly been employed by the power division of the Department of the Interior, and he is familiar with the Hoover

LAB VEGAS, NEVADA, MARCH 5, 1948

A committee from the town of Henderson, which had heard that as soon as the commission took charge of the utilities, housing rentals at Henderson would be increased, or that a charge would be made for electricity, water and service hereafter delivered free by the government was present, and several of the committee men made statements and presented reasons as to why no charge should be made in rentals, and suggesting that no change be made in the procedure from as it had been in the past under government control.

The unequivocal position of the commission was that every legitimate source of income should be taken advantage of in order to eliminate the losses at which the project had been operated by BPC and its successor, WAA, for otherwise neither the operation of the utilities or the project could successfully be undertaken by the State.

The committee from Henderson proposed:

1. If the utility service (light, water, sewerage, maintenance of household equipment, etc.) was to be charged for, the rent on the houses should be reduced to offset it.

2. Delay action with respect to the housing until the State can take over both the utilities and the plant at the same time.

3. When the State takes the utilities, War Assets Administration should provide operation and maintenance amounting to about $3,000 per month.

Henderson housing rentals, which were below the average for the Las Vegas area, and also included free utilities, were discussed at length. Representatives of Stauffer Chemical Co., and Guy F. Atkinson Co., who were present, were averse to a change, fearing an increase in rents of houses for their employees would be at once reflected by labor union demands for increases of pay. War Assets Administration representatives on the other hand advocated such an increased charge for utilities be made by the State, although they had not made such charge during their own operations.

Various phases of the problem were discussed, including a proposal to sell houses to employees at Basic Magnesium Project, but not to others. Governor Pittman explained to the Henderson committee that if the State took over the Basic Magnesium Project utilities only on April 1, the State would have no other source of revenue to supply the houses with electricity and water than what could be derived from a charge for same, but if both the Basic Magnesium Plant and the utilities were acquired at one and the same time, possibly a different plan could be worked out with the assistance of the unions and the lessees operating the plant. He said they all must realize that the State is not trying to make a profit, but it could not run behind for the Legislature had not set up any fund to provide payment if the commission ran behind. In case of a deficit, the State would have to turn the utilities back to War Assets Administration as quickly as possible,
to make room for others, why should not some of these be made to provide their own transformer facilities, since we need Bank Y. All we can get off it now is 39,000 KVA which is less than the load of Southern Nevada Power Company.

Compton said the bureau could not very well help itself with respect to the Boulder City load, and to help them out, he asked if the commission would have any objection to allowing the Bureau of Reclamation to use the No. 9 Bank at Basin for the length of time it would take them to secure the delivery of suitable transformers to supply the Boulder City load, and then return the No. 9 Bank to Basin at no cost to the Federal Government, War Assets, or the State of Nevada. In reply to a question by Mueller, Compton said that there should be a payment made by the bureau for the use of this equipment. In other words, the No. 9 Bank, and the No. 3 Bank (now at Parker Dam, but State property) would be rented to the bureau until the bureau can secure the additional equipment needed. Compton said he would take this up with the bureau and get its views for presentation at the next meeting of the commission. Mueller expressed approval, saying it would result in income for the commission, so as to own the transformers, and the suggested plan is the type of business we must now follow.

Shaver asked them: "When this Bank No. 3 is brought back from Parker Dam, where it now is in use by the bureau, would the bureau buy it or continue to rent it from us and place it in the Boulder Project, or would they acquire it by some other means and charge it to the Boulder Project? The bureau is now paying a rental of either $1,200 or $1,700 per month for Bank 3. Mueller said he thought it was close to $3,000 per month. Shaver said Nevada would like to have receive that revenue, on taking over B. M. Project. Compton said that with respect to the bureau paying to the Colorado River Commission a monthly lease rental, whatever lease or rental is agreed upon would have to take into consideration that when the bureau returns the transformer to the basic plant, the rental would stop. The Bureau of Reclamation would then have no further use for the transformer. But if they put it down in the vicinity of the Metropolitan District switchyard at Boulder, be thought Nevada should analyze the purposes it would be used for; how much of it will be used for Boulder City load, and how much of it might be used to supply standby to Nevada's power station. Then determine what the rental should be on the part of the bureau for its partial use of the bank. He said he thought Nevada might be engineering and/or physical difficulties that would prevent such an operation, but he would discuss it with the bureau. He considered that a suggestion which had been made by the bureau to put a transformer on top of the roof of the powerhouse for this purpose was impractical.

There followed a long exchange between Mueller and Smith regarding the Shasta Dam power situation. Mueller stated that when all elements of cost and expense were considered, the bureau's proposal would permit no lower rates—as low as would be possible under S. P. Co's new contract with P. G. & E. Co. Governor Pittman suggested that Smith discuss the contract with George contracts. Compton tried to keep Nevada's obligation down to $200,000 in discussions, seeking a minimum, for the reason that Southern Nevada Power Company would be called upon to underwrite the payments. No agreement was reached as to a joint procedure that would be acceptable to Southern Nevada Power Company and the commission, and it was the opinion of both Compton and Wingfield that the negotiations should be dropped for the time being.

Compton said the proposal of Southern Nevada Power Company to underwrite generator N-7 was subject to two conditions: First, to use advance payments by his company to build up a reserve fund as a "cushion," at which to draw for generation charges until we find ourselves with more machinery and equipment that we will need during the period we still must meet the $300,000 per year additional for generating equipment; and second, if N-7 should not be required to meet Nevada's energy requirements in the next few years, then find a way for that unit to be used by Edson and/or the City as a "riving unit" within the plant for maintenance purposes of other units undergoing repairs. He had discussed this with Edson Company who said they can use N-7 during maintenance periods. The City was not so positive as to their need of N-7 as a "riving unit," but thought it possible. He also said it would be necessary for Metropolitan Water District to agree to give advance notice of five years before exercising their option to take possession of N-7, instead of the presently required advance notice of two years, and also have them give further consideration of being relieved of having to take over N-7 in 1968. The Metropolitan District engineers consulted thought that their board of directors would approve of such an extension of the time of notice to be given prior to exercising their option. Compton was of the further opinion that the agreement of May, 1942, for power supply to BM-Plant, signed by Nevada, Edson, City, and Metropolitan district, would have to be amended in order to accomplish this. Compton suggested the following detailed procedure:

First, a letter from Colorado River Commission to Metropolitan Water District, requesting formal approval by authorized officials of their option, extending the time to notice to five years. Upon receipt of the district's approval, the commission should then address a letter to the Bureau of Reclamation requesting an amendment or modification of the agreement, entitled "Arranging of Power Supply for Defense Plant Corporation at BM-Plant." Consent to this change should be all that is required in order for Nevada to take over N-7.

In addition to possession of N-7, we would then have by Federal contract, 44,000 kilowatts of generating capacity in Sec. G-3 (Units A-1 and A-2). We can arrange to use that 44,000 as stand by. At our conference, Los Angeles seemed to think that when we acquire a major unit, our right to 44,000 kilowatts in Sec. G-3 would cease to exist. We do not think so, and do not think that Los Angeles will press the point, as they can make use of any idle capacity in Sec. G-3. At present Nevada uses about 35,000 kw. of Sec. G-3, which under the separate differing load factors amounts to about 207,000,000 kilowatt-hours per year.

Relative to Nevada's request for one unit at Davis Dam, or
200,000,000 kw.-hrs., our suggestion was that through exchange facilities, our Davis energy be given to the City at Davis, and we took an equal amount from the City’s units of Los Angeles units at Boulder. The City could also exchange its prospective allotment at Davis with Arizona for Boulder power, after Arizona’s generating units have been installed.

Compton stated that Arizona will at once request for its use the installation of Units A-3 and A-4, and Attorney Matthews of the City had drafted for them the form of a letter to be addressed to the City, as the government’s generating agent, formally requesting the installation. The proposal and letter will be presented to the Arizona Power Authority for approval at once. On February 18, it had not yet returned to the City by Arizona. Harvey McPhail, chief engineer of the Bureau of Reclamation Power Division had advised Compton that such a request should be in Washington within two weeks in order to be considered for an appropriation soon.

A further matter regarding the City’s proposal to generate for Nevada developed. The Arizona agents said they would protest delivery of generator N-7 to Nevada if Nevada entered into the proposed contract with the City, and they (Arizona) would apply for N-7 for use by Arizona. Opinion of members was that negotiations for N-7 had progressed so far in behalf of Nevada, that regardless of the type of contract or plan Nevada finally made for generating capacity, Arizona could not get N-7.

Compton was not satisfied with the way the bureau is handling transformer Bank Y. This bank was requested by Nevada and installed for its use. Soon thereafter, energy was set up by Kingman, Arizona, Needles, California, and the Bureau of Reclamation plant at Boulder, were also loaded onto it, and now it is fully loaded, with no extra capacity for Nevada. California Electric Power Company now supplies Kingman with 8,000 kilowatts through its own generating facilities, but has given notice it can no longer do so, and because of physical difficulties, within 90 days the Bureau of Reclamation will be obliged to put this additional load on Bank Y, forcing Southern Nevada Power Company to transfer that much additional load onto its own transformer at Basic, in order for Boulder City to have power. The bureau should make provision for taking care of Nevada’s load, and permit Nevada to utilize the transformer originally installed for the State.

With respect to N-7, Compton thought that an appropriate part of its capacity should be reserved for the early Nevada contracts, which are the Southern Nevada Power Company, Lincoln County Power District, and Overton District. He said that the commission should give very careful consideration to protecting the future needs and slow expansion of present contractors. He said their future needs should be definitely provided for, as well as their present demands. He stated that by official estimates, Overton District now used 5,000,000 kilowatt-hours per year, and 15,000,000 should be placed in escrow for that district; Lincoln County Power District uses 30,000,000 and should have 75,000,000 in escrow; Southern Nevada Power Company 142,000,000, and should have 300,000,000. In kilowatts, at present load factors, he said Overton would need 6,000, Lincoln 10,000, and Southern Nevada 70,000, total 77,000 kilowatts.

Entered into a new contract with Pacific Gas and Electric Company for sufficient energy to apparently meet all northern Nevada needs for several years. He had not seen the contract but the deal had been widely published in newspapers as a boom to Nevada, with statements that it would make ample power available for industry and that the rates would be lower. Smith said he had been asked recently by Harvey McPhail, chief electrical engineer for the Bureau of Reclamation, as to what Nevada’s intentions were, and if we had plans for marketing the energy we had asked for.

Smith said the success of the plan had been contingent upon transmission of the energy over the transmission lines of P. G. & E., and Sierra Pacific, into the Reno area, and sale of it as a block to Sierra Pacific for their markets. He inquired and was told that Sierra Pacific Company that an attempt to be made to do this had met with negative reception by Sierra Pacific, who are opposed to direct entry of Shasta Dam power into the area being served by them under Nevada franchise.

Smith thought the new P. G. & E. Sierra Pacific contract might forever prevent the advent of lower priced energy from Shasta Dam coming to Nevada. All Shasta Dam energy would now be sold to P. G. & E. at the dam, as the sole major marketing agency, and the additional requirements of Sierra Pacific Company would then be supplied by P. G. & E. and be marketed by Sierra Pacific, both being private companies which can do to a considerable extent control their rates. The terms of sale of energy to Sierra Pacific, and charges for transmission over the lines of P. G. & E. to a point in the Sierra Nevada mountains, plus the cost to Sierra Pacific for transmission over its own lines from the point of junction to Reno, would now determine the energy rate.

At this point Shaver, in order to have a statement in the record, referred to the situation developing at Boulder in regard to Transformer Bank Y. Technical discussion of location and use of machinery followed, showing that several agencies were now taking advantage of Bank Y, but that Southern Nevada Power Company was being forced out of Bank Y in part and onto their own transformer at Basic. Changes in the setup of transformers were recommended to overcome this trouble. Mueller asked if Bank Y had not been installed at the request of Nevada, and we therefore should have first call on its use. Smith said that although Bank Y had been put in for Nevada, and Nevada was obligated to make the payments on it, the bank, like all other machinery at the plant, remained the property of the United States. In short, we buy it, and pay for it, but the U. S. owns it. So when, as a matter of expediency, the bureau wished to help Metropolitan Water District sell its unused kilowatt-hours to Kingman, Arizona, and the easiest way was through our Bank Y because we were not then making use of its full capacity, the bureau used the idle capacity in the bank and credited us with that part of the charges. Then other similar loads were placed on the bank until now it is fully loaded, and there is no more capacity in it for Nevada. For a time this helped us by relief of a part of the carrying charges which lowered our costs, and is reflected in our rates, but now when we need the full 45,000 KVA of the bank we cannot get it, as other parties are on it.

Mueller said that as we are now being shoved off to a further extent
He said: "We realize that there are many more important things to be done, and we will proceed to carry those matters through to a successful conclusion as best we possibly can. It has been a great pleasure for me to sit with this commission, where everything is discussed in such a free and open manner. Everyone has been frank and honest, and their opinions have been given without reservations. I believe that in these respects we are not far from a common conclusion and accord, feeling that it is for the best interest of the State of Nevada."

Mueller said that last night he had been called by long distance telephone by Project Administrator Colonel John Reilly, who said he would need some assistance in being certain that the utilities are taken over, and inasmuch as we had appointed Mr. Shaver as our representative to do so, he thought it would be well to let Mr. Shaver know that he is going to be in a very busy man for about 30 days.

Cahalan asked when the State would take over the utilities at Basic Magnesium Project.

Mueller replied that War Assets Administration was very anxious to have us take over all of Basic Magnesium Project. He said: "That is one of the incentives for us to take over everything at once, both for the military plant, which is much more simple than to take out one particular item. Inasmuch as we have actual title and control of the utilities, we should let nothing interfere with taking them over as soon as possible. I am hopeful that procedure in taking over the plant will catch up with taking over the utilities, as it would simplify procedure."

Smith said action had been taken sometime ago by the Chamber of Commerce of Las Vegas looking toward the formation of a water district. This was about six months ago and the project seemed inactive. He inquired if the commission would like to take some action that might push it along. He suggested a letter to Mr. Archie Grant, chairman of their committee, asking what progress is being made.

Mueller said they were now actively going ahead, and Shaver said that he had learned that all the petitions were in, excepting one, and they wanted to get that one in before taking action. He said they already had enough signatures to call for the water district election. The chairman said that if there was no objection it would be the desire of the commission that the secretary address a letter to Mr. Grant inquiring as to progress. (The formation of such a district is primary to obtaining Mead Lake water for Las Vegas partly through the pipe line and pumping facilities now in control of the Colorado River Commission.)

Smith referred to the request by the Colorado River Commission for an allocation of 90,000 kilowatts of energy per year from Shasta Dam power plant, for withdrawal and use as needed in northern Nevada, made on June 4, 1947. He said that since the request was made it had been consented to by the Bureau of Reclamation subject to availability of transmission facilities, and that the bureau had prepared and had submitted to the commission a tentative contract.

(Copies of said contract had been sent to all members of the commission and its engineers by the secretary.)

Smith said that since the contract had been received, the Sierra Pacific Power Company, apparently to forestall effective action on the part of the State and the bureau to bring in lower-priced power, had Governor Pittman remarked that was about the limit of the one million generator to be acquired, and that the present 4,000 kilowatts would not be enough for B. M. Project and stand-by. Compton said that when Arizona came in for Boulder power, and we also had another 45,000 kilowatts at Davis Dam, then by economical coordination of loads, we would have much extra capacity. Present Basic Magnesium Project load is about 220,000,000 kilowatt-hours, and calls for 35,000 kilowatt capacity.

Compton was asked to explain his offer to underwrite N-7. He replied that Southern Nevada Power Company would make an advance payment of $15,000 per month, beginning now, to the State of Nevada, for transmission to the Bureau of Reclamation as a credit, which would be in addition to billing for energy actually used. This would continue for four years, or until a credit of $1,500,000 had been accumulated. At the end of that time, when payments on N-7 began, his company would pay the full charge of about $300,000 annually. Similar advance payments are now being made by the municipalities of Burbank and Glendale, to build up their credit. The cost of N-7 and the related necessary machinery will be between four and five million dollars. The annual payments will be about $300,000 per year. The continuing payments on Sec. 1-3 will be about $10,000 per year. Mueller said he thought a resolution to accept the proposal of Southern Nevada Power Company and for Nevada to take over N-7 was now in order. He therefore made the following motion:

"I move that the Colorado River Commission take all steps necessary to acquire N-7; all steps necessary to see that the Southern Nevada Power Company properly underwrites the cost thereof, and that all proper steps are taken to see that the Southern Nevada Power Company provides the financial cushion it has offered."

Smith asked if the proposed advance payments were not in the nature of a loan to the commission, which would be repaid later as a credit on power bills which would be owed to the State. Compton replied that he did not so consider the advance payments, and that they would be an operating expense, as a cost of power. They would come back to Southern Nevada Power Company in installment credit over a period of years to be agreed upon. He said they should be considered as a part of the cost of production of power, and would be reflected in the rates to the company's consumers.

Shaver asked if the advance payments could not be retained by the commission on its own books, instead of being an advance payment to the Bureau of Reclamation.

Compton replied that the Bureau has advanced $5,000,000 to install this N-7 machinery and equipment, and will be charging the State 3 percent interest on that fund advanced. When we make advance payment to them—say for easy figuring, of $1,000,000, the Bureau of Reclamation is then out of pocket net $4,000,000, and they will charge us interest only on the $4,000,000; therefore, by making the advance payments direct to the Bureau of Reclamation, those advance payments decrease the State's payment of the 3 percent interest charges on the equivalent sum of money.

Compton said that few, if any of the lessons at Basic Magnesium Project, were able or willing to enter into long-term contracts. His
proposal provided a means for them to obtain power on short notice, for which his company took the risk. For his own prospective requirements far less power than a full unit would be necessary. In assuming the obligation for a full unit, a building up of reserve money was necessary, for otherwise they might not be able to meet the annual payments when due, if their revenue from power sales should decrease.

Smith inquired if Compton could estimate what energy rate losses at Basic Magnesium Project would be required to pay under the new program. Compton replied that he would suggest, as the initial operation, a charge of 86 per kilowatt-hour (90 cents a kilowatt-month), which is the same charge as they are now paying, plus the Boulder firm-energy rate, as quoted to the lessee for Boulder energy. At a 70 percent load factor, the fixed charges would be approximately one million, and with an assumed falling water rate of 1.26 mills, would make a cost of 2.18 mills per kilowatt-hour delivered at 230,000 volts at the switchyard at Boulder. If the Bureau of Reclamation is operating the two Basic Magnesium Lines from Boulder to Basic, under the proposed Davis operation, and would make a charge of 5 mills per kilowatt-hour for transmitting State of Nevada energy from Boulder to the Basic Magnesium Project, that would make a cost of 2.78 mills at Basic. He said he believes that losses paying 5 mills per kilowatt-hour could make a successful operation, with this initial charge of 86 per kilowatt-hour, and after the State had an experience record, quite likely the rate could be adjusted downward.

Shaver asked if the "wheeling" charge of .5 mill from the 230 KV bus at Boulder to the 15.8 KV bus at Basic did not also include the distribution cost inside the Basic Magnesium Project plant grounds.

Compton replied that the inside-plant distribution would be small, and he thought it could be included in the .5 mill charge.

Smith said he wished to have his position on the Southern Nevada Power Company proposal perfectly clear before voting on the resolution; which was his understanding that N.P. would be underwritten as proposed, without any strings being tied to the proposal by Southern Nevada Power Company, unless it might be that the commission reserves an adequate amount of power to meet the future needs of the present State contractors.

Compton stated that the statement was correct, and repeated that he believed the advance payments were necessary, because his company was agreeing to underwrite a generator very much larger than would be necessary if their own needs alone were considered in order to meet their demands for the next 5 or 10-year period.

Mueller stated that this burden would fall upon Southern Nevada Power Company alone, for Lincoln County Power District cannot be called upon for any part of its, or be held liable for any part of it. That district is a not-for-profit municipality. Their financial set-up does not permit them to be mortgaged or take on any financial liability until their power bonds are paid, bonds bought in part by the government, in order to construct a transmission line to Pinchot for their use. Overton Power District's use of energy is small and they could not be of much help. The Southern Nevada Power Company must bear the risk, and for that reason he believed we, the Colorado River Commission, should seek to accumulate the advance payments.

had learned that one mill was satisfactory to both Edison and to California Electric Company and that informally he knew it would be satisfactory to the City when brought before their board of directors for action.

Shaver further stated that it had been agreed that if the terms were acceptable to all parties, he was to send a letter addressed to City, Edison, and California Electric, stating the terms of the compromise and the arguments upon which it was based, and that the commission will, for the State contractors, accept a ruling of one mill on these overdrafts created during the operating year of 1946-1947. With the commission's assent, he would draft such a letter to be sent by the Secretary to the City, Edison, and California Electric.

Smith moved that the compromise on payment of the Nevada overdraft at Boulder Dam Plant arrived at by Shaver and the California allottees be approved, and that the secretary be instructed to address letters to the interested parties that the compromise proposal would be accepted. Cahalan seconded the motion which was carried by unanimous vote.

Governor Potter stated that the time had come when we must hasten the proposed contract for sale of the Basic Magnesium Plant at Henderon to the State of Nevada by War Assets Administration. He said all of the men present had read the proposed contract and were familiar with it. He said a motion should be made that will tend to bring the deal to a head in the shortest possible time.

Cahalan then proposed the following resolution:

WITNESSES. The War Assets Administration has submitted to the Colorado River Commission, the fourth draft of a Letter of Intent concerning the acquisition of Basic Magnesium Plant; and

WITNESSES. The Colorado River Commission after careful analysis of the terms and conditions of said Letter of Intent, do approve in principle said Letter; and

WITNESSES. It is the sense of this commission that in making over said Magnesium Plant, that great and manifold benefits will accrue to the Federal Government, and the State of Nevada as a whole, and particularly to Southern Nevada, where this project is located in close proximity to the great Boulder Canyon Project.

NOW THEREFORE, Be it Resolved, That John V. Mueller be authorized and instructed to proceed to Washington at an early date to confer with the War Assets Administration with a view to bringing negotiations to an early conclusion, in order that the State of Nevada may take over Basic Magnesium Plant without further delay.

The motion was seconded by Thompson, and was passed by unanimous vote. Cahalan said he wished to congratulate the Governor, for the record, for the able manner in which he had carried on the negotiations; to congratulate Mr. Mueller, and the other members of the commission, and to say on behalf of Southern Nevada that he thought this was the most important thing that has happened in the history of the State since the construction of Boulder Dam. The Governor thanked Cahalan and said he conceived in the idea that this was the most important development that had happened in the history of Nevada for a long time, and the most important act of the commission since its inception.
amount of 22,689,259 kilowatt-hours. Martindale some time previously had requested that we give this our attention without too much delay. Shaver said, "The commission authorized me, as their engineer, to settle the matter. I talked with Martindale Thursday morning, in the presence of Kolil, Vogel, also representing the City, and also two men from Edison Company, one of them named Mason. This overdrawn affects the City of Los Angeles, the Southern California Edison Company, and California Electric Company, because the payment, if any is made, will be prorated between them in the ratio of 50, 40, and 5 percent, respectively. We all agreed on the amount of energy overdrawn as 19,570,387 kilowatt-hours."

Compton interrupted, saying that was Southern Nevada Power Company's portion, that the total overdraw was 22,689,259, which Shaver said was correct. Continuing, Shaver said, "Lincoln County Power District's overdraw was 1,732,157, Overton District 1,884,715." Shaver asked Martindale to submit his proposal for settling the overdraw. Martindale asked Kolil to submit figures concerning the cost of the overdraw. Kolil quoted the cost under which Edison Company and the City agreed to supply Arizona with steam-generated energy. I was not interested in any figure like five or six mills. They then quoted a figure something like 3.86 mills as being their oil increment cost, and Kolil had that cost based on the prorated cost at each of the City's four steam plants, the cost at each differing slightly.

"Martindale suggested that since Nevada has already paid the "falling water" charge, and have already paid the generating charges, not including, or not to be excluded from the cost of the two sections, the net cost, or net value of the overdraw was about 2.06 mills. Martindale suggested that since the overdraw had been created by Nevada contractors through no fault of theirs particularly, and was not allowed through any particular fault of the City, but was a condition created by a series of events brought about by the discussion of certain items brought up in our Withdrawal No. 14, and Relinquishment No. 9, that each party take a half share of the burden. This brought the figure down to 1.03 mills as a net result. I made a suggestion that Nevada be allowed to pay 3 mills, but in kilowatt-hours. We could do this by over-obligating ourselves this year or next and deliberately returning those kilowatt-hours to them as secondary energy. They would pay the falling water rate for secondary energy of something under 4 mills. We would have paid for the falling water charge of roughly 1.35 mills in falling water in this event would be a little under one mill—.8 or .9 of a mill. Nevada could pay this in the next year or two, in this way, without cash obligation. The City and Edison thought it would be desirable to settle the 1946–1947 overdraw in money, now, before the end of the current operating year. They were willing to suggest to their respective boards that they be repaid at a rate of one mill. I said I would report to the Nevada contractors, which I have done. Compton asked if there was a mill figure was acceptable to his company. Lincoln District made no commitment, but indicated that it would be satisfactory if O.K. with Overton District, the officers of which I have not yet had time to contact."

Compton said that, by telephone that morning to Martindale, he

as a "cushion" available, especially in case of a depression, to help meet future payments.

Cahlan asked if the proposal is accepted, would it be necessary for lessees at Basic Magnesium Project plant to put up a guarantee to the Colorado River Commission for their power, or would Southern Nevada Power Company take over that responsibility? Compton replied, "As far as the generation of that power—that interpretation that you have stated is correct. Their (the lessees) obligation to the Colorado River Commission of Nevada would be that obligation incurred by the Colorado River Commission in withdrawing the kilowatt-hours of energy which they had advised the commission they would need for their operation. The Colorado River Commission would have to protect itself for that obligation incurred in its withdrawal of the power, or the kilowatt-hours, by asking the lessees to secure to whatever the amount they agree upon; the obligation incurred by the State, only insofar as that obligation is computed, based upon the withdrawn kilowatt-hours. As far as the generating machine or the annual fixed charges upon the generating machine which will be used to supply power to the lessees, the Southern Nevada Power Company is underwriting that obligation for the benefit of Nevada."

Cahlan asked what the obligation of the lessees would be, approximately.

Compton said, "The obligation of the lessees would be the Boulder firm energy rate, estimated at present at 1.28 mills; times the number of years that would be required by the State of Nevada to relinquish that energy under the General Rules and Regulations. If one kilowatt-hour is withdrawn by the lessee at 1.28 mills, and the lessee then advises the commission that he wishes to relinquish that energy, the commission would advise the Secretary in accordance with the Rules and Regulations, the State obligation—of it doesn't use that power and it takes three years to relinquish that energy, the State's obligation would be 1.28 times 3, or 3.84 mills per kilowatt-hour times the number of kilowatt-hours he had withdrawn for his account."

Governor Pittman asked if there was a second to the motion before the commission. It was seconded by Smith, and upon vote was passed unanimously.

Cahlan asked if the Secretary was required to make a complete record of all the proceedings and was informed by Governor Pittman that he believed recorded all proceedings, clerical and otherwise, and did all of the official work, as his duty. Mussler said he thought the Governor should be congratulated, as he considered this to have been the most "forward move" ever taken by the Colorado River Commission. He said: "We have been talking
for months, made many trips, done a great many things. We may have taken a little more time than we should have, but I think we've all been diligent. But we have, in my opinion, secured a tremendous proportion of our energy at Boulder Dam at the least possible cost, and we certainly have not divided the State in any single interest's worth of liability.

The Governor thanked Mueller, and assured the commission that he greatly appreciated the fine cooperation and work done by the members. The Governor said: "I know the engineers have worked diligently and have made many trips to Los Angeles to confer with the City of Los Angeles, the Southern Edison Company, and other interested parties. I think the members, as a whole, are to be congratulated for working out this excellent plan. I think that Mr. Compton has rendered valuable service in bringing this solution about."

Smith said that a number of steps must now be taken, the first of which were given in a letter received by him that morning from Shaver, which he read to the commission as follows:

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

Following our Engineering Committee discussions with the City of Los Angeles last week, and your conversation with me subsequent thereto, I would like to make the following recommendations:

That the State of Nevada take these four steps in securing generating capacity at Boulder (Hoover) Power plant:

1. Request the retention of N-7 by the State of Nevada on June 1, 1933.
2. Retain our interest in present generating capacity in Section G-3.
3. Reaffirm our request for an allocation of Davis Dam energy.
4. Enter into negotiations with Metropolitan Water District for the extension of the "recapture" time on N-7.

I believe these steps are necessary, inasmuch as we cannot look forward to any relief in the terms of the Los Angeles proposal, and it would appear that the State of Nevada will protect itself by taking such steps.

In this manner, we acquire the use of generator N-7, and if necessary may, if desirable, continue our conversations with the City of Los Angeles or the Arizona Power Authority, or we may proceed independently of either.

With this programming of Nevada's needs, we remain an allottee of Boulder energy and not a "purchaser" of capacity from the City of Los Angeles.

I would suggest also, if these steps are taken, that Nevada meet with the Arizona Power Authority, the City of Los Angeles, and the other operating agencies, the Metropolitan Water District, and the Bureau of Reclamation, to formulate plans and suggest operating procedure, looking toward the most efficient use of Boulder facilities and the delivery of energy to all allottees.

Very truly yours,
A. J. SHaver, Resident Engineer.

Mueller stated that he had had a telephone long-distance call that morning from War Assets Administration asking him to present to the Colorado River Commission a request on the part of the W.A.A for an option on N-7 to be made officially by the Colorado River Commission. He suggested that the commission ask W.A.A. to place any ownership or claim W.A.A. may have to N-7 in the form of an option to Nevada, or whatever form the attorney general thinks is proper, and that it be made a part of the Letter of Intent covering the B. M. Project utilities, in order that its transfer to Nevada may be facilitated. He said he had every reason to think W.A.A. would do it, but they would like an official request from the commission.

Mueller then moved that the secretary of the commission notify the W.A.A. that it is the desire of the commission to have an option on N-7 made a part of the Letter of Intent, if not, he made an option, such instrument as is recommended by the attorney general. The motion was seconded by Thompson and unanimously carried.

Cahall asked if the commission should act on the recommendations of Shaver.

Smith said it was his opinion that Shaver's recommendations should be followed up at once.

Compton said that the motion first passed would necessitate the taking over of N-7, and require following the sequence of steps set out in Shaver's letter. The first step would be to request the retention of N-7 by the State of Nevada. That would require correspondence, or the proper letter by the secretary of the commission to the M.W.D., and when M.W.D. have advised the commission that their board of directors are agreeable to changing their present option of two years by extending it to five years, in consideration of being relieved of their obligation in 1936, then the next step would be to advise the Bureau of Reclamation in order that the agreement of 1942, to which Nevada is a party, by which Defense Plant Corporation obtained energy from Nevada, could properly be revised or amended to provide for the modification of the option and relief from the obligation; that the reaffirming of the State's request for an allocation of Davis Dam energy also be done. He said he believed that within a week or ten days the Bureau of Reclamation would address a request to the commission asking them to reaffirm their former request for energy from Davis Dam.

Compton then requested that Shaver describe the steps taken by which the settlement was arrived at with the City and Edison Company, on Thursday of the past week in Los Angeles, regarding the overdraft of kilowatt-hours incurred by the State's contractors during the year of operation ending May 31, 1947.

Mueller moved that the Shaver letter of February 16, subject to the consent of the members of the engineering committee, all of whom were present, be submitted as the report of the engineering committee. The motion was passed.

Shaver then proceeded with an account of the discussions had with Roy Martinula representing the City of Los Angeles, regarding the overdraft of energy made by Nevada contractors during the operating year 1946-1947. Our contractors overdraw their obligations in the
for months, made many trips, done a great many things. We may have taken a little more time than we should have, but I think we’ve all been diligent. But we have, in my opinion, secured a tremendous proportion of our energy at Boulder Dam at the least possible cost, and we certainly have not received the State in one single nickel’s worth of liability.”

The Governor thanked Mueller, and assured the commission that he greatly appreciated the fine cooperation and work done by the members. The Governor said: “I know the engineers have worked diligently and have made many trips to Los Angeles to confer with the City of Los Angeles, the Southern Edison Company, and other interested parties. I think the members, as a whole, are to be congratulated for working out this excellent plan. I think that Mr. Compton has rendered valuable service in bringing this solution about.”

Smith said that a number of steps must now be taken, the first of which were given in a letter received by him that morning. From Shaver, which he read to the commission as follows:

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

Following our Engineering Committee discussions with the City of Los Angeles last week, and your conversation with me subsequent thereto, I would like to make the following recommendations:

That the State of Nevada take these four steps in securing generating capacity at Boulder (Hoover) Power plant.

(1) Request the retention of N-7 by the State of Nevada on June 1, 1943.

(2) Retain our interest in present generating capacity in Section G-3.

(3) Reaffirm our request for an allocation of Davis Dam energy.

(4) Enter into negotiations with Metropolitan Water District for the extension of the “recapture” time on N-7.

I believe these steps are necessary, inasmuch as we cannot look forward to any relief in the terms of the Los Angeles proposal, and it would appear that the State of Nevada will protect itself by taking such steps.

In this manner, we acquire the use of generator N-7, and if necessary we may, if desirable, continue our conversations with the City of Los Angeles or the Arizona Power Authority, or we may proceed independently of either.

With this programming of Nevada’s needs, we remain an allottee of Boulder energy and not a “purchaser” of capacity from the City of Los Angeles.

I would suggest also, if these steps are taken, that Nevada meet with the Arizona Power Authority, the City of Los Angeles, and the other operating agencies, the Metropolitan Water District, and the Bureau of Reclamation, to formulate plans and suggest operating procedure, looking toward the most efficient use of Boulder facilities and the delivery of energy to all allottees.

Very truly yours,

A. J. SHAVER, Resident Engineer.

Mueller stated that he had had a telephone long-distance call that morning from War Assets Administration asking him to present to the Colorado River Commission a request on the part of the WAA for an option on N-7 to be made officially by the Colorado River Commission. He suggested that the commission ask WAA to place any ownership or claim WAA may have to N-7 in the form of an option to Nevada, or whatever form the attorney general thinks is proper, and that it be made a part of the Letter of Intent covering the B.M. Project utilities in order that its transfer to Nevada may be facilitated. He said he had every reason to think WAA would do it, but they would like an official request from the commission.

Mueller then moved that the secretary of the commission notify the WAA that it is the desire of the commission to have an option on N-7 made a part of the Letter of Intent, or if not, be made on an option, such instrument as is recommended by the attorney general.

Cahalan asked if the commission should act on the recommendations of Shaver.

Smith said it was his opinion that Shaver’s recommendations should be followed up at once.

Compton said that the motion first passed would necessitate the taking over of N-7, and require following the sequence of steps set out in Shaver’s letter. The first step would be to request the retention of N-7 by the State of Nevada. That would require correspondence, or the proper letters by the secretary of the commission to the MWD, and when MWD has advised the commission that their board of directors are agreeable to changing their present option of two years by extending it to five years, in consideration of being relieved of their obligation in 1966, then the next step would be to advise the Bureau of Reclamation in order that the agreement of 1942, to which Nevada is a party, by which Defense Plant Corporation obtained energy from Nevada, could possibly be revised or amended to provide for the modification of the option and relief from the obligation; that the reaffirming of the State’s request for an allocation of Davis Dam energy also be done. He said he believed that within a week or ten days the Bureau of Reclamation would address a request to the commission asking them to reaffirm their former request for energy from Davis Dam.

Compton then requested that Shaver describe the steps taken by which a settlement was arrived at with the City and Edison Company, on Thursday of the past week in Los Angeles, regarding the overdraft of kilowatt-hours incurred by the State’s contractors during the year of operation ending May 31, 1947.

Muller moved that the Shaver letter of February 16, subject to the consent of the members of the engineering committee, all of whom were present, be submitted as the report of the engineering committee. The motion was passed.

Shaver then proceeded with an accounts of the discussions had with Roy Mearsdale representing the City of Los Angeles, regarding the overdraft of energy made by Nevada contractors during the operating year 1946-1947. Our contractors overran their obligations in the
entire Basic Magnesium plant together with all domestic water facilities, power facilities, and housing facilities connected therewith.

As I stated to you this morning, I am most anxious to encourage and promote industry at the site of this great plant and I feel certain that we can accomplish this result if the burden is not made too great on the State of Nevada and if a definite policy is established for future use of the plant by the State of Nevada, taking over the same under its priority.

I believe that such a meeting as I have suggested, on the location of this property, will readily show the need for immediate action of some nature. I am convinced that as the matter now stands the potential value of this great plant is being seriously impaired by disposal of component parts which are essentially necessary to the operation of any industry which might acquire the same for the purpose of continued operation.

I know of no agency or department of the government other than the ones referred to above, which might have an interest in the matter or have authority to act in the matter. However, if there are such, I assure you, that it has been an oversight on my part not to have mentioned the same, and I respectfully suggest that such agency which I may have overlooked, be also represented at the meeting.

Inasmuch as I understood that this matter would be referred by you to Mr. Steelman for consideration, may I respectfully suggest that you likewise refer this letter to him?

I am grateful for your kind expression of concern in this matter and for the opportunity given me to discuss these problems with you today.

Very respectfully,

Pay McCarren.

The secretary was instructed to write to the Nevada Congressional delegation urging them to sponsor and try to obtain enactment of legislation for payment of revenue to Nevada in lieu of taxes at Davis Dam, similar to that in effect at Boulder Dam. This was done and Senator McCarran prepared and presented appropriate legislation in December 1947, but it met with too strong opposition, and was not successful.

The secretary was ordered to write the Nevada Congressional delegation and urge on behalf of the Commission that the appropriation to carry on work at Davis Dam include funds for the construction of a power transmission line from Davis Dam to Boulder Dam.

The Commission at this meeting amended its former request for Davis Dam energy, increasing the order to one-third of the total plant output. As formerly stated, Nevada was eventually granted one-fourth of the total Davis power, to be taken and used when made available.

CARSON CITY, NEVADA, MARCH 22, 1947

Present by invitation were representatives of the power division of Region No. II, U. S. Bureau of Reclamation, to discuss Nevada's interest in Shasta Dam power, also H. F. McPhail, Director, Branch of Power Utilization, Bureau of Reclamation. McPhail's presence was due to the following letter from the Secretary:

The City contends that each Nevada withdrawal in kilowatt-hours should not exceed a maximum demand of 106 percent in kilowatts or horsepower. The Nevada engineers held that so long as the total of all withdrawals made in the past have a combined demand of less than 100 percent, for the total State's load, the State is entitled under the General Regulations to more kilowatt-hours from its total allocated generating capacity, or a total of up to 100 percent. The present total State system load factor being only 36 percent, which is very low, the commission's engineers held that the commission had considerable generating capacity already withdrawn upon which to generate additional kilowatt-hours, and until this capacity had been used up, they should be permitted to withdraw kilowatt-hours without designating any, or at least a very low additional demand. The California allottees were inclined to the view that each separate withdrawal should be based on a demand not to exceed 100% regardless of the total system load demand.

The Bureau of Reclamation at a later date upheld the position of the State, and withdrawals in kilowatt-hours are now being made on the capacity allotted in the past to each contractor, until such capacity has been exhausted on the basis of 106 percent load factor.

LAS VEGAS, NEVADA, OCTOBER 24, 1946

The commission and the City had been negotiating a proposal suggested by the commission to have the City install generators and generate and supply all of Nevada's energy at agreed charges. Apprehension at delay by the City in preparing a contract to supply the State with said generating capacity was expressed, also delay on all sides in working out a settlement on the Nevada energy withdrawals question. Ultimately the withdrawals situation was cleared up.

During this time the commission, through Senator McCarran, had initiated studies looking to acquisition of Basic Magnesium Project, which tentatively entailed the commission taking over major unit generator designated as No. 1, which had been installed for the magnesium plant during the war, and upon which War Assets Administration was still obligated for annual charges amounting to about $50,000 per year, for the war. This was under consideration, the City withdrew its proposal to install machinery and generate energy for the State. This did not inconvenience the State, but it rendered useless the great amount of time and expense that had been incurred both by the State and City in working on the proposal with the City.

War Assets Administration had succeeded Reconstruction Finance Corporation in the management of Basic Magnesium Project, and H. J. Atkinson Company had succeeded J. M. Montgomery Company as agent for War Assets Administration at Basic. The commission had experienced some difficulty in obtaining copies of its "Letters of Intent" under which leases were operating at Basic, due to reluctance of both Reconstruction Finance Corporation and War Assets Administration to send them out prior to making firm contracts.

Several matters of far-reaching importance were discussed, but no action was taken. These included possibility of exchange of energy whereby California allottees would receive Boulder power in exchange for Shasta Dam power for use in northern Nevada. The Sierra Pacific
amount of 22,688,259 kilowatt-hours. Martindale some time previously had requested that we give this our attention without too much delay. Shaver said, "The commission authorized me, as their engineer, to settle the matter. I talked with Martindale Thursday morning, in the presence of Kool, Vogel, also representing the City, and also two men from Edison Company, one of them named Mason. This overdraw affects the City of Los Angeles, the Southern California Edison Company, and California Electric Company, because the payment, if any is made, will be prorated between them in the ratio of 50, 40, and 5 percent, respectively. We all agreed on the amount of energy overdrawn as 19,570,367 kilowatt-hours."

Compton interrupted, saying that we Southern Nevada Power Company's portion, that the total overdraw was 22,688,259, which Shaver said was correct. Continuing, Shaver said, "Lincoln County Power District's overdraw was 1,782,157; Overton District 1,386,715." Shaver asked Martindale to submit his proposal for settling the overdraw. Martindale asked Kool to submit figures concerning the cost of the overdraw. Kool quoted the cost under which Edison Company and the City agreed to supply Arizona with steam-generated energy. I said I was not interested in any figure like five or six mills. They then quoted a figure something like 3.86 mills as being their oil increment cost, and Kool had that cost based on the prorated cost at each of the City's four steam plants, the cost at each differing slightly.

Martindale suggested that since Nevada has already paid the "falling water" charge, and have already paid the generating charges, not including, or not to be excluded from the cost of the two sections, the net cost, or net value of the overdraw was about 2.96 mills. Martindale suggested that since the overdraw had been created by Nevada contractors through no fault of theirs particularly, and it was not allowed through any particular fault of the City, but was a condition created by a series of events brought about by the discussion of certain items brought up in our Withdrawal No. 14, and Reimbursement No. 5, that each party take a half share of the burden. This brought the figure down to 1.03 mills as a net result. I made a suggestion that Nevada be allowed to pay its share of the cost of the overdraw, 1.03 mills. We could do this by over-obligating ourselves this year or next and deliberately returning those kilowatt-hours to them as secondary energy. They would pay the falling water rate for secondary energy of something under 4 mills. We would have paid for the falling-water charge of roughly 1.35 mills. The difference of 2.96 mills in falling water in this event would be a little under one mill—.8 or .9 of a mill. Nevada could pay this in the next year or two, in this way, without cash obligation. The City and Edison thought it would be desirable to settle the 1946-1947 overdraw in money, now, before the end of the current operating year. They were willing to suggest to their respective boards that they be repaid at a rate of one mill. I said I would report to the Nevada contractors, which I have done. Compton asked if there was a one mill figure was acceptable to the company. Lincoln District made no commitment, but indicated that it would be satisfactory if O.K. with Overton District, the officers of which I have not yet had time to contact."

Compton said that, by telephone that morning to Martindale, he as a "cushion" available, especially in case of a depression, to help meet future payments.

Cahlan asked if that the proposal is accepted, would it be necessary for lessees at Basic Magnesium Project plant to put up a guarantee to the Colorado River Commission for their power, or would Southern Nevada Power Company take over that responsibility?

Compton replied that the Southern Nevada Power Company would be under obligation to supply power to the machines at Basic. The leases would be required to obligate themselves to the commission for their energy needs. Their obligation to the commission would be that the commission incurred in withdrawing the kilowatt-hours for their operations, under the terms of the General Regulations governing withdrawal of power from Boulder Plant by Nevada.

In response to a question by Cahlan as to whether the leases would be required to post guarantees in advance of receiving power, Compton replied: "As far as the generation of that power—that interpretation that you have stated is correct. Their (the lessees') obligation to the Colorado River Commission of Nevada would be that obligation incurred by the Colorado River Commission in withdrawing the kilowatt-hours of energy which they had advised the commission they would need for their operation. The Colorado River Commission would have to protect itself for that obligation incurred in its withdrawal of the power, or the kilowatt-hours, by asking the lessees to secure to whatever the amount they agree upon; the obligation incurred by the State, only insofar as that obligation is computed, based upon the withdrawn kilowatt-hours. As far as the generating machine or the annual fixed charges upon the generating machine which will be used to supply power to the lessees, the Southern Nevada Power Company is underwriting that obligation for the benefit of Nevada."

Cahlan asked what the obligation of the lessees would be, approximately.

Compton said: "The obligation of the lease would be the Boulder firm energy rate, estimated at present at 1.32 mills; times the number of years that would be required by the State of Nevada to relinquish that energy under the General Rules and Regulations. If one kilowatt-hour is withdrawn by the lessee at 1.32 mills, and the lessee is to pay the commission that he wishes to relinquish that energy and the commission as provides the Secretary in accordance with the Rules and Regulations, the State obligation—of it doesn't use that power and it takes three years to relinquish, that energy—the State's obligation would be 1.32 times 3, or 3.96 mills per kilowatt-hour times the number of kilowatt hours which he had withdrawn for his account."

Governor Pittman asked if there was a second to the motion before the commission. It was seconded by Smith, and upon vote was passed unanimously.

Cahlan asked if the Secretary was required to make a complete record of all the proceedings and was informed by Governor Pittman that the secretary recorded all proceedings, clerical and otherwise, and did all of the official work, as his duty.

Mustler said he thought the Governor should be congratulated, as he considered this to have been the most "forward move" ever taken by the Colorado River Commission. He said: "We have been talking
had learned that one mill was satisfactory to both Edison and to California Electric Company and that informally he knew it would be satisfactory to the City when brought before their board of directors for action.

Shaver further stated that it had been agreed that if the terms were acceptable to all parties, he was to send a letter addressed to City, Edison, and California Electric, stating the terms of the compromise and the arguments upon which it was based, and that the commission will, for the State contractors, accept a yielding of one mill on these overdrafts created during the operating year of 1946-1947. With the commission’s assent, he would draft such a letter to be sent by the Secretary to the City, Edison, and California Electric.

Smith moved that the compromise on payment of the Nevada overdraft at Boulder Dam Plant arrived at by Shaver and the California allottees be approved, and that the secretary be instructed to address letters to the interested parties that the compromise proposal would be accepted.

Cahill seconded the motion which was carried by unanimous vote.

Governor Peterson stated that the time had come when we must hasten the proposed contract for sale of the Basic Magnesium Plant at Henderson to the State of Nevada by War Assets Administration. He said all of the men present had read the proposed contract and were familiar with it. He said a motion should be made that will tend to bring the deal to a head in the shortest possible time.

Cahill then proposed the following resolution:

Whereas, The War Assets Administration has submitted to the Colorado River Commission the fourth draft of a Letter of Intent concerning the acquisition of Basic Magnesium Plant; and

Whereas, The Colorado River Commission after careful analysis of the terms and conditions of said Letter of Intent, do approve in principle said Letter; and

Whereas, It is the sense of this commission that in taking over said Magnesium Plant, that great and manifold benefits will accrue to the Federal Government, and the State of Nevada as a whole, and particularly to Southern Nevada, where this project is located in close proximity to the great Boulder Canyon Project.

Now Therefore, Be It Resolved, That John V. Mueller be authorized and instructed to proceed to Washington at an early date to confer with The War Assets Administration with a view to bringing negotiations to an early conclusion, in order that the State of Nevada may take over Basic Magnesium Plant without further delay.

The motion was seconded by Thompson, and was passed by unanimous vote.

Cahill said he wanted to congratulate the Governor, for the record, for the able manner in which he had carried on the negotiations; to congratulate Mr. Mueller, and the other members of the commission, and to say on behalf of Southern Nevada that he thought this was the most important thing that has happened in the history of the State since the construction of Boulder Dam. The Governor thanked Cahill and said he concurred in the idea that this was the most important development that had happened to the history of Nevada for a long time, and the most important act of the commission since its inception.

proposal provided a means for them to obtain power on short notice, for which his company took the risk. For his own prospective requirements far less power than a full unit would be necessary. In assuming the obligation for a full unit, a building up of reserve money was necessary, for otherwise they might not be able to meet the annual payments when due if their revenue from power sales should decrease.

Smith inquired if Compton could estimate what energy rate losses at Basic Magnesium Project would be required to pay under the new program. Compton replied that he would suggest, as the initial operation, a charge of 85 per kilowatt hour (50 cents a kilowatt month) which is the same charge as they are now paying, plus the Boulder firm-energy rate, be quoted to the lessee for Boulder energy. At a 75 percent load factor, the fixed charges would be approximately one mill, and with an assumed falling water rate of 1.25 mills, would make a cost of 2.88 mills per kilowatt-hour delivered at 230,000 volts at the switchyard at Boulder. If the Bureau of Reclamation is operating the two Basic Magnesium lines from Boulder to Basic, under the proposed Davis operation, and would make a charge of 3 mills per kilowatt-hour for transmitting State of Nevada energy from Boulder to the Basic Magnesium Project, that would make a cost of 2.78 mills at Basic. He said he believes that losses paying 3 mills per kilowatt-hour could make a successful operation, with this initial charge of 85 per kilowatt hour, and after the State had an experience record, quite likely the rate could be adjusted downward.

Shaver asked if the “wheeling” charge of .5 mill from the 230 KV bus at Boulder to the 15.5 KV bus at Basic did not also include the distribution cost inside the Basic Magnesium Project plant grounds.

Compton replied that the inside-plant distribution would be small, and he thought it could be included in the 5 mill charge.

Smith said he wished to have his position on the Southern Nevada Power Company proposal perfectly clear before voting on the resolution; which was his understanding that N.V. would be underwritten as proposed, without any strings being tied to the proposal by Southern Nevada Power Company, unless it might be that the commission reserve an adequate amount of power to meet the future needs of the present State contractors.

Compton replied that the statement was correct, and repeated that he believed the advance payments were necessary, because his company was agreeing to underwrite a generator very much larger than would be necessary if their own needs alone were considered in order to meet their demands for the next 5 or 10-year period.

Mueller stated that the advance payment would fall upon Southern Nevada Power Company alone, for Lincoln County Power District cannot be called upon for any part of it, or be held liable for any part of it. That district is a nontaxable municipality. Their financial set-up does not permit them to be mortgaged or take on any financial liability until their power bonds are paid, bonds bought in part by the government in order to construct a transmission line to Pioche for their use. Overton Power District’s use of energy is small and they could not be of much help. The Southern Nevada Power Company must bear the risk, and for that reason he believed we, the Colorado River Commission, should seek to accumulate the advance payments
He said: "We realize that there are many more important things to be done, and we will proceed to carry those matters through to a successful conclusion as best we possibly can. It has been a great pleasure for me to sit with this commission, where everything is discussed in such a free and open manner. Everyone has been frank and honest, and their opinions have been given without reservations. I believe that in the reason we have come to a common conclusion and accord, feeling that it is for the best interest for the State of Nevada."

Mueller said that last night he had been called by long distance telephone by Project Administrator Colonel John Reilly, who said he would need some assistance in being certain that the utilities are taken over, and inasmuch as we had appointed Mr. Shaver as our representative to do so, he thought it would be well to let Mr. Shaver know that he is going to have a very busy man for about 30 days.

Cahalan asked when the State would take over the utilities at Basic Magnesium Project.

Mueller replied that War Assets Administration was very anxious to have us take over all of Basic Magnesium Project. He said: "That is one of the reasons for us to take over everything at once, both utilities and plant, which is much more simple than to take out one particular item. Inasmuch as we have actual control of the utility, we should let nothing interfere with taking them over as soon as possible. I am hopeful that procedure in taking over the plant will catch with taking over the utilities, as it would simplify procedure."

Smith said action had been taken sometime ago by the Chamber of Commerce of Las Vegas looking toward the formation of a water district. This was about six months ago and the project seemed inactive. He inquired if the commission would like to take some action that might push it along. He suggested a letter to Mr. Archie Grant, chairman of their committee, asking what progress is being made.

Mueller said they were now actively going ahead, and Shaver said that he had learned that all the petitions were in, except one, and they wanted to get that one in before taking action. He said they already had enough signatures to call for the water district election. The chairman said that if there was no objection it would be the desire of the commission that the secretary address a letter to Mr. Grant inquiring as to progress. (The formation of such a district is primary to obtaining Mead Lake water for Las Vegas partly through the pipe line and pumping facilities now in control of the Colorado River Commission.)

Smith referred to the request by the Colorado River Commission for an allocation of 90,000 kilowatts of energy per year from Shasta Dam power plant, for withdrawal and use as needed in northern Nevada, made on June 4, 1947. He said that since the request was made it had been consented to by the Bureau of Reclamation subject to availability of transmission facilities, and that the bureau had prepared and had submitted to the commission a tentative contract. (Copies of said contract had been sent to all members of the commission and its engineers by the secretary.)

Smith said that since the contract had been received, the Sierra Pacific Power Company, apparently to forestall effective action on the part of the State and the bureau to bring in lower-priced power, had Governor Pittman remarked that was about the limit of the one major generator to be acquired, and the present 44,000 kilowatts would not be enough for B. M. Project and stand-by. Compton said that when Arizona came in for Boulder power, and we also had another 45,000 kilowatts at Davis Dam, then by economical coordination of loads, we would have much extra capacity. Present Basic Magnesium Project load is about 220,000,000 kilowatt-hours, and calls for 35,000 kilowatt capacity.

Compton was asked to explain his offer to underwrite N-7. He replied that Southern Nevada Power Company would make an advance payment of $15,000 per month, beginning now, to the State of Nevada, for transmission to the Bureau of Reclamation as a credit, which would be in addition to billing for energy actually used. This would continue for four years, or until a credit of $750,000 had been accumulated. At the end of that time, when payments on N-7 began, his company would pay the full charge of about $330,000 annually. Similar advance payments are now being made by the municipalities of Burbank and Glendale, to build up their credit. The cost of N-7 and the related necessary machinery will be between four and five million dollars. The annual payments will be about $330,000 per year. The continuing payments on Sec. G-3 will be about $130,000 per year. Mueller said he thought a resolution to accept the proposal of Southern Nevada Power Company and for Nevada to take over N-7 was now in order. He therefore made the following motion:

"I move that the Colorado River Commission take all steps necessary to acquire N-7; all steps necessary to see that the Southern Nevada Power Company properly underwrites the cost thereof, and that all proper steps are taken to see that the Southern Nevada Power Company provides the financial cushion it has offered."

Smith asked if the proposed advance payments were not in the nature of a loan to the commission, which would be repaid later as a credit on power bills which would be owed to the State. Compton replied that he did not consider the advance payments, and that they would be an operating expense, as a cost of power. They would come back to Southern Nevada Power Company in installment credit over a period of years to be agreed upon. He said they should be considered as a part of the cost of production of power, and would be reflected in the rates to the company's consumers.

Shaver asked if the advance payments could not be retained by the commission on its own books, instead of being an advance payment to the Bureau of Reclamation.

Compton replied that the Bureau has advanced $3,000,000 to install this N-7 machinery and equipment, and will be charging the State 3 percent interest on that fund advanced. When we make advance payment to them—say for easy figuring, of $1,000,000, the Bureau of Reclamation is then out of pocket net $4,000,000, and they will charge us interest only on the $4,000,000; therefore, by making the advance payments direct to the Bureau of Reclamation, those advance payments decrease the State's payment of the 3 percent interest charges on the equivalent sum of money.

Compton said that few, if any of the issues at Basic Magnesium Project, were able or willing to enter into long-term contracts. His
200,000,000 kw.-hrs., our suggestion was that through exchange facilities, our Davis energy be given to the City at Davis, and we take an equal amount from the City's units of Los Angeles units at Boulder. The City could also exchange its prospective allotment at Davis with Arizona for Boulder power, after Arizona's generating units have been installed.

Compton stated that Arizona will at once request for its use the installation of Units A-3 and A-4, and Attorney Mathews of the City had drafted for them the form of a letter to be addressed to the City, as the government's generating agent, formally requesting the installation. The proposal and letter will be presented to the Arizona Power Authority for approval at once. On February 13, it had not yet returned to the City by Arizona. Harvey McPhail of the Bureau of Reclamation Power Division had advised Compton that such a request should be in Washington within two weeks in order to be considered for an appropriation soon.

A further matter regarding the City's proposal to generate for Nevada developed. The Arizona agents said they would protest delivery of generator N-7 to Nevada if Nevada entered into the proposed contract with the City, and they (Arizona) would apply for N-7 for use by Nevada. Opinion of members was that negotiations for N-7 had progressed far in behalf of Nevada, that regardless of the type of contract or plan Nevada finally made for generating capacity, Arizona could not get N-7.

Compton was not satisfied with the way the bureau is handling transformer Bank Y. This bank was requested by Nevada and installed for its use. Soon thereafter, energy for Kingman, Arizona, Needles, California, and the Bureau of Reclamation plant at Boulder, were also loaded onto it, and now it is fully loaded, with no extra capacity for Nevada. California Electric Power Company now supplies Kingman with 5,000 kilowatts through its own generating facilities, but has given notice it can no longer do so, and because of physical difficulties, within 90 days the Bureau of Reclamation will be obliged to put this additional load on Bank Y, forcing Southern Nevada Power Company to transfer that much additional load onto its own transformer at Bache, in order for Boulder City to have power. The bureau should make provision for taking care of Nevada's load, and permit Nevada to utilize the transformer originally installed for the State.

With respect to N-7, Compton thought that an appropriate part of its capacity should be reserved for the early Nevada contractors, which are the Southern Nevada Power Company, Lincoln County Power District, and Overton District. He said the commission should give very careful consideration to protecting the future needs and slow expansion of present contractors. He said their future needs should be definitely provided for, as well as their present demands. He said that by offhand estimates, Overton District now used 5,000,000 kilowatt-hours per year, and 15,000,000 should be placed in escrow for that district; Lincoln County Power District uses 50,000,000 and should have 75,000,000 in escrow; Southern Nevada Power Company 142,000,000, and should have 300,000,000. In kilowatts, at present load factors, he said Overton would need 6,000, Lincoln 10,000, and Southern Nevada 70,000, total 77,000 kilowatts.

Smiley entered into a new contract with Pacific Gas and Electric Company for sufficient energy to apparently meet all northern Nevada needs for several years. He had not seen the contract but the deal had been widely publicized in newspapers as a boon to Nevada, with statements that it would make ample power available for industry and that the rates would be lower. Smith said he had been asked recently by Harvey McPhail, chief electrical engineer for the Bureau of Reclamation, as to what Nevada's intentions were, and if we had plans for marketing the energy we had asked for.

Smith said the success of the plan had been contingent upon transmission of the energy over the transmission lines of P. G. & E., and Sierra Pacific, into the Reno area, and sale of it as a block to Sierra Pacific for their markets. His inquiries and suggestions to Sierra Pacific Company that an attempt be made to do this had met with negative reception by Sierra Pacific, who are opposed to direct entry of Shasta Dam power into the area being served by them under Nevada franchise.

Smith thought the new P. G. & E. Sierra Pacific contract might forever prevent the advent of lower priced energy from Shasta Dam coming to Nevada. All Shasta Dam energy would now be sold to P. G. & E. at the damsite, as the sole major marketing agency, and the additional requirements of Sierra Pacific Company would then be supplied by P. G. & E. and be marketed by Sierra Pacific, both being private companies which can cut a considerable extent control their rates. The terms of sale of energy to Sierra Pacific, and charges for transmission over the lines of P. G. & E. to a point in the Sierra Nevada mountains, plus the cost to Sierra Pacific for transmission over its own lines from the point of junction to Reno, would now determine the energy rate.

At this point Shaver, in order to have a statement in the record, referred to the situation developing at Boulder in regard to Transformer Bank Y. Technical discussion of location and use of machinery followed, showing that several agencies were now taking advantage of Bank Y, but that Southern Nevada Power Company was being forced out of Bank Y in part and upon the other transformer at Bache. Changes in the setup of transformers were recommended to overcome this trouble. Mueller asked if Bank Y had not been installed at the request of Nevada, and we therefore should have first call on its use. Smith said that although Bank Y had been put in for Nevada, and Nevada was obligated to make the payments on it, the bank, like all other machinery at the plant, remained the property of the United States. In short, we buy it, and pay for it, but the U.S. owns it. So when, as a matter of expediency, the bureau wished to help Metropolitan Water District sell its unused kilowatt-hours to Kingman, Arizona, and the easiest way was through our Bank Y because we were not then making use of its full capacity, the bureau used the idle capacity in the bank and credited us with that part of the charges. Then other similar loads were placed on the bank until now it is fully loaded, and there is no more capacity in it for Nevada. For a time this helped us by relief of a part of the carrying charges which lowered our costs, and is reflected in our rates, but now when we need the full 45,000 KVA of the bank we cannot get it, as other parties are on it.

Mueller said that as we are now being shoved off to a further extent
contracts. Compton tried to keep Nevada's obligation down to $200,000 in discussion, seeking a minimum for the reason that Southern Nevada Power Company would be called upon to underwrite the payments. No agreement was reached as to a joint procedure that would be acceptable to Southern Nevada Power Company and the commission, and it was the opinion of both Compton and Wingfield that the negotiations should be dropped for the time being.

Compton said the proposal of Southern Nevada Power Company to underwrite generator N-7 was subject to two conditions: First, to use advance payments by his company to build up a reserve fund as a "cushion," or which to draw for generating charges until we find ourselves in need of machinery and equipment that we will need during the period we still must meet the $300,000 per year additional for generating equipment; and second, if N-7 should not be required to meet Nevada's energy requirements in the next few years, that we find a way for that unit to be used by Edison and/or the City as a "spare unit" within the plant for maintenance purposes of other units undergoing repairs. He had discussed this with Edison Company who said they can use N-7 during maintenance periods. The City was not so positive as to their need of N-7 as a "spare unit," but thought it possible. He also said it would be necessary for Metropolitan Water District to agree to give advance notice of five years before exercising their option to take possession of N-7, instead of the presently required advance notice of two years, and also have them give further consideration of being relieved of having to take over N-7 in 1918. The Metropolitan district engineers consulted thought that their board of directors would approve of such an extension of the time of notice to be given prior to exercising their option. Compton was of the further opinion that the agreement of May 1914, for power supply to BMI, signed by Nevada, Edison, City of, and Metropolitan district, would have to be amended in order to accomplish this. Compton suggested the following detailed procedure:

From a letter from Colorado River Commission to Metropolitan Water District, requesting formal approval by the district of modification of their option, extending the time of notice to five years. Upon receipt of the district's approval, the commission should then address a letter to the Bureau of Reclamation requesting an amendment or modification of the agreement, entitled "Arranging of Power Supply for Defense Plant at BMI Plant." Consent to this change should be all that is required in order for Nevada to take over N-7.

In addition to possession of N-7, we would then have by Federal contract, 44,000 kilowatt of generating capacity in Sec. G-3 (Units A-1 and A-2). We can arrange to use that 44,000 as standby. At our conference, Los Angeles seemed to think that when we acquire a major unit, our right to 44,000 kilowatt in Sec. G-3 would cease to exist. We do not think so, and do not think that Los Angeles will press the point, as they can make use of any idle capacity in Sec. G-3 at present. Nevada uses about 35,000 kw. of Sec. G-3, which under the separate differing load factors amounts to about 307,000,000 kilowatt-hours per year.

Relative to Nevada's request for one unit at Davis Dam, or
Edison and/or the City had agreed with them on a satisfactory plan for the use and payment of generator N-7.

Nevada—On January 23, 1948, your secretary was informed from Washington that the intermin contract had been signed by the Secretary of the Interior.

Mr. Shaver, in his work in Washington with War Assets Administration, in the preparation of a contract for Nevada to take control of Basic Magnesium Project.

A half-hour of discussion followed concerning the employment of a general manager for Basic Magnesium Project if the State takes control. Several names were discussed, but no action was taken.

A motion was passed to instruct A. J. Shaver to set up the operation of facilities and utilities at Basic Magnesium Project.

CARSON CITY, NEVADA, FEBRUARY 13, 1948

Shaver gave an account of work of the engineering committee in Los Angeles on February 9, 10, and 11. He said the committee first called on E. W. Rockwell, advisory engineer for the commission, on Monday morning, February 9, to whose Committee outlined a proposed new plan under which Southern Nevada Power Company would underwrite the cost of generator N-7 for the State. The plan would contemplate:

(a) Acquisition of N-7 by Nevada on June 1, 1951; (b) Retention of our present interest and capacity in sec. 5-3; and (c) Acquisition of an allocation of Davis Dam energy, previously requested. The plan also provided for an extension of the Metropolitan Water District time of two years in which to exercise its option on N-7 time up to two or three years. The plan outlined would be in lieu of the City's proposal to Nevada. Rockwell thought the new proposal excellent and better than the City's proposal.

Shaver stated that in the afternoon the engineering committee met with representatives of the City in the Municipal Power and Light Building. Present for the City were Messrs. Vogel, Kool, Martin, Garman (at times) engineers, and John Mathews, attorney. The City was asked if they would reduce the kilowatt charge and the minimum obligation of their proposal. Martin, spokesman, said they could make no reduction in the $7.50 per kilowatt charge. Before the conference ended on the following day, he said they would be willing to reduce, or even entirely eliminate, the minimum obligation of 50,000 kilowatt-hours, but a reduction in the $7.50 per kilowatt charge could not be considered.

Nevada's new plan was detailed to the City of Los Angeles. They offered no objection to it, and the remainder of the conference was devoted to discussions regarding the physical and engineering requirements, and the effects on the several allottees. The procedure was not worked out, and the City requested a few days for more study before making additional suggestions. Both Shaver and Compton stated that at the time of this meeting there appeared to be no serious obstacles to the new plan.

Compton related his conference with the Arizona Power Authority on February 5 and 6. A Mr. Wingfield was chief representative for Arizona. Wingfield had formerly been employed by the power division of the Department of the Interior, and he is familiar with the Hoover

DEVELOPMENT, assistant manager of S. P. P. Co. No action was taken by the commission.

The meeting was adjourned at 5:30 p.m.

LAS VEGAS, NEVADA, MARCH 5, 1948

A committee from the town of Henderson, which had heard that as soon as the commission took charge of the utilities, housing rentals at Henderson would be increased, or that a charge would be made for electricity, water and service, herefore delivered free by the government was present, and several of the committee members made statements and presented reasons as to why no change should be made in rentals, and suggesting that no change be made in the procedure from as it had been in the past under government control.

The unanimous position of the commission was that every legitimate source of income should be taken advantage of in order to eliminate the losses at which the project had been operated by BPC and its successor, WAA, for otherwise neither the operation of the utilities or the project could successfully be undertaken by the State.

The committee from Henderson proposed:

1. If the utility service (light, water, sewerage, maintenance of household equipment, etc.) was to be charged for, the rent on the houses should be reduced to offset it.

2. Delay action with respect to the housing until the State can take over both the utilities and the plant at the same time.

3. When the State takes the utilities, War Assets Administration should provide operation and maintenance amounting to about $3,000 per month.

Henderson housing rentals, which were below the average for the Las Vegas area, and also included free utilities, were discussed at length. Representatives of Stauffer Chemical Co., and Guy F. Atkinson Co., who were present, were averse to a change, fearing an increase in rents of houses for their employees would be at once reflected by labor union requests for increases of pay. War Assets Administration representatives on the other hand, advocated such an increased charge for utilities be made by the State, although they had not made such charge during their own operations.

Various phases of the problem were discussed, including a proposal to sell houses to employees at Basic Magnesium Project, but not to others. Governor Pittman explained to the Henderson committee that if the State took over the Basic Magnesium Project utilities only on April 1, the State would have no other source of revenue to supply the houses with electricity and water than what could be derived from a charge for same, but if both the Basic Magnesium Plant and the utilities were acquired at one and the same time, possibly a different plan could be worked out with the assistance of the unions and the lessees operating the plant. He said they all must realize that the State is not trying to make a profit, but it could not run behind the Legislature had not set up any fund to provide payment if the commission ran behind. In case of a deficit, the State would have to turn the utilities back to War Assets Administration as quickly as possible.
and that would probably result in the destruction of the complete Basic Magnesium Project. The Governor also said:

"Your problems and ours are mutual, and we must earnestly want to work them out. Everyone of you may feel sure that we are going to do all we can to arrive at a good, fair, and practical solution of this question. But we cannot give you an answer now, for we do not know what it will be. We want to do all we can for the people out there at Henderson and we are working to that end with all the sincerity we have in our making."

Some members of the Nevada State Board of Control were present at this meeting. The law under which the commission had authority to acquire Basic Magnesium Project required the joint consent of the Board of Control and the Colorado River Commission. Some member of the Board of Control had felt they were not sufficiently familiar with the proposal to intelligently vote on it, and a few days prior to this meeting had asked the secretary of the commission in the absence of the Governor, who was out of the State at the time, to more fully acquaint them with the proposal and such steps as had been taken. Thereafter the secretary met with the Board of Control and detailed the measures taken up to that time and submitted copies of the Letter of Intent to take over the project.

The fifth and last draft of the Letter of Intent to take over Basic Magnesium Project was read and discussed by the Attorney General. It had been approved by the Administrator and the General Counsel of War Assets Administration. Approval as to form and legality by the Attorney General of Nevada was also required.

The Letter of Intent being an agreement for Nevada to take over control and operation of all utilities at Basic Magnesium Project, was formally approved by the commission. The text of this document as finally executed on October 6, 1947 is attached as Appendix No. 5.

A. J. Shaver, who had formerly been authorized and instructed to set up the utilities for the commission, made a brief report, and stated that payment of utility employees would have to be made out of present Colorado River Commission funds until the first returns came in from the utilities. Shaver made a complete presentation of the organization as so to be ready when the commission took over the utilities on April 1.

At this meeting the commission voted to increase its application for Davis Dam power to one-third of the total plant output.

It was ordered that the State charge of one-tenth mill per kilowatt-hour be increased to two-thirds, as the Colorado River fund had increased to about $600,000, and a further increase of expenses was expected.

Sustaining membership in the sum of $250 was voted for the Colorado River Water Users Association.

*On August 29, 1948, the commission received official information from the Bureau of Reclamation that the State of Nevada had been allocated 41,000 kilowatt-hours from Davis Dam to be sold separately by the Bureau to Los Angeles, Pasadena, Glendale, and Burbank, but subject to rereceipt by Nevada in any increments desired upon one year's advance notice to the Bureau. The complete allocation and explanatory text by the Bureau is attached as Appendix No. 11.
curtailment, provided that there shall be a prorata reduction in the monthly demand charges in the event of such reduction or discontinuance of service.

10. Withdrawal by Nevada.

Nevada agrees that it will not during the five-year term of this contract withdraw electric energy from the Boulder Project under the terms of existing contracts for delivery directly or indirectly to the Basic Plant in lieu of energy to be delivered by City and Edison under this contract except as to withdrawals which will be effective on or after June 1, 1946. Provided, that such agreement by Nevada shall not limit or in any way affect Nevada's right to withdraw energy for any other purpose.


City and Edison shall each bill W.A.A. monthly or before the tenth of the month for their respective shares of the demand charge and energy charge for the previous calendar month. W.A.A. shall pay said bills within twenty days after receipt thereof. At the end of each contract year the said monthly payments shall be subject to adjustment to reflect the correct billing for the year in accordance with the terms hereof.

In the event W.A.A. shall fail to pay bills rendered when due, the City and/or Edison may, at their option, discontinue service. If bills are not paid when due, an interest charge of one per cent (1%) of the amount unpaid shall be added thereto, and thereafter an additional interest charge of one per cent (1%) of the principal sum unpaid shall be added on the 30th day of each succeeding calendar month until the amount due, including all interest, is paid in full. Nothing contained herein shall be construed as in any manner abridging, limiting, or depriving City and/or Edison 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. In the event there is any dispute with respect to any billing under the terms of this contract, payments made shall be subject to adjustment upon final determination by the Board of Control.

12. Board of Control.

The City, Edison, and W.A.A. shall each designate in writing, a person to constitute a Board of Control, and as between City, Edison, and W.A.A., said Board of Control shall determine all matters involved in connection with the delivery of electric energy under the terms of this contract, and their decision shall be binding upon the parties hereto. In the event of disagreement between the members of the Board of Control, the decision of such person as shall be selected by them shall be accepted by the parties as the decision of the Board of Control, and be controlling.

13. Waiver.

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.

14. Termination.

The term of this contract shall be from June 1, 1946, to May 31, 1951.
such cost as will be allocated to the State by the United States for such charges on Sections G-7 and T-7. The draft submitted a few days ago, which Mr. Smith has discussed, provided that starting May 31, or June 1, 1951, the company would be entitled to certain credits; one credit being $8,000 per month, or $96,000 per year, the other credit being $8 per kilowatt per year of kilowatts of capacity in Sections G-7 and T-7 served by the State to other State power contractors.

At a meeting in September of 1947, the Southern Nevada Power Company presented a form of request to the Colorado River Commission for Generator A-9, stating therein they required 40,000 kilowatts or the capacity of half unit A-9, which could be 45,000 or 50,000, as the capacity required by the company for the operation of its own system. The State of Nevada has a right to request generating capacity at Boulder to meet the requirements of its power users, and in the judgment of the power company, for our own operations we will require 45,000 kilowatts of capacity. The Colorado River Commission decided that the installation of Generator A-9, plus the A-3 Transformer Bank, equivalent to a full-sized unit, would not fulfill the State's requirements for power insofar as other State power contractors were involved. Therefore, no request was made, and no further action was taken by the State on the Southern Nevada Power Company's request. The company has now submitted another supplemental agreement.

"The basis of this new plan is that the company requires 45,000 kilowatts capacity for its own use. At the meeting in September the Lincoln County Power District representatives objected to 45,000 kilowatts of generating capacity (for which the company was willing to pay 100 percent of such cost) being installed for the exclusive use of our company. To satisfy Lincoln County Power District, and Overton Power District, we provide in this supplemental contract, that 14,000 kilowatts of capacity shall be held in reserve for their (L.C.P.D. and Overton Dist.) use. It shall not cost them any money until such time as they notify the State that they desire a portion or all of the 14,000 kilowatts. The Southern Nevada Power Company will pay those costs for the other power users until such time as these other power users' power requirements are such that they desire to use a portion of this 14,000. That is a comparison to the Lincoln County Power District to the Southern Nevada Power Company. Southern Nevada Power Company, as I stated, wants 45,000 kilowatts of capacity. That's what we feel our operations will require, and we are willing to pay for.

"N-7 generator has a capacity, or a name-plate rating of 62,000 kva, which at 100 percent load factor is 82,000 power factor. Forty-five thousand kilowatts for Southern Nevada Power Company, Lincoln County Power District, and Overton Power District, leaves 35,000 kilowatts for other State power contractors. The leases at the Basic Magnesium Project are now using approximately 32,000 to 35,000 kilowatts of capacity. The remaining capacity in N-7 is 35,000 kilowatts, which will carry the existing loads at the Basic Magnesium Project, for which the contract provided they shall pay $6 per kilowatt-year. The power cost to the lessee at Basic at $6 per kilowatt-year, with a firm energy rate of 1.26 mills per kilowatt-hour, which is slightly greater than the present firm energy rate, makes a power cost of 2.26
to RFC's Basic Plant, and the said power supply provisions of said contract terminate as of midnight May 31, 1946.

4. Witnesseth: W.A.A. has acquired all the rights and title of RFC to the Basic Plant and electric equipment used in connection therewith, including among other things 220,000 volt transmission lines from its Basic Plant to Boulder Powerhouse and certain 220 kv. switching facilities at said Boulder Powerhouse known as Section TTA, and W.A.A. is desirous of obtaining a power supply for said Basic Plant for a five-year period commencing June 1, 1946, and

5. Witnesseth: City and Edison are willing upon the terms and conditions hereinafter set out to supply W.A.A. the electric energy required for the operation of its Basic Plant, provided Nevada agrees not to withdraw Boulder energy for said purpose, and Nevada is willing to agree in consideration of City and Edison agreeing to supply said electric energy.

6. Now, therefore, In consideration of the provisions and conditions herein contained the parties hereto agree as follows, to wit:

   (a) Electric energy will be delivered by the City and Edison Company to Section TTA at the Boulder Power Plant at approximately 220 kv. in the form of three (3) phase alternating current at a frequency of approximately sixty (60) cycles per second.
   (b) The electric energy required to be delivered under this contract shall be for use solely at the Basic Plant and operations incidental thereto including the pumping of water from Lake Mead for said plant but exclusive of electric energy for use at Henderson townsite.
   (c) All electric energy delivered hereunder shall be measured at approximately 13,200 volts at the Basic Plant on metering equipment installed and maintained at said plant at the sole expense of W.A.A. For the purpose of computing the maximum demand and the amount of energy delivered to W.A.A. at Section TTA at Boulder Power Plant one and one-quarter per centum (1 1/4%) shall be added to the meter readings to cover line and transformer losses. Meters shall be tested at any reasonable time at the request of either W.A.A., City, or Edison, and in any event shall be tested at least once each year. If the test discloses that the error of any meter exceeds one percent (1%) such meter shall be adjusted so that the error does not exceed one-half of one percent (1/2 of 1%). Meters shall be kept sealed between tests and all tests of said metering equipment shall be conducted only when representatives of W.A.A. and City and/or Edison are present.

8. Rates.
   (a) The rate for energy delivered hereunder shall consist of a combination demand charge and energy charge.
   (b) The demand charge for all monthly demands up to a maximum of 35,000 kw. shall be fifty cents (50¢) per kilowatt of monthly thirty (30) minute maximum demand, but not less than $125.00 per month in any event.
   (c) For all thirty (30) minute monthly maximum demands in excess of 35,000 kilowatts the demand charge shall be seventy-five cents (75¢) per kilowatt of each excess monthly demand.

mills. Assuming $320,000 as the annual cost of Generator N-7, which the Southern Nevada Power Company is willing to underwrite for the State, and further assuming that the lessors at Basic shall have a demand of 35,000 kilowatts at 3 a kilowatt-year, means that the power lessors would pay a total sum of $310,000 annually for the 35,000 kilo-

The Southern Nevada Power Company would pay $320,000 less $310,000 or $10,000. Now on the surface that might not look equitable, but I believe there isn't a member of the Colorado River Commission who says or feels that the Southern Nevada Power Co. should necessarily pay a higher power cost for its power from Boulder than any other State power contractor shall pay. Using the figures that are quoted, and the estimated generating charges prepared by the Bureau of Reclamation for the year ending May 31, 1948, the Southern Nevada Power Co. will pay, in addition to the $310,000 on N-7, $86,000, or a total payment of $496,000, and based on the assumed kilowatt-hours used in the estimated generating charges for the year of opera-

tion ending May 31, 1948, the Southern Nevada Power Company's power cost is 2.75 mills per kilowatt-hour. In other words, gentlemen, the Southern Nevada Power Company is paying five and one-third of a mill per kilowatt-hour more for its power than the lessors at Basic. We're underwriting a unit on which the lessors at Basic can come and go, in accordance with withdrawal and relinquishment provisions under the General Regulations. They can enter into a five-year contract, a ten-

year contract, or any length of contract they desire, but for the charge of 3¢ per kilowatt-year, they are getting their power for less cost than the Southern Nevada Power Company.

"I believe Mr. Smith has in mind also that portion of the contract which provides that, as determined by the company, there is unused capacity in the 45,000 kwatts, except for the use of the company and that other State power contractors may use that excess at 3¢ per kilowatt per year. Unless the load increases and existing load require-
mints on Southern Nevada Power Company system are drastically reduced by economic reasons within this area I don't believe the Southern Nevada Power Company should, or the Colorado River Com-
mission members will, ask the Southern Nevada Power Company to give up kwatts of capacity in N-7 to-wit, up to 45,000 kwatts, because actually 45,000 less 14,000 reserved for Lincoln and Overton, leaves Southern Nevada only 31,000 kwatts, and that 31,000 kilo-

watts will all be required by the company. As additional power requirements are required for lessee at Basic, the additional power requirements will have to come through either of two ways: Davis Dam energy, or the installation of additional generating machinery and equipment at Boulder. When additional machinery and equip-
ment are installed at Boulder, all of you are aware that whoever con-
tracts for that installation shall contract to pay for the balance of the 30-year period or until May 31, 1987. So as the first step in a solution to the power problem and a power supply for the lessors at Basic, there's 35,000 kwatts in N-7 at a cost per kilowatt-hour less than what Southern Nevada Power Company will pay, what Lincoln County Power District will pay, and what Overton Power District will pay, and by blending that power within a certain ratio with kilowatt-hours available from Davis, power deliveries can be made to the lesses
at basic at reasonable power cost, and when I say reasonable, I mean probably cheaper than you can get at any other place in the country."

The engineering committee was authorized to contact E. W. Rockwell of Metropolitan Water District, for engineering services in a study of the proposed contract between Southern Nevada Power Company and the State of Nevada, and for any other purposes necessary.

Muller raised a question as to whether, under the terms of our agreement with War Assets to take over Basic Magnesium Project, we could enter into a contract with Southern Nevada Power Company that specified a charge of 66 per year demand charge to lessees, which might possibly, under some conditions, yield a profit. Our contract with War Assets Administration requires that the commission sell power to the Basic Magnesium Project lessees at net cost.

Subsequently sub-sections 15(a) and 15(b) were rewritten in such a way as to prevent any profit in the sales of power by the State. (See Appendix No. 2).

Mr. Ralph Alsup, President of the Metal Trades Council, appeared and presented arguments for not raising house rents at Henderson.

A letter from War Assets Administration dated March 19, 1948, signed by M. L. Godman, Deputy Administrator, Office of Real Property Disposal, was read as follows:

GENTLEMEN: Reference is made to that certain Letter of Intent covering the Basic Magnesium Plant located at Henderson, Nevada, executed on March 17, 1948, by the War Assets Administrator, and to be executed by the Chairman and Secretaries of the Colorado River Commission, and the State Board of Control, upon presentation.

In accordance with the provisions of this Letter of Intent, representatives of the War Assets Administration and the Colorado River Commission have agreed that the purchaser shall be placed in possession on April 1, 1948. This letter, when duly signed by the Deputy Administrator, Office of Real Property Disposal, War Assets Administration, accepted by the Colorado River Commission, and approved by the Nevada State Board of Control, together with the above referred Letter of Intent, when executed, shall be your authorization to enter the premises of the Basic Magnesium Plant and take possession thereof.

It has been determined that it is feasible for your commission to take actual possession as of April 1, 1948, of all the area contained in such plant which is now in use, as well as all the entire electric transmission and distribution systems, the water supply system and the sewage disposal system, will be placed under the custody and control of your commission on April 1, 1948. It is essential that this Administration retain certain portions of this facility to complete certain plant inventories, disposal of chapels and hospital, and for other purposes. It is understood and agreed that these portions of the plant will be turned over to the Colorado River Commission, from time to time, as the need for same by the War Assets Administration is satisfied.

All rentals and other income accruing after April 2, 1948, shall be payable to the Colorado River Commission, and the Colorado River Commission shall assume all responsibility and liability for taxes.

APPENDIX 1

Contract for Sale of Electric Energy to War Assets Administration for Use at Its Basic Magnesium Project

1. THIS CONTRACT, made this first day of June 1946, between War Assets Administration (hereinafter referred to as "WAA"), established by Executive Order 9869 (11 F.R. 1263); the City or Los Angeles, a municipal corporation of the State of California and its Department of Water and Power (said department acting herein in the name of the City but as principal in its own behalf as well as in behalf of the City; and the term "City" as herein used being deemed to include both the City of Los Angeles and its Department of Water and Power); the State of Nevada, a body politic and corporate, and its Colorado River Commission (said Commission acting in the name of the State and as principal in its own behalf as well as in behalf of the State and the term "Nevada" as herein used being deemed to be both the State of Nevada and its Colorado River Commission); and the Southern California Edison Company, Ltd., a private corporation organized and existing under the laws of the State of California (hereinafter referred to as Edison),

WITNESSETH THAT:

2. WHEREAS, that certain contract (hereinafter referred to as "Defense Plant Contract") dated the ninth day of May 1942, by the State of California and Edison, California Electric Power Company, Metropolitan Water District, and Nevada, wherein a power supply as made available to Defense Plant Corporation for use at its Basic Magnesium Plant (hereinafter referred to as "Basic") near Las Vegas, Nevada, which contract terminated as to such power supply as of midnight, May 31, 1945; and—

2. WHEREAS, That certain contract (hereinafter referred to as District Route Contract), dated the 21st day of May 1945, by the State of California, and Edison, California Electric Power Company, Metropolitan Water District, and Nevada, wherein a power supply as made available to Defense Plant Corporation for use at its Basic Magnesium Plant (hereinafter referred to as "Basic") near Las Vegas, Nevada, which contract terminated as to such power supply as of midnight, May 31, 1945, and—

2. WHEREAS, That certain contract (hereinafter referred to as District Route Contract), dated the 21st day of May 1945, by the State of California, and Edison, California Electric Power Company, Metropolitan Water District, and Nevada, wherein a power supply as made available to Defense Plant Corporation for use at its Basic Magnesium Plant (hereinafter referred to as "Basic") near Las Vegas, Nevada, which contract terminated as to such power supply as of midnight, May 31, 1945, and—
LIST OF APPENDICES

1. War Assets Administration-Southern California Edison Company contract to supply Basic Magnesium Project with power to May 31, 1951.
5. Letter of Intent—Purchase and Operation of Basic Magnesium Project.
10. Allocation of Davis Dam Power by U. S. Bureau of Reclamation.

At this meeting a formal motion was passed to not make any changes in Henderson rentals or place a charge for utilities and service at this time.

On the morning of April 1st the commission reconvened, and upon the report and recommendation of the engineering committee, formally approved the contract for Southern Nevada Power Company to underwrite Generator N-7 (Appendix No. 2).

In response to questions, and during discussions as to the power rate that would develop under this contract and new conditions, Compton made the following statement:

"A figure of 3 mills per kilowatt-hour was arrived at by taking a six-dollar per kilowatt per year charge at a 90 percent load factor and adding thereto the Boulder Dam energy rate of 1.28 mills per kilowatt-hour and also adding 3 of a mill per kilowatt-hour as a charge of getting the power from the Boulder Dam to the lessor at the basic date. That, on those assumptions will be the charge for the power at basic who have purchased capacity and are taking power from Section G-7, but it must be borne in mind through the interchange agreement that will be entered into between the State of Nevada and the Bureau of Reclamation for the interchange of Boulder-Davis energy by the Boulder-Davis 230 kv. transmission line, will result in stand-by capacity to N-7 generator. It is not possible to state what the result in charge as coming out of that contract will actually be, but I feel that taking into account the various charges that have been referred to in the Letter of Intent that the power lessor will be able to get their power for a charge of approximately 3 mills to 3.5 mills, and I believe there is very good indication that a charge of 3 mills per kilowatt-hour would probably be the prevailing rate for Boulder energy alone delivered for use of lessees at the Basic Plant."

Smith stated: "Mr. Chairman, I think the contract with Southern Nevada Power Company is very fair. It has been carefully worked out, and is fair to present lessors and it offers strong inducement to future operators coming in to locate at Basic for the reason that a definite power cost can be given them—at least within certain
narrow limits, and it is a desirable setup from every point of view. It solves a large number of perplexing problems that have been troubling us for some time. I am very much in favor of the contract and I will vote for its approval.”

The contract was signed by the parties thereto on May 6, 1948.

It was ordered that the licensing board of Clark County be requested to issue no gambling or liquor licenses for Henderson Township.

Discussion of accounting methods, employees, bonding of employees, followed.

A recess was then taken to go out to Henderson. Upon arrival there the meeting reconvened with representatives of War Assets Administration present, and formally took possession of Basic Magnesium Project.

The letter of intent, which was signed by Governor Pittman and Secretary Smith on March 30, 1948, under which the State took possession, is attached hereto as Appendix No. 5.

Under the terms of the agreement Col. John R. Reilly, War Assets Administration Project Administrator at Henderson, had been designated to remain as a War Assets Administration representative.

CARSON CITY, NEVADA, APRIL 8, 1948

The meeting had been called in response to a request by Senator George W. Malone, who was accompanied by Harvey K. McPhail, Director, Branch of Power Utilization, U. S. Bureau of Reclamation, Project also from U. S. B. R. Region II were J. P. Bimore, Chief, Marketing and Sales Division, and Leland O. Graham, Attorney, Region II, U. S. B. R.

Senator Malone at some length stated his ideas regarding a prepared plan for the State of Nevada to contract for the 90,000 kilowatts from Shasta Dam that had been reserved for it at the request of the Commission. The Bureau had submitted a tentative contract to the Commission which is commented upon elsewhere in this chapter and is included as Appendix No. 6. The main objective of the meeting was, however, consideration of means by which northern Nevada might obtain a limited amount of Shasta power at once, without delay, to relieve a distressing power shortage and “brownout.”

A committee was appointed by the Governor from the large number of representatives of civic, business, and municipal groups present, which committee agreed to meet with the commission’s engineers that night to work out an emergency contract with the Bureau. This was done and the contract was sent to Washington for official processing by the Bureau’s headquarters. Long before this had been accomplished the power shortage was relieved by timely storms in the Sierra Nevada Mountains.

The necessity for such an emergency contract still exists. Western power production, particularly in California and Nevada, cannot keep up with the demand. Outlook for power supply to the Reno area served by Sierra Pacific Power Company has improved as a result of a new contract it has made with Pacific Gas and Electric Company, which requires additional and heavier transmission lines over the Sierras, but the “brownout” of any bureau power over any of these lines has been denied by the power companies. Possible use of such Federal power has reached an impasse as a result of a lack of Nevada
The need for generating capacity from which Nevada may withdraw and use its full allotment of energy is recognized. Regional Director Moritz informs me that during a conference in Boulder City, May 8, 1948, with representatives of the State of Arizona and your operating agent relative to arrangement of switching facilities for Units A-3 and A-4, there was considerable discussion about arranging all new equipment so that generating units or capacity therein may be reassigned if and when the States require additional capacity.

Sincerely yours,

WILLIAM E. WARTE
Assistant Secretary of the Interior.

The Attorney General and the commission feel that while the letter from the Department of the Interior offers some assurance that Nevada's power will be safeguarded, to a certain extent it still "permits the question," and further clarification of this important point is necessary.

It was ordered by the commission that the Southern Nevada Power Company-Colorado River Commission agreement for the said company to underwrite Generator N-7 be submitted to War Assets Administration, and thereafter be put in such form as would be satisfactory to War Assets, after which, with the approval of Southern Nevada Power Company, it was to be resubmitted to the Attorney General, and following his approval as to form and legality, it be approved by the commission. It was agreed by the commission that in order to save time, approval of the final contract could be made by each member after examining it, without the formality of a meeting.

Applications for withdrawal of additional energy by Southern Nevada Power Company were read and approved. The first application, No. 23, was for 5,000,000 kilowatt-hours, maximum demand 768 HP, energy, to become available on or about November 3, 1948. The second application, No. 23, for 2,000,000 kilowatt-hours, maximum demand 1,170 HP, to be available about June 1, 1949.

It was noted that these applications were for capacity in excess of the amount remaining available to Nevada on Sec. 6 of the State contract with Los Angeles, which is making arrangements for additional capacity, and demands for energy over our allotted right on Sec. 6 of the State contract with Los Angeles for energy over our allotted right on Sec. 6 of the State contract with Los Angeles are to be supplied from sources.

It was stated that there had been a meeting in Reno of a group composed of city of Reno officials, representatives of the Reno Chamber of Commerce, the Sierra Pacific Power Company, and officials from several other towns in Northern Nevada, to discuss the advisability of approving a contract between the Sierra Pacific Power Company and the Southern Nevada Power Company and the Pacific Gas and Electric Company, which would make more energy available and provide for extensive installation of additional transmission lines and other improvements. A report on the proposed contract had been prepared by Secretary Smith in compliance with a request by the above group, and the report was read at the meeting after which the proposed contract between the two power companies was approved by the group. The text of this contract appears as Appendix No. 7, and the report of the secretary as Appendix No. 8.

resale contracts, which are required by Nevada law before the State, as represented by the C. R. G., can contract for electric power from the Bureau of Reclamation or any other source. The development of northern Nevada is retarded by lack of sufficient electric power, in the opinion of all municipalities represented at the conferences.

LAS VEGAS, NEVADA, APRIL 10, 1949

The commission had been told by certain members of the Bureau of Reclamation that if Nevada delayed securing a space or pit in Boulder Dam plant for the installation of a generator, the few remaining pits might be filled by the operators of other allottees, and then at a later date, when Nevada would need to withdraw energy from its allotment, no space in which to install the machinery would be available, in consequence of which the State would be shut out from obtaining additional energy from Boulder Dam plant, regardless of its 18 percent allocation.

The commission, as well as other members of the bureau, are of the opinion that the Boulder Canyon Project Act and the Supplementary Boulder Canyon Project Act of 1947 insures to Nevada a total of 17,6259 percent of the total firm energy generated at Boulder Dam, and the responsibility of delivering same to Nevada, subject to the General Regulations which are a part of said Acts, rests squarely upon the Bureau of Reclamation.

The commission ordered that a letter be directed to the Secretary of the Interior on the subject, asking for a commitment that no situation be permitted to develop at Boulder Dam which would in any way prevent or interfere with withdrawal by Nevada of its full allotment of energy.

Subsequently the commission's secretary and the attorney general sent the following letter:

May 29, 1948.

HONORABLE JULIUS A. KEGO, U. S. Secretary of the Interior, Washington, D. C.

Dear Mr. Secretary: In accordance with the Boulder Canyon Project Act (54 Stats. 774) and the General Regulations approved and promulgated for the operation and sale of power thereunder, dated May 20, 1941, the State of Nevada was allotted 17.6259 percent of the firm energy generated at Hoover Dam Power Plant.

The government's obligation to deliver energy to the State is set forth in Section 10(a) of the Master Contract between the U. S. of America and the State of Nevada, dated May 29, 1941, and reads as follows:

"10. (a) Subject to:"

(x) 1

(i) 2

(ii) 3

the United States will deliver to the State energy in the manner required by this contract, in the quantity to which the State is entitled hereunder, and in accordance with the State's load requirements."

Also, see Section 8(b) and 9(a) of the same contract.

Section 4(1) (xii) of the said General Regulations provides the manner in which the States (Arizona and Nevada) may withdraw and use

The energy allotted to Nevada at Boulder Dam is subject to the General Regulations which are a part of said Acts, and rests squarely upon the Bureau of Reclamation. The commission, as well as other members of the bureau, are of the opinion that the Boulder Canyon Project Act and the Supplementary Boulder Canyon Project Act of 1947 insures to Nevada a total of 17.6259 percent of the total firm energy generated at Boulder Dam, and the responsibility of delivering same to Nevada, subject to the General Regulations which are a part of said Acts, rests squarely upon the Bureau of Reclamation.

The commission ordered that a letter be directed to the Secretary of the Interior on the subject, asking for a commitment that no situation be permitted to develop at Boulder Dam which would in any way prevent or interfere with withdrawal by Nevada of its full allotment of energy.

Subsequently the commission's secretary and the attorney general sent the following letter:

May 29, 1948.

HONORABLE JULIUS A. KEGO, U. S. Secretary of the Interior, Washington, D. C.

Dear Mr. Secretary: In accordance with the Boulder Canyon Project Act (54 Stats. 774) and the General Regulations approved and promulgated for the operation and sale of power thereunder, dated May 20, 1941, the State of Nevada was allotted 17.6259 percent of the firm energy generated at Hoover Dam Power Plant.

The government's obligation to deliver energy to the State is set forth in Section 10(a) of the Master Contract between the U. S. of America and the State of Nevada, dated May 29, 1941, and reads as follows:

"10. (a) Subject to:"

(x) 1

(i) 2

(ii) 3

the United States will deliver to the State energy in the manner required by this contract, in the quantity to which the State is entitled hereunder, and in accordance with the State's load requirements."

Also, see Section 8(b) and 9(a) of the same contract.

Section 4(1) (xii) of the said General Regulations provides the manner in which the States (Arizona and Nevada) may withdraw and use
the energy allocated to each. This section in part provides as follows:

Except as hereinabove provided in this article, each of the States of Arizona and Nevada may at any time prior to May 31, 1937, enter into a contract or contracts with the United States which shall entitle it to all or any part of the energy allocated to it for use within such States. Such contract or contracts shall continue in force until May 31, 1937, but shall obligate the United States to deliver energy, and the State to take and pay for the same, only in accordance with notices of withdrawal of energy and notices of relinquishment of energy given as hereinafter provided.

So much of the energy allocated to the States not contracted for by them, and not in use by them or the Metropolitan Water District of Southern California, shall be taken and paid for by the other allottees according to specified percentages for each allottee. Section 4(h) (y), under “Schedule of Withdrawal of Energy,” also provides: ** All energy taken by the State shall first be released by the City, the Company, and the Nevada-California Electric Corporation severally in the proportion of their respective obligations with reference thereto. In the event that energy required by the State shall be in quantity exceeding that which the above allottees are obligated so to release, such excess, to the extent that energy allocated to the State may be in use by the District, shall be released by the District.”

All of the energy allocated to the States is now being generated upon machinery installed for use by other allottees, and is in use by them, except such energy as has been withdrawn by Nevada. This generating machinery, however, remains the property of the Government. It is apparent when such energy is diverted to the States, that subject to physical facilities for delivery it may still be generated in the same manner as when it is in use by other allottees, and upon the same generators. In accordance with the contract and regulations it is the responsibility of the Bureau of Reclamation to see that the States receive the energy allocated to them when withdrawals are made.

Recently a question has arisen as to whether a condition might develop under which it would be impossible for the State of Nevada to take the energy to which it is entitled.

Generators and appurtenant transformers and switching equipment are installed at the request of the respective allottees to meet their demands. There are spaces for 15 major unit generators of 62,000 kva and 2 units of 40,000 kva in Hoover Dam Power Plant. Major unit generators have been installed in 12 spaces; two more are requested by the State of Arizona. One of the two smaller generators has been installed. There now remains available only one space for a major unit designated as N-9, on the Nevada side of the power plant, and one space for a so-called half unit, A-9, on the Arizona side of the plant.

If for any reason other allottees should request and have generators installed in the two remaining spaces, would Nevada be prevented from taking the remainder of its allocation of energy? The State has requested and is in process of contracting for use of Generator N-9 after June 1, 1931, at which time it will assume the annual charges upon that unit. The State will require an additional unit, or the equivalent of the capacity of another unit, from some other source in the power plant in order to withdraw its full allocation, but it cannot legally at this time assume the responsibility of requesting a second generator in order to hold a space for it in the power plant.

The foregoing details are explanatory of a request which is hereby made that you take such steps as may be necessary in order to protect the State of Nevada’s interests and rights to generating capacity through which it may withdraw and use its full allotment of energy from Hoover Dam Power Plant; and to put each allottee on notice that no generating machinery and equipment shall be installed at said power plant in such a manner that it may in any event preclude Nevada from withdrawing the full allotment of energy to which it is entitled at any time in the future.

Respectfully yours,

COLORADO RIVER COMMISSION OF NEVADA.

ALFRED MERRETT SMITH, Secretary.

ADAM BIBLE, Attorney General for Nevada, Legal Adviser.

or: E. A. Morris, U. S. Bureau of Reclamation, Director Region No. 3, Boulder City, Nevada; C. P. Christensen, Director of Power, Hoover Power Plant, Boulder City, Nevada; Samuel E. Morris, General Manager, Los Angeles Department of Water and Power, Los Angeles, California, and Harvey McPhail, Director, Branch of Power Utilization, U. S. Bureau of Reclamation, Washington, D. C.

The following reply was received from the Department of Interior seven weeks later:

UNITED STATES DEPARTMENT OF INTERIOR.

WASHINGTON, D. C., July 7, 1948.

Mr. Alfred Merrett Smith, Secretary, Colorado River Commission of Nevada, Reno, Nevada.

Mr. Dean Mr. Smith: Reference is made to your letter of May 23, 1948, relative to reservation of generating capacity at Hoover power plant for the State of Nevada.

Consideration has been given to your request that steps be taken to protect the State of Nevada’s interest in rights to generating capacity through which it may withdraw and use its full allotment of energy from Hoover Dam power plant. You have stated that your State has requested and is in the process of contracting for the use of generator N-7 after June 1, 1931. It is assumed that the use of Unit N-7 would take care of the State’s additional needs at that time.

No allottee has requested installation of Unit N-8 or A-9. If some agency other than Nevada makes such a request first, then it will be the time to consider the question you are now raising. It is impossible at the present time to predict the conditions that will exist, if and when some allottee other than Nevada requests the installation of N-8 and A-9, but if and when that occurs such request will not be act upon without giving full consideration to the views and rights of your State.
the energy allocated to each. This section in part provides as follows:

Except as hereinafter provided in this article, each of the States of Arizona and Nevada may at any time prior to May 31, 1967, enter into a contract or contracts with the United States which shall entitle it to all or any part of the energy allocated to it for use within such States. Such contract or contracts shall continue in force until May 31, 1967, but shall obligate the United States to deliver energy, and the State to take and pay for the same, only in accordance with notices of withdrawal of energy and notices of relinquishment of energy given as hereinafter provided.

So much of the energy allocated to the States not contracted for by them, and not in use by them or the Metropolitan Water District of Southern California, shall be taken and paid for by the other allottees according to specified percentages for each allottee. Section 4(3)(b), under "Schedule of Withdrawal of Energy," also provides: 

** All energy taken by the State shall first be released by the City, the Company, and the Nevada-California Electric Corporation severally in the proportion of their respective obligations with reference thereto. In the event that energy required by the State shall be in quantity exceeding that which the above allottees are obligated to release, such excess, to the extent that energy allocated to the State may be in use by the District, shall be released by the District.**

All of the energy allocated to the States is now being generated upon machinery installed for use by other allottees, and is in use by them, except such energy as has been withdrawn by Nevada. This generating machinery, however, remains the property of the Government. It is apparent when such energy is diverted to the States, that subject to physical facilities for delivery it may still be generated in the same manner as when it is in use by other allottees, and upon the same generators. In accordance with the contract and regulations it is the responsibility of the Bureau of Reclamation to see that the States receive the energy allocated to them when withdrawals are made.

Recently a question has arisen as to whether a condition might develop under which it would be impossible for the State of Nevada to take the energy to which it is entitled.

Generators and appurtenant transformers and switching equipment are installed at the request of the respective allottees to meet their demands. There are spaces for 15 major unit generators of 83,000 kva and 2 units of 40,000 kva in Hoover Dam Power Plant. Major unit generators have been installed in 12 spaces; two more are requested by the State of Arizona. One of the two smaller generators has been installed. There now remains available only one space for a major unit designated as No. 1, on the Nevada side of the power plant, and one space for a so-called half unit, A-9, on the Arizona side of the plant.

If for any reason other allottees should request and have generators installed in the two remaining spaces, would Nevada be prevented from taking the remainder of its allocation of energy? The State has requested and is in process of contracting for use of Generator N-7 after June 1, 1951, at which time it will assume the annual charges upon that unit. The State will require an additional unit, or the equivalent of the capacity of another unit, from some other source in the power plant in order to withdraw its full allocation, but it cannot legally at this time assume the responsibility of requesting a second generator in order to hold a space for it in the power plant.

The foregoing details are explanatory of a request which is hereby made that you take such steps as may be necessary in order to protect the State of Nevada's interests and rights to generating capacity through which it may withdraw and use its full allotment of energy from Hoover Dam Power Plant; and to put each allottee on notice that no generating machinery and equipment shall be installed at said power plant in such a manner that it may in any event preclude Nevada from withdrawing the full allotment of energy to which it is entitled at any time in the future.

Respectfully yours,

COLORADO RIVER COMMISSION OF NEVADA.

ALFRED MERRETT SMITH, Secretary.

ADAM R. RICK, Attorney General for Nevada, Legal Advisor.

Mr. R. A. Martin, U. S. Bureau of Reclamation, Director Region No. 3, Boulder City, Nevada; C. C. Christensen, Director of Power, Hoover Power Plant, Boulder City, Nevada; Samuel B. Morris, General Manager, Los Angeles Department of Water and Power, Los Angeles, California, and Harvey McPhail, Director, Branch of Power Utilization, U. S. Bureau of Reclamation, Washington, D. C.

The following reply was received from the Department of Interior seven weeks later:

UNITED STATES DEPARTMENT OF INTERIOR
OFFICE OF THE SECRETARY
WASHINGTON, D. C., July 7, 1948.

Ms. ALFRED MERRETT SMITH, Secretary, Colorado River Commission of Nevada, Reno, Nevada.

Mr. Dean Mr. Smith: Reference is made to your letter of May 12, 1948, relative to reservation of generating capacity at Hoover power plant for the State of Nevada.

Consideration has been given to your request that steps be taken to protect the State of Nevada's interests and rights to generating capacity through which it may withdraw and use its full allotment of energy from Hoover dam power plant. You have stated that your State has requested and is in the process of contracting for the use of generator N-7 after June 1, 1951. It is assumed that the use of Unit N-7 would take care of the State's additional needs at that time.

No allottee has requested installation of Unit N-8 or A-9. If some agency other than Nevada makes such a request first, then will be the time to consider the question you are now raising. It is impossible at the present time to predict the conditions that will exist, if and when some allottee other than Nevada requests the installation of N-8 and A-9, but if and when that occurs such request will not be acted upon without giving full consideration to the views and rights of your State.
The need for generating capacity from which Nevada may withdraw and use its full allotment of energy is recognized. Regional Director Merz informs me that during a conference in Boulder City, May 8, 1948, with representatives of the State of Arizona and your operating agent relative to arrangement of switching facilities for Units A-3 and A-4, there was considerable discussion about arranging all new equipment so that generating units or capacity therein may be reassigned if and when the States require additional capacity.

Sincerely yours,

WILLIAM E. WARNE,
Assistant Secretary of the Interior.

The Attorney General and the commission feel that while the letter from the Department of the Interior offers some assurance that Nevada's power will be safeguarded, to a certain extent it still "begs the question," and further clarification of this important point is necessary.

It was ordered by the commission that the Southern Nevada Power Company-Colorado River Commission agreement for the said company to underwrite Generator N-7 be submitted to War Assets Administration, and thereafter be put in such form as would be satisfactory to War Assets, after which, with the approval of Southern Nevada Power Company, as was to be submitted to the Attorney General, and following his approval as to form and legality, it be approved by the commission. It was agreed by the commission that in order to save time, approval of the final contract could be made by each member after examining it, without the formality of a meeting.

Applications for withdrawal of additional energy by Southern Nevada Power Company were read and approved. The first application, No. 22, was for 5,000,000 kilowatt-hours, maximum demand 768 HP, energy to become available on or about November 3, 1948. The second application, No. 23, for 7,000,000 kilowatt-hours, maximum demand 1,170 HP, to be available about May 3, 1949.

It was noted that these applications were for capacity in excess of the amount remaining available to Nevada on Sec. G-3 under the State contract with Los Angeles. The commission is arranging for additional capacity, and demands for energy over our allotted eight on Sec. G-3 are to be supplied from other sources.

It was stated that there had been a meeting in Reno of a group composed of city officials, representatives of the Reno Chamber of Commerce, the Sierra Pacific Power Company, and officials from several other towns in Northern Nevada, to discuss the advisability of approving a contract between the Sierra Pacific Power Company and the Pacific Gas and Electric Company, which would make more energy available and provide for extensive installation of additional transmission lines and other improvements. A report on the proposed contract had been prepared by Secretary Smith in compliance with a request by the above group, and the report was read at the meeting at which the proposed contract between the two power companies was approved by the group. The text of this contract appears as Appendix No. 7, and the report of the secretary as Appendix No. 8.

resale contracts, which are required by Nevada law before the State, as represented by the C. R. C., can contract for electric power from the bureau or any other source. The development of northern Nevada is retarded by lack of sufficient electric power, in the opinion of all municipalities represented at the conferences.

LAS VEGAS, NEVADA, APRIL 20, 1948

The commission had been told by certain members of the Bureau of Reclamation that if Nevada delayed securing a space or pit in Boulder Dam plant for the installation of a generator, the few remaining pits might be filled by the generation of other allottees, and then at a later date, when Nevada would need to withdraw energy from its allotment, no space in which to install the machinery would be available, in consequence of which the State would be shut out from obtaining additional energy from Boulder Dam plant, regardless of its 30 percent allocation.

The commission, as well as other members of the bureau, are of the opinion that the Boulder Canyon Project Act and the Supplementary Boulder Canyon Project Adjustment Act insured to Nevada a total of 17,6259 percent of the total firm energy generated at Boulder Dam, and the responsibility of delivering same to Nevada, subject to the General Regulations which are a part of said Acts, rests squarely upon the Bureau of Reclamation.

The commission ordered that a letter be directed to the Secretary of the Interior on the subject, asking for a commitment that no situation be permitted to develop at Boulder Dam which would in any way prevent or interfere with withdrawal by Nevada of its full allotment of energy.

Subsequently the commission's secretary and the attorney general sent the following letter:

May 29, 1948.

HONORABLE JULES A. KAYE, U. S. Secretary of the Interior, Washington, D. C.

Dear Mr. Secretary: In accordance with the Boulder Canyon Project Adjustment Act (54 Stats. 774) and the General Regulations approved and promulgated for generation and sale of power thereunder, dated May 20, 1941, the State of Nevada was allocated 17.6259 percent of the firm energy generated at Hoover Dam Power Plant.

The government's obligation to deliver energy to the State is set forth in Section 10(a) of the Master Contract between the U. S. of America and the State of Nevada, dated May 29, 1941, and reads as follows:

"10. (a) Subject to:
   (i) * * * * * *; and
   (ii) * * * * * *

the United States will deliver to the State energy in the manner required by this contract, in the quantity to which the State is entitled hereunder, and in accordance with the State's load requirements.

Also, see Section 8(b) and 9(a) of the same contract.

Section 4(b) (iv) of the said General Regulations provides the manner in which the States (Arizona and Nevada) may withdraw and use
narrow limits, and it is a desirable setup from every point of view.
It solves a large number of perplexing problems that have been trou-
bling us for some time. I am very much in favor of the contract and
I will vote for its approval.”

The contract was signed by the parties thereto on May 6, 1948.
It was ordered that the licensing board of Clark County be requested
to issue no gambling or liquor licenses for Henderson Townsite.

Discussion of accounting methods, employees, bonding of employees,
followed.
A recess was then taken to go out to Henderson. Upon arrival there
the meeting reconvened with representatives of War Assets Admin-
istration present, and formally took possession of Basic Magnesium
Project. The Letter of Intent, which was signed by Governor Pitt-
man and Secretary Smith on March 30, 1948, under which the State
took possession, is attached hereto as Appendix No. 9.

Under the terms of the agreement Col. John R. Reilly, War Assets
Administration Project Administrator at Henderson, had been design-
ated to remain as War Assets Administration representative.

CARSON CITY, NEVADA, APRIL 8, 1948

The meeting had been called in response to a request by Senator
George W. Malone, who was accompanied by Harvey E. McPhail,
Director, Branch of Power Utilization, U. S. Bureau of Reclamation.
Project also from U. S. B. R. Region II were J. P. Bine, Chief,
Marketing and Sales Division, and Leland O. Graham, Attorney, Region
II, U. S. B. R.

Senator Malone at some length stated his ideas regarding a prepared
plan for the State of Nevada to contract for the 90,000 kilowatts from
Shasta Dam that had been reserved for it at the request of the com-
misson. The Bureau had submitted a tentative contract to the com-
mission which is commented upon elsewhere in this chapter and is
included as Appendix No. 6. The main objective of the meeting was,
however, consideration of means by which northern Nevada might
obtain a limited amount of Shasta power at once, without delay, to
relieve the distressing power shortage and “brownout.”

A committee was appointed by the Governor from the large number
of representatives of civic, business, and municipal groups present,
which committee agreed to meet with the commission’s engineers that
night to work out an emergency contract with the bureau. This was
done and the contract was sent to Washington for official processing
by the bureau’s heads. Long before this had been accomplished the
power shortage was relieved by timely storms in the Sierra Nevada
Mountains.

The necessity for such an emergency contract still exists. Western
power production, particularly in California and Nevada, cannot keep
up with the demand. Outlook for power supply to the Reno area
served by Sierra Pacific Power Company has improved as a result of a
new contract it has made with Pacific Gas and Electric Company,
which requires additional and heavier transmission lines over the
Sierras, but the “wheeling” of any bureau power over any of these
lines has been denied by the power companies. Possible use of such
Federal power has reached an impasse as a result of a lack of Nevada

The secretary stated that the committee appointed by the aforesaid
group had decided to continue investigations for securing Shasta Dam
power, and in particular to provide against another “brownout.”

No action was taken by the commission at this time as the emergency
power shortage in Northern Nevada had ceased to exist.

Mr. Shaver stated that the total overdraft of energy above Nevada’s
authorized withdrawals would probably amount to 8,000,000 kilowatt-
hours out of a total of about 174,000,000 kilowatt-hours of Nevada use,
or 4 percent. He said he thought the City was trying to drive a rather
hard deal with Nevada on a settlement for this overdraft by charging
the full Los Angeles steam-power generating rate for it. He stated
that it would be difficult if not impossible to forecast the annual use
by Nevada closer than 4 percent of the total.

A lease to the Coulter-Harriss Company was approved, covering
building J-2 and other equipment, to be used in a process for the
recovery of magnesium metal from slag and dross left in the plant at
the time Defense Plant Corporation suspended operations.

Authority was granted John W. Mueller to approve and ratify assign-
ments of contracts from War Assets Administration to the Colorado
River Commission.

CONCLUDING NOTES

On June 27, 1948, subsequent to the last meeting here recorded,
Charles A. Thompson, member of the commission since December 23,
1943, died. The members were deeply grieved to lose a valuable and
beloved associate, who was an outstanding leader in Southern Nevada.

At this date, August 16, 1948, the Basic Magnesium Project is operat-
ing under the temporary management of John V. Mueller, a member
of the Colorado River Commission, at no salary other than the legal
fixed rate of pay per day for service as a commissioner when officially
occupied, including travel and subsistence. Leases at the Project are
being transferred from War Assets Administration to the commission.
The two major lessees, Staufffer Chemical Company and Western
Electrochemical Company, are operating to the full extent of their
present capacity and both of these firms plan increased operations.

No detailed cost and income statements have been submitted to the
commission by the temporary management at this date, August 16,
1948, but incomplete information indicates that the income exceeds
expenses, and that War Assets Administration, which maintains rep-
resentatives at the plant who must approve all transactions and pro-
cedures, is satisfied with the takeover proceedings as they are being
conducted by the Colorado River Commission.
LIST OF APPENDICES
1. War Assets Administration-Southern California Edison Company
contract to supply Basic Magnesium Project with power to May
31, 1951.
2. Southern Nevada Power Company Supplemental Contract with
Colorado River Commission to underwrite Generator N-7.
3. Letter of Intent—Operation of Basic Magnesium Project Utilities
by Nevada.
4. Analysis of City of Los Angeles Proposal for Supplying All
5. Letter of Intent—Purchase and Operation of Basic Magnesium
Project.
6. Proposed Contract with United States Bureau of Reclamation for
Shasta Dam Power.
7. Pacific Gas & Electric Company-Sierra Pacific Power Company
Contract.
8. Report on Contract Between Pacific Gas & Electric Company and
Sierra Pacific Power Company, relating to Shasta Dam Power.
10. Allocation of Davis Dam Power by U.S. Bureau of Reclamation.
11. Los Angeles Proposal to Supply All Generating Capacity for
Nevada.

maintenance, fire protection, power costs, and any other expenses
incidental to the operation or maintenance of the portion of the Basic
Magnesium Plant placed in the custody of the commission as of April
1, 1946. Your commission will assume the same responsibility and
liability for other portions of the plant at the date that same is placed
in your possession. The Project Administrator, Colonel John R. Reilly,
is authorized to determine the prorata portion of expenditures for
protection and maintenance which must be paid by Colorado River
Commission until such time as they assume the total cost on the whole
plant.

This letter is executed in duplicate, and it is requested that you
return one copy to this office upon the acceptance and approval of same
as indicated by the proper State officials.

Sincerely yours,

M. L. COOMAN,
Deputy Administrator, Office of Real Property Disposal.

At this meeting a formal motion was passed to not make any changes
in Henderson rentals or place a charge for utilities and service at this
time.

On the morning of April 1st the commission reconvened and, upon
the report and recommendation of the engineering committee, formally
approved the contract for Southern Nevada Power Company to under-
write Generator N-7 (Appendix No. 2).

In response to questions, and during discussions as to the power
rate that would develop under this contract and new conditions,
Compton made the following statement:

"A figure of 3 mills per kilowatt-hour was arrived at by taking a
six-dollar per kilowatt per year charge at a 60 percent load factor and
adding thereto the Boulder Firm energy rate of 1.28 mills per kilo-
watt-hour and also adding 3 of a mill per kilowatt-hour as a charge
of getting the power from the Boulder switchyard to the lessee at
Basic. That, on those assumptions will be the charge for the leases
at Basic who have purchased capacity and are taking that power from
Section G-7, but it must be borne in mind through the interchange
agreement that will be entered into between the State of Nevada and
the Bureau of Reclamation for the interchange of Boulder-Davis energy
over the Boulder-Davis 200 kV transmission line, will result in stand-by
capacity to the N-7 generator. It is not possible to state what the
result in charge as coming out of that contract will actually be, but I
feel that taking into account the various charges that have been refer-
ted to in the Letter of Intent that the power lessees will be able to get
their power for a charge of approximately 3 mills to 3½ mills, and I
believe there is very good indication that a charge of 3 mills per
kilowatt-hour will probably be the prevailing rate for Boulder energy
alone delivered for use of lessees at the Basic Plant."

Smith stated: "Mr. Chairman, I think the contract with Southern
Nevada Power Company is very fair. It has been carefully worked
out, and is fair to present lessees and it offers strong inducement to
future operators coming in to locate at Basic for the reason that a
definite power cost can be given them—at least definite within certain
at Basic at reasonable power cost, and when I say reasonable, I mean probably cheaper than you can get it at any other place in the country."

The engineering committee was authorized to contact E. W. Rockwell of Metropolitan Water District, for engineering services in a study of the proposed contract between Southern Nevada Power Company and the State of Nevada, and for any other purposes necessary.

Miller raised a question as to whether, under the terms of our agreement with War Assets to take over Basic Magnesium Project, we could enter into a contract with Southern Nevada Power Company that specified a charge of 86 per year demand charge to lessee, which might possibly, under some conditions, yield a profit. Our contract with War Assets Administration requires that the commission sell power to the Basic Magnesium Project lessees at net cost. Subsequently sub-sections 15(a) and 15(b) were rewritten in such a way as to prevent any profit in the sale of power by the State. (See Appendix No. 2.)

Mr. Ralph Alsup, President of the Metal Trades Council, appeared and presented arguments for not raising house rentals at Henderson.

A letter from War Assets Administration dated March 19, 1948, signed by M. L. Godman, Deputy Administrator, Office of Real Property Disposal, was read as follows:

GENTLEMEN: Reference is made to that certain Letter of Intent covering the Basic Magnesium Plant located at Henderson, Nevada, executed on March 17, 1948, by the War Assets Administrator, and to be executed by the Chairman and Secretaries of the Colorado River Commission, and the State Board of Control, upon presentation.

In accordance with the provisions of this Letter of Intent, representatives of the War Assets Administration and the Colorado River Commission have agreed that the purchaser shall be placed in possession on April 1, 1948. This letter, when duly signed by the Deputy Administrator, Office of Real Property Disposal, War Assets Administration, accepted by the Colorado River Commission, and approved by the Nevada State Board of Control, together with the above-referenced Letter of Intent, when executed, shall be your authorization to enter the premises of the Basic Magnesium Plant and take possession thereof.

It has been determined that it is feasible for your commission to take actual possession as of April 1, 1948, of all the area contained in such plant which is now under lease, as well as all the entire electric transmission and distribution systems, the water supply system and the sewage disposal systems, will be placed under the custody and control of your commission on April 1, 1948. It is essential that this Administration retain certain portions of this facility to complete certain plant improvements, disposal of chapels and hospital, and for other purposes. It is understood and agreed that these portions of the plant will be turned over to the Colorado River Commission, from time to time, as the need for same by the War Assets Administration is fulfilled.

All rentals and other income accruing after April 1, 1948, shall be payable to the Colorado River Commission, and the Colorado River Commission shall assume all responsibility and liability for taxes.

APPENDIX 1

Contract for Sale of Electric Energy to War Assets Administration for Use at Its Basic Magnesium Project.

1. THIS CONTRACT, made this first day of June 1946, between War Assets Administration (hereinafter referred to as "WAA"), established by Executive Order 9689 (11 F.R. 1263); the City of Los Angeles, a municipal corporation of the State of California and its Department of Water and Power (said department acting herein in the name of the City but as principal in its own behalf as well as in behalf of the City, and the term "City" as herein used being deemed to include both the City of Los Angeles and its Department of Water and Power); 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 and the term "Nevada" as herein used being deemed to be both the State of Nevada and its Colorado River Commission); and the Southern California Edison Company, Ltd., a private corporation organized and existing under the laws of the State of California (hereinafter referred to as Edison),

WITNESSETH THAT:

2. WHEREAS, that certain contract (hereinafter referred to as "Defence Plant Contract") dated the ninth day of May 1942, Symbol No. 112-1387, was entered into between Defence Plant Corporation (a corporation created by Reconstruction Finance Corporation pursuant to Section 5d of the Reconstruction Finance Corporation Act, as amended), which said corporation pursuant to Public Law 334, approved on June 30, 1943, was dissolved effective July 1, 1945, and all of its functions, powers, duties, and authority, together with its documents, books of accounts, records, assets, and liabilities, of all kind and nature, were transferred to Reconstruction Finance Corporation (hereinafter referred to as RFC) to be performed, exercised, and administered by Reconstruction Finance Corporation in the same manner and to the same extent and effect as if originally invested in the Reconstruction Finance Corporation, and severally United States, City, Edison, California Electric Power Company, Metropolitan Water District, and Nevada, wherein a power supply as made available to Defence Plant Corporation for use at its Basic Magnesium Plant (hereinafter referred to as "Basic") near Las Vegas, Nevada, which contract terminated as to such power supply as of midnight, May 31, 1945, and

3. WHEREAS, That certain contract (hereinafter referred to as District Rosale Contract), dated the 31st day of May 1945, Symbol No. 112-1455, was entered into between the United States (acting for that purpose by Harold L. Ikes, Secretary of the Interior) and several RFC, a corporation created by the Reconstruction Finance Corporation Act, as amended, the City, Edison, California Electric Power Company, and the Metropolitan Water District wherein, among other things, a power supply was made available by City and Edison.
to RFC’s Basic Plant, and the said power supply provisions of said contract terminate as of midnight May 31, 1946.

4. Witnesseth, WAA has acquired all the rights and title of RFC to the Basic Plant and electric equipment used in connection therewith, including among other things 220,000 volt transmission lines from its Basic Plant to Boulder Powerhouse and certain 220 kv. switching facilities at said Boulder Powerhouse known as Section TTA, and WAA is desires of obtaining a power supply for said Basic Plant for a five year period commencing June 1, 1946, and—

5. Witnesseth, City and Edison are willing upon the terms and conditions hereinafter set out to supply WAA the electric energy required for the operation of its Basic Plant, provided Nevada agrees not to withdraw Boulder energy for said purpose, and Nevada is willing to agree in consideration of City and Edison agreeing to supply said electric energy.

6. Now, Therefore, In consideration of the provisions and conditions herein contained the parties hereto agree as follows, to wit:

   (a) Electric energy will be delivered by the City and Edison Company to Section TTA at the Boulder Power Plant at approximately 220 kv. in the form of three (3) phase alternating current at a frequency of approximately sixty (60) cycles per second.
   (b) The electric energy required to be delivered under this contract shall be for use solely at the Basic Plant and operations incidental thereto including the pumping of water from Lake Mead for said plant but exclusive of electric energy for use at Henderson townsite.
   (c) All electric energy delivered hereunder will be measured at approximately 13,300 volts at the Basic Plant on metering equipment installed and maintained at said plant at the sole expense of WAA. For the purpose of computing the maximum demand and the amount of energy delivered to WAA at Section TTA at Boulder Power Plant one and one-quarter percent (1 1/4\% \%) shall be added to the meter readings to cover line and transformer losses. Meters shall be tested at any reasonable time at the request of either WAA, City, or Edison, and in any event shall be tested at least once each year. If the test discloses that the error of any meter exceeds one percent (1\% \%) such meter shall be adjusted so that the error does not exceed one-half of one percent (1/2 \% \%) of the meter readings. Meters shall be kept sealed between tests and all tests of said metering equipment shall be conducted only when representatives of WAA and City and/or Edison are present.

8. Rates.
   (a) The rate for energy delivered hereunder shall consist of a combination demand charge and energy charge.
   (b) The demand charge for all monthly demands up to a maximum of 35,000 kwh. shall be five cents (5\% \%) per kilowatt of monthly thirty (30) minute maximum demand, but not less than $1,500 per month in any event.
   (c) For all thirty (30) minute maximum demands in excess of 35,000 kilowatts the demand charge shall be seventy-five cents (75\% \%) per kilowatt of such excess monthly demand.

mills. Assuming $320,000 as the annual cost of Generator N-T, which the Southern Nevada Power Company is willing to underwrite for the State, and further assuming that the losses at Basic shall have a demand of 35,000 kilowatts at $6 a kilowatt-year, means that the power losses would pay a total sum of $100,000 annually for the 35,000 kilowatts. The Southern Nevada Power Company would pay $320,000 less $210,000 or $110,000. Now on the surface that might not look equitable, but I believe there’s not a member of the Colorado River Commission who says or feels that the Southern Nevada Power Co. should necessarily pay a higher power cost for its power from Boulder than any other State power contractor shall pay. Using the figures that are quoted, and the estimated generating charges prepared by the Bureau of Reclamation for the year ending May 31, 1948, the Southern Nevada Power Co. will pay, in addition to the $110,000 on N-T, $86,000, or a total payment of $196,000, and based on the assumed kilowatt-hours used in the estimated generating charges for the year of operation ending May 31, 1948, the Southern Nevada Power Company’s power cost is 2.73 mills per kilowatt-hour. In other words, gentlemen, the Southern Nevada Power Company is paying five-sounds of a mill per kilowatt-hour more for its power than the lessors at Basic. We’re underwriting a unit on which the lessors at Basic can come and go, in accordance with withdrawal and relinquishment provisions under the General Regulations. They can enter into a five-year contract, a ten-year contract, a 15-year contract, or any length of contract they desire, but for the charge of $6 per kilowatt-year they are getting their power for less cost than the Southern Nevada Power Company.

"I believe Mr. Smith has in mind also that portion of the contract which provides that, as determined by the company, there is unused capacity in the 45,000 kilowatts, except for the use of the company and that other State power contractors may use that excess at $6 per kilowatt per year. Unless the load increases and existing load requirements on Southern Nevada Power Company systems are drastically reduced by economic reasons within this area I don’t believe the Southern Nevada Power Company should, or the Colorado River Commission members will, ask the Southern Nevada Power Company to give up kilowatts of capacity in N-T to-wit, up to 45,000 kilowatts, because actually 45,000 less 14,000 reserved for Lincoln and Overton, leaves Southern Nevada only 31,000 kilowatts, and that 31,000 kilowatts will all be required by the company. As additional power requirements are required for lessors at Basic, the additional power requirements will have to come through either of two ways: Davis Dam energy, or the installation of additional generating machinery and equipment at Boulder. When additional machinery and equipment are installed at Boulder, all of you are aware that whoever contracts for that installation shall contract to pay for the balance of the 30-year period or until May 31, 1987. So as the first step in a solution to the power problem and a power supply for the lessors at Basic, there’s 35,000 kilowatts in N-T at a cost per kilowatt-hour less than what Southern Nevada Power Company will pay, what Lincoln County Power District will pay, and what Overton Power District will pay, and by blending that power within a certain ratio with kilowatt-hours available from Davis, power deliveries can be made to the lessors.
such cost as will be allocated to the State by the United States for such charges on Sections G-7 and T-7. The draft submitted a few days ago, which Mr. Smith has discussed, provided that starting May 31, or June 1, 1951, the company would be entitled to certain credits; one credit being $6,000 per month, or $72,000 per year, the other credit being $6 per kilowatt per year of kilowatts of capacity in Sections G-7 and T-7 served by the State to other State power contractors.

At a meeting in September of 1947, the Southern Nevada Power Company presented a form of request to the Colorado River Commission for Generator A-9, stating therein they required 40,000 kilowatts or the capacity of half-unit A-9, which could be 45,000 or 50,000, as the capacity required by the company for the operation of its own system. The State of Nevada has a right to request generating capacity at Boulder to meet the requirements of its power users, and in the judgment of the power company, for our own operations we will require 45,000 kilowatts of capacity. The Colorado River Commission decided that the installation of Generator A-9, plus the A-3 Transformer Bank, equivalent to a full-sized unit, would not fulfill the State’s requirements for power insofar as other State power contractors were involved. Therefore, no request was made, and no further action was taken by the State on the Southern Nevada Power Company’s request. The company now has submitted another supplemental agreement.

The basis of this new plan is that the company requires 45,000 kilowatts capacity for its own use. At the meeting in September the Lincoln County Power District representatives objected to 45,000 kilowatts of generating capacity for which the company was willing to pay 100 percent of such cost being installed for the exclusive use of our company. To satisfy Lincoln County Power District, and Overton Power District, we provide in this supplemental contract, that 14,000 kilowatts of capacity shall be held in reserve for their (L.C.P.D. and Overton Dist.) use. It shall not cost them any money until such time as they notify the State that they desire a portion or all of the 14,000 kilowatts. The Southern Nevada Power Company will pay those costs for the other users until such time as these other power users’ power requirements are such that they desire to use a portion of this 14,000. That is the commitment to the Lincoln County Power District by the Southern Nevada Power Company. Southern Nevada Power Company as I stated, wants 45,000 kilowatts of capacity. That’s what we feel our operations will require, and we are willing to pay for.

N-7 generator has a capacity, or a name-plate rating of 82,000 kva, which at 100 percent load factor is 82,000 power factor. Forty-five thousand kilowatts for Southern Nevada Power Company, Lincoln County Power District, and Overton Power District, leaves 35,000 kilowatts for use by other State power contractors. The leases at the Basic Magnesium Project are now using approximately 32,000 to 35,000 kilowatts of capacity. The remaining capacity in N-7 is 35,000 kilowatts, which will carry the existing loads at the Basic Magnesium Project, for which the contract provided they shall pay $6 per kilowatt-year. The power cost to the leasing at Basic at $6 per kilowatt-year, with a firm energy rate of 1.26 mills per kilowatt-hour, which is slightly greater than the present firm energy rate, makes a power cost of 2.26
curtailment, provided that there shall be a prorate reduction in the monthly demand charges in the event of such reduction or discontinuance of service.

10. Withdrawal by Nevada.

Nevada agrees that it will not during the five-year term of this contract withdraw electric energy from the Boulder Project under the terms of existing contracts for delivery directly or indirectly to the Basic Plant to be of energy to be delivered by City and Edison under this contract except as to withdrawals which will be effective on or after June 1, 1947, provided, that such agreement by Nevada shall not limit or in any way affect Nevada's right to withdraw energy for any other purpose.


City and Edison shall each bill W.A.A. monthly on or before the tenth of the month for their respective shares of the demand charge and energy charge for the previous calendar month. W.A.A. shall pay said bills within twenty days after receipt thereof. At the end of each contract year the said monthly payments shall be subject to adjustment to reflect the correct billing for the year in accordance with the terms hereof.

In the event W.A.A. shall fail to pay bills rendered when due, the City and/or Edison may, at their option, discontinue service. If bills are not paid when due, an interest charge of one per cent (1%) of the amount unpaid shall be added thereto, and thereafter an additional interest charge of one per cent (1%) of the principal sum unpaid shall be added on the 30th day of each succeeding calendar month until the amount due, including such interest, is paid in full. Nothing contained herein shall be construed as in any manner abridging, limiting, or depriving City and/or Edison 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. In the event there is any dispute with respect to any billing under the terms of this contract, payments made shall be subject to adjustment upon final determination by the Board of Control.

12. Board of Control.

The City, Edison, and W.A.A. shall each designate in writing, a person to constitute a Board of Control, and as between City, Edison, and W.A.A., said Board of Control shall determine all matters involved in connection with the delivery of electric energy under the terms of this contract, and their decision shall be binding upon the parties hereto. In the event of disagreement between the members of the Board of Control, the decision of such person as shall be selected by them shall be accepted by the parties as the decision of the Board of Control, and be controlling.

13. Waiver.

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.

14. Term.

The term of this contract shall be from June 1, 1946, to May 31,

GARBON CITY, NEVADA, MARCH 24, 1948

All five members of the State Board of Control were present, including the Governor. The Letter of Intent, being an agreement on the part of the commission, acting for the State, to take over the Basic Magnesium Project was, after some discussion and questions, approved by the Board of Control, one member present not voting, as he said that he had not had time to study the proposal.

It was agreed by the State to take control of both the utilities and the B. M. Project plant entirely on April 1, 1948.

Compton, speaking for Southern Nevada Power Company, asked if the commission after taking charge of the B. M. Project, would desire to renew a contract for delivery of power to Henderson Totahide at 69,000 volts, for another year, until May 31, 1949. If so, Southern Nevada Power Company desired to withdraw an additional 20,000,000 kilowatt-hours.

Compton also asked if the commission would like to renew a contract for pumping water for Basic Magnesium Project from June 1, 1946, to May 1, 1949. About 9,000,000 kilowatt-hours were annually required for pumping, which the company supplied at 34 mills per kilowatt-hour.

These two contract renewals were approved, together with Southern Nevada Power Company's request for the withdrawal of an additional 20,000,000 kilowatt-hours, to become effective October 3, 1948, as Withdrawal No. 21.

Compton said he had prepared a contract for Southern Nevada Power Company to underwrite generator N-7 and associated equipment, and wished to submit it for consideration. The chairman suggested that copies of the contract be handed the members for study, after which action could be taken on it at a meeting to be held in Las Vegas on March 30, 1948.

A request by the U. S. Air Force for delivery of five large motor-generator sets at Basic was considered and denied, as the members considered they added much to the value of the plant, and their disposal could easily prevent the consumption of highly desirable leases, very necessary to make the project successful.

Shaver, engaged in setting up operation of the utilities at Henderson for the commission, submitted utility rates he had prepared to be filed with the Public Service Commission.

LAS VEGAS, NEVADA, MARCH 30, 1948

Compton read his proposed supplemental contract to underwrite generator N-7, which is included in this chapter as Appendix No. 2, previously referred to. Compton made the following statement regarding the contract, which statement is given verbatim as transcribed at its meeting:

"Mr. Chairman, the payment of $15,000 per month, commencing January 1, 1948, and terminating May 31, 1951, constitutes a payment of $675,000 in a form of generating costs. After May 31, of 1951, the State will be responsible for 100 percent payment of the generating charges allocated against the State by the United States for Sections G-7 and T-7. The Southern Nevada Power Company, under this supplemental contract, underwrits the State of Nevada 100 percent for
Generation costs for the ultimate City system assumed $7.50 per kilowatt per year but not to exceed the cost of equipment. Results are given in Exhibit I.

From the foregoing data on cost of generating capacity, it is apparent that there is not a great difference in the cost of generating capacity furnished by the City or State, provided the City's proposition for ultimate generating capacity is reasonable. If it is believed that the load factor will be high, the City's proposition will probably be the lowest in cost.

In providing for State's generating capacity, an agreement is required between the City and Municipalities for the apportionment of generation costs on Sections G1 and G3. The present regulations provide that apportionment be made on use or withdrawal of energy, whichever is greater. It is apparent that it is not reasonable for Nevada to use withdrawn energy for apportionment when such energy is in excess of that which can be generated on Sections G1 and G3. It is suggested that energy for apportionment of charges be either a fixed amount each year or an amount determined by the product of capacity available to Nevada from Sections G1 and G3 and the product of system load factor and 8,760 hours. Should the City's proposal be accepted there are several items that should be covered:

1. Provision should be made for generating capacity in addition to the one unit and stand-by capacity. This should include the method of charging for the additional capacity. If no provision is made for additional capacity the State should have the right to terminate the contract when additional generating capacity is required.

2. It is possible that Arizona may require stand-by capacity and the City would furnish it from stand-by capacity paid for by Nevada. Should Nevada's payments for such stand-by include capacity paid for by Arizona, there should be a reduction in Nevada's payments.

3. The State should be relieved of any liability resulting in the reapportioning of generating charges for Sections G1 and G3. This involves the determination, if any, of Nevada's and Kingman and Needles share of generation costs in Sections G1 and G3 so that the Municipalities will not be required to pay for that portion of generation used by others as covered in the $7.50 rate.

4. It would appear that the City, at this time, would be in a position to relieve the State of the possibility of paying for property rendered idle, in so far as the City is concerned.

5. An agreement must be made with Kingman and Needles as to the cost of generation. A charge of $7.50 per kw. year amounts to $7.50 x 5,000 kw. = $37,500 for 5,000 kw. of generating capacity. The load of Kingman and Needles is about 22 million kw.-hr. per year. This gives a cost of generation of $37,500 $1.77 per kw.-hr.

This is about twice as much as their present charge and does not allow anything for transmission over the Basic and Southern Nevada Power Company lines to their lines.
The City’s proposal is for one generator with stand-by. The proposed charge of $7.50 per kilowatt per year of maximum demand was based upon a firm output of 70,000 kilowatt and the estimated cost of one unit with stand-by capacity. No mention is made regarding the furnishing of additional generating capacity which the State most likely will require when it uses all of its firm allotment of Boulder energy. This energy averages about 700 million kilowatt-hours per year which at a load factor of .70 requires 135,000 kilowatts of generating capacity, an amount considerably above the firm capacity in the City’s proposal. Should the City agree to furnish this additional generating capacity at $7.50 per kilowatt per year, the cost of two generating units with stand-by transformer capacity would be paid for completely by Nevada and the City would have the use of a large portion of the generating capacity. An estimate of the cost of the City’s system with two full-sized units with stand-by capacity is shown in Exhibit B as $625,000 per year. This cost is equated when the State takes 110,000 kilowatts at $7.50 per kilowatt-year. Therefore, it would appear reasonable to adjust the charges for the ultimate City system so that the State would not pay more than the total cost of capacity set aside for its use. This may be accomplished by continuing the charge of $7.50 per kilowatt-year, but limiting the total payment to the actual cost of equipment installed for the State. Another method would be to adjust the demand charge, using the total cost of equipment provided for the State and the maximum firm output of the equipment. This would give about $6 per kilowatt per year.

The City’s generating capacity for the State’s ultimate requirements would probably be set up as shown in Exhibit F, and consists of two generators units A3 and A4 with stand-by capacity of the original 100,000 kva transformer bank connecting to units A1 and A2. The State’s generating capacity for the same conditions is shown in Exhibit G and consists of unit N8, unit A3, and unit A9. This gives a stand-by capacity of only 40,000 kva due to use of unit A9, but it is believed that this amount of stand-by capacity will be ample. Both systems require an initial expenditure by the State of about $450,000 for 40,000 kva of transformer capacity at base. The estimated yearly cost for the two systems with 110,000 kw and 140,000 kw are:

<table>
<thead>
<tr>
<th>City</th>
<th>$430,000</th>
<th>$497,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>$900,000</td>
<td>$900,000</td>
</tr>
</tbody>
</table>

The above comparison assumes that the City’s charge is $7.50 per kilowatt per year but that the total charge does not exceed the cost of equipment furnished. A comparison of the cost of generating capacity under different loads is shown in Exhibit H.

The over-all cost of the City’s and State’s systems were compared for an estimated load-building program, which started in 1922 with 400 million kilowatt-hours and increased 30 million kilowatt-hours per year until 1967 when it reached 700 million kilowatt-hours at which point it remained until termination of Boulder Canyon Project contracts in 1967. The comparison was made with power used at load factors of .50, .60, .70, and .80, and in each case additional generating capacity was added to form the ultimate system when the load demand exceeded 12,000 kilowatts, the rating of a full-sized generating unit.
actual cost of facilities furnished, or the rate should be reduced to a
value of about $6 per kw. per year. Cost data in the report used the
first method of limiting the yearly payment.
5. The City should relieve the State of any obligation to pay the
City for property rendered idle.
Respectfully yours,
E. W. ROCKWELL,
Consulting Engineer.

APPENDIX 2

ANALYSIS OF CITY’S PROPOSAL FOR GENERATING CAPACITY
FOR NEVADA

In analyzing the City’s proposition to furnish generating capacity
for the electric power system which uses energy allocated to Nevada
under the Boulder Canyon Project, a comparison has been made with
generating equipment at Hoover Dam authorized and paid for by the
Colorado River Commission of the State of Nevada. The generating
systems compared were substantially equal insofar as each was suitable
to supply power to the required load. There were minor differences in
electrical characteristics and capacity furnished, but for the purpose
of supplying power to the load both systems were suitable. The
generating system proposed by the City of Las Angeles is shown in
Exhibit A and consists of a full-sized generating unit, with stand-by
capacity in the form of a 100,000 kva transformer bank connecting
to Units A1 and A2. This system is referred to as “City System,” or
simply “City.” The generating system with which the comparison was
made is shown in Exhibit B and consists of generating Unit N7 and
Bank N7-8, half-sized Unit A9 and 40,000 kva of transformer capacity
connecting to Units A1 and A2. This system is referred to as the
“State System,” or simply “State.” This system has two sources of
generation, Unit N7 and Units A1 and A2 through Bank A9 that
cannot be operated in parallel due to connection to systems paralleled
at other places. However, it is believed that no great hardship will
be imposed by operating the Nevada system with the loads divided
between two generating systems.

In comparing the two systems in regard to initial cost there is a
rather odd situation, in that the City’s proposal requires an initial
expenditure by the State for metering equipment and extension of
210 kw lines at Hoover Dam and for a new 40,000 kva substation at
Basic Magnesium amounting to about $600,000. On the other hand,
the State’s system requires no initial expenditure other than assuming
the yearly costs of equipment at Hoover Dam. However, the estimated
yearly costs for the two systems with 70,000 kw and 80,000 kw are:

| City       | $560,000   | $645,000 |
| State      | 680,000    | 686,000  |

In considering the costs of the two systems for different loads, the
fixed yearly cost of the State’s system favors lower cost power as the
load increases regardless of load factor, provided that the system peak
is within the capacity of the system; and the method of charging for
generating capacity at the rate of $7.50 per kw.kwhr per year for the
City system favors lower cost power as the load factor increases. This
comparison is shown in Exhibit D.

1. This supplemental agreement made this day of May, 1948, by
and between the State of Nevada, a body politic and corporate, and
the Colorado River Commission is meant to be 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 supplemental contract
being deemed to be both the State of Nevada and its Colorado River
Commission or its successor(s), acting in pursuance of an act of the
Legislature of the State of Nevada, entitled, “An Act creating a com-
mmission to be known as the Colorado River Commission of Nevada,
defining its powers and duties, and making an appropriation for the
expense thereof, and repealing all acts and parts of acts in conflict
with this act,” approved March 30, 1935, (Chapter 71, Statutes of
Nevada, 1935) and acts amendatory thereof or supplemental thereto.

2. Whereas, The State and the Company did enter into a contract
dated October 10, 1941, for the sale of electrical energy generated
at Hoover Power Plant, and
3. Whereas, The State did, pursuant to the Boulder Canyon Project
Act, enter into a contract with the United States of America for the
sale to the State of electrical energy generated at Hoover Power Plant,
and it is provided in said contract that the State of Nevada shall be
entitled to generation of electrical energy by means of Section 6-3-1.

4. Whereas, The kilowatts of generation capacity now available in
Section 6-3-1 for use by the State at Hoover Power Plant is no longer
sufficient to meet the State’s power requirements; and
5. Whereas, the transformer capacity of Section 7-3.3.1, commonly
known as transformer bank “Y” through which the present State
of Nevada Power contractors receive electrical energy is fully loaded and
it is necessary to provide for additional transforming capacity at
Hoover Power Plant to meet the State’s additional power requirements;
and
6. Whereas, The Company, in the performance of its obligation as
a public utility to supply electric energy to the inhabitants of Clark
County, Nevada, in accordance with a Certificate of Public Convenience
and necessity as granted by the Public Service Commission of Nevada,
dated July 5, 1929, finds it necessary to request the State to provide for

EGREEMENTS

2. Whereas, The State and the Company did enter into a contract
dated October 10, 1941, for the sale of electrical energy generated
at Hoover Power Plant, and
3. Whereas, The State did, pursuant to the Boulder Canyon Project
Act, enter into a contract with the United States of America for the
sale to the State of electrical energy generated at Hoover Power Plant,
and it is provided in said contract that the State of Nevada shall be
entitled to generation of electrical energy by means of Section 6.3-1.

4. Whereas, The kilowatts of generation capacity now available in
Section 6.3-1 for use by the State at Hoover Power Plant is no longer
sufficient to meet the State’s power requirements; and
5. Whereas, the transformer capacity of Section 7.3.3.1, commonly
known as transformer bank "Y" through which the present State
of Nevada Power contractors receive electrical energy is fully loaded and
it is necessary to provide for additional transforming capacity at
Hoover Power Plant to meet the State’s additional power requirements;
and
6. Whereas, The Company, in the performance of its obligation as
a public utility to supply electric energy to the inhabitants of Clark
County, Nevada, in accordance with a Certificate of Public Convenience
and necessity as granted by the Public Service Commission of Nevada,
dated July 5, 1929, finds it necessary to request the State to provide for

1224.0x1224.0
its use additional generating and transforming capacity at Hoover Power Plant to meet the growing demands of customers; and
7. Whereas, Lincoln County Power District No. 1, Overton Power District No. 5, and Southern Nevada Power Company, are joint users of Sections G-3, T-1-B.1 and T-1-B.2 and each pay their pro rata share of operation, amortization and replacement costs in the ratio of the number of kilowatt-hours of energy used by each; and
8. Whereas, Article 12 (a) of the contract dated October 10, 1941, referred to above provides as follows:

Energy Rates and Generating Charges

The rates and charges to be paid by the Company for electrical energy shall be as follows:

A. The cost to the State as charged the State by the United States Government, under the provisions of Exhibit 3, for all electrical energy contracted for by the Company for all electrical energy delivered to it if such electrical energy is in excess of the minimum herein contracted for and such additional charge as the State may deem necessary, but not exceeding three-tenths mill ($0.0003) per kilowatt-hour, to apply toward reimbursing the State for the costs of administration incurred by the Colorado River Commission of Nevada.

The Company shall pay hereunder its pro rata share of the annual costs of operation, amortization and replacements of all facilities installed by the United States Bureau of Reclamation and required and used for the delivery of electrical energy to the Company, with the intent and purpose that said costs shall be borne equitably and on pro rata basis by all contractors of power using facilities through contracts with the State, or otherwise.

If, in the opinion of the State, any cost to be paid by the State to the United States cannot equitable be apportioned between all contractors purchasing energy from the State in the ratio of the number of kilowatt-hours of energy used by each, then the Company shall pay such proportion of the said cost as the State may determine to be equitable and just; and

9. Whereas, Sections G-7 and T-7 (Unit N.7 and N.7.4) Transformer Banks and associated 250-Kv. Switchyards were installed by the United States for use by Defense Plant Corporation under an agreement to which the United States of America, Defense Plant Corporation, Metropolitan Water District of Southern California, therein called "District," the City of Los Angeles, therein called "City," and all other power allottees from Boulder Canyon Project are parties, entitled "Agreement Arranging and Power Supply for Defense Plant Corporation," dated May 9, 1942, which contract provides in Article 305 thereof, in part, as follows:

"** During the period of segregation Sections G-7 and T-7 may be used to generate Boulder Energy, if any which Defense Plant may have procured; and during said period of segregation the Secretary may arrange for the use of said sections for other parties, including the United States, which

APPENDIX 4

Analysis of City of Los Angeles Proposal For Supplying All Generating Capacity for Nevada

October 20, 1947.

MR. ALFRED MERRITT SMITH, Colorado River Commission, Office of State Engineer, Carson City, Nevada.

My Dear Sir: I have examined the City's proposed agreement for "Furnishing Generating Capacity for the State of Nevada" which you handed me in Carson City on October 6, 1947, and have compared the City's proposed generating system with a State's system consisting of electrical equipment authorized and paid for by the State and installed at Hoover Dam. Comparative cost data for the two systems are included in a report entitled an "Analysis of City's Proposal for Generating Capacity for Nevada," which is transmitted herewith. The report indicates that there is but little difference in the cost of the two systems; the State's system being lower in cost for loads of low load factor and the City's system being lower in cost for loads of high load factor. However, the State's system has a slight advantage in lower cost on the basis of selling unused generating capacity to other users of Boulder energy.

The report also indicates that the City's proposal should include additional benefits to the State in order to place the two systems on a more equal basis as follows:

1. The proposed rate of $7.50 per kw.-year covers the cost of one generating unit and sufficient transformer capacity for stand-by generation. Should stand-by capacity be sold to another party such as the State of Arizona, the charge for stand-by to Nevada should be reduced by one-half the cost of stand-by commonly used by both parties.

2. The proposed rate for power taken in excess of requests and withdrawals at steam plant rates of $16 per kw.-year and 350 kwh. per barrel of oil should be modified to more closely simulate average steam costs. A value of 500 kwh. per barrel of oil would be more suitable with the $18 per kw.-year demand rate.

3. The proposed rate of $7.50 per kw.-year provides for an adjustment which is based upon the actual cost of generating equipment at Hoover Dam. Such an adjustment should not include steam plant costs as indicated in section 12 of the proposal. Apparently this is an error in the proposal for it is believed it was not the intent to include steam costs in the adjustment of hydro costs.

4. The City's proposal does not provide for an adjustment of rate when the State uses its full allotment of Boulder energy. At that time the State will require more than the output of one Hoover Dam generating unit with stand-by capacity. The rate of $7.50 per kw.-year would pay for all facilities provided by the City for the State when the State's load attains a value of about 110,000 kw. Under these conditions the rate should be modified to limit the yearly payment to the
may have rights to take Boulder Energy, and the receipts from such arrangements shall be credited to the Defense Plant's obligation regarding said sections during said period **; and

10. WHEREAS, The said agreement dated May 9, 1942, also provides in said Article 305 thereof, in part as follows:

** Said period of segregation shall terminate, and the District agrees to assume all generating costs for Sections G-7 and T-7, on June 1 of the year of operation following the year of operation in which either one of the following events has occurred:

(a) The usage by the District in the operation of its aqueduct system has exceeded 263,000 kilowatt-hours in any one year of operation;

(b) The integrated 30-minute demand in the operation of the District's aqueduct system has exceeded 150,000 kilowatts;

but in no event later than June 1, 1946; provided, that at the option of the District it may terminate said period of segregation and assume said costs at an earlier date upon written notice of two years to the Secretary, through the City as Operating Agent; and

11. WHEREAS, The Colorado River Commission of Nevada, by letter dated February 20, 1948, addressed to the Metropolitan Water District of Southern California stated in part as follows:

At a regular meeting of the Colorado River Commission of Nevada, held in the Governor's Chambers, Carson City, Nevada, on February 18, 1948, this Commission voted to take over Sections G-7 and T-7 at Boulder (Hoover) Power Plant to be used in generating a power supply for the State of Nevada, providing above-mentioned Article 305 is amended so that the Metropolitan Water District of Southern California will not be obligated to assume the generating costs of Sections G-7 and T-7 on May 31, 1948, or under any condition except through exercising an option upon written notice of five years; and

12. WHEREAS, It is contemplated that the Metropolitan Water District of Southern California will agree to such an amendment and as a result the generating costs of Sections G-7 and T-7 will then become the obligation of the State of Nevada;

AGREEMENT

13. Now, THEREFORE, In consideration of the premises and of the provisions, covenants and conditions herein contained, the parties hereto agree that the Agreement between the parties hereto dated October 10, 1941, be and the same is hereby supplemented and amended as follows, to-wit:

14. That the State shall arrange with the United States for the generating rights of Sections G-7 and T-7 at the Hoover Power Plant.

15. That:

(a) 45,000 kilowatts of the capacity of said sections G-7 and T-7
shall be for the use of the Company in the performance of its obligation as a public utility to supply electric energy to the inhabitants of Clark County, Nevada, in accordance with the Certificate of Public Convenience and Necessity granted to the Company by the Public Service Commission of Nevada, under date of July 3, 1929. Portions of said 45,000 kilowatts, not in excess of a combined demand of 34,000 kilowatts, may be used by Lincoln County Power District No. 1 and Overton Power District No. 5 at a generation charge of $6 per kilowatt per year, or at the generation charge specified in paragraph 15(b) hereof, whichever is the smaller.

The remaining capacity of said Sections G-7 and T-7 may be used by other State power contractors at a generation charge of $6 per kilowatt per year, or at the generation charge specified in paragraph 15(b) hereof, whichever is the smaller; provided, however, that when the Company requires additional kilowatts of capacity in excess of the amount available to the Company from Sections G-3 and T-1-B-1 (Bank "Y") and Sections G-7 and T-7, then said remaining capacity of Sections G-7 and T-7 (to wit: The amount in excess of 45,000 kilowatts) shall be for the use of the Company to the extent said remaining capacity has not then been contracted for by other State power contractors. During such times as the whole of the said 45,000 kilowatts of capacity of said Sections G-7 and T-7 is not required by the Company, as determined by the Company, other State power contractors may use such unused portions thereof at a generation charge of $6 per kilowatt per year, or at the generation charge specified in said paragraph 15(b) hereof, whichever is the smaller, during such time as such unused portion is not required by the Company.

(b) During any year of operation in which the combined kilowatts withdrawn by or the kilowatt demand (whichever is the greater) of all purchasers of capacity from Section G-7 and T-7, multiplied by $6 per kilowatt will equal or exceed the total annual generating charges on said sections for such year of operation, then in such event the generation charge per kilowatt for such year, will be the total annual generating charge for said Sections divided by the combined kilowatts withdrawn by or kilowatt demand (whichever is the greater) of all said purchasers. By the words "year of operation" as herein used shall be meant the period from June 1st of one year to May 31st of the next succeeding year, both dates inclusive.

(c) Each contract entered into by the State covering the sale of capacity in Sections G-7 and T-7, shall provide that each contractor shall be required to pay for the amount of capacity so contracted for throughout the life of such contract and that such contract may not be terminated, nor may the amount of capacity contracted for thereafter be relinquished, except upon the effective date of "Notice of Relinquishment," given as provided in Article 4(b) (iv) of the General Regulations. In each such contract, provision shall also be made that the contractor shall be obligated to pay for the kilowatts withdrawn from its account or for the kilowatts of its actual demand, whichever is the greater.

(d) The State will not enter into contracts for the sale of capacity in Sections G-7 and T-7 for use in the area then being served by the Company, without its written consent.

H. In the event the Southern Edison Company does not submit a proposal deemed acceptable to lessee for the use of generator known as N-7, located at Hoover Dam, Nevada, whatever rights lessee may have to the use of this generator may be assigned to the lessee on a mutually agreeable basis.

1. Lessee at its own expense shall carry insurance on the property and equipment covered by this agreement against fire, windstorm and such other hazards in such companies and amounts as shall be satisfactory to lessee. Such insurance policies shall be made payable to the Treasurer of the United States for the protection of all interests and be delivered to lessee for safekeeping. In the event lessee fails to procure such insurance as it is obligated to procure, or pay any of the premiums when due, the lessee may at its option procure such insurance and pay any delinquent premiums and require lessee to immediately reimburse it for such cost, which cost shall be considered additional rental and immediately become payable. Lessee shall be obligated to save lessee harmless against any loss or damage because of injury to persons occurring on the said leased property during lessee’s occupancy thereof. Lessee will procure and maintain at its cost public liability insurance and property damage insurance in such amounts and with such companies as lessee shall approve or require. Policies evidencing such insurance shall name Reconstruction Finance Corporation, acting by and through the War Assets Administration, as assured, and be delivered to lessee.

J. Lessee agrees to operate all the above-mentioned utilities, including but not limited to water treatment, softening and chlorination, to the satisfaction of the lessee or its representatives, and to grant free access at all times to any and all parts of the leased property to the lessee or its representatives for inspection of the premises and methods of operation. Lessee shall likewise be granted free access to enter any portion of lessee’s properties known as Basic Magnesium Project for the purpose of carrying out the provisions of this agreement.

K. The lessee agrees to obtain firm commitments from consumers of power at Basic Magnesium Project to take and pay for specified amounts of electrical energy.

L. The lessee agrees to use diligence in promptly exercising its rights to withdrawal of electrical energy in order to provide an ample supply of power for Basic Magnesium Project at the lowest costs possible.

M. As long as this interim use lease is in force, lessee shall keep the leased property and equipment which it uses hereunder in a good state of repair, at its cost, for the period of such use, and in a condition to carry on all necessary repairs, alterations, additions, improvements, and equipment necessary for the orderly and efficient operation of the premises and equipment, in all respects to keep the leased property in a safe, sanitary and healthful condition.

N. The lessee reserves the right to assume the obligations of any or all plant lessees, in whole or in part, for the furnishing of such utility services by lessee at any time.

This Letter of Intent is executed in quadruplicate and it is requested that you indicate your acceptance hereon by having the chairman and secretary of the Colorado River Commission execute and return this administration three (3) counterparts hereof. Upon your acceptance, your possession of the above-described premises for the purposes
The following items are to be allowed in computing the cost of supplying power:
1. Cost to Nevada for firm energy delivered at present delivery points in Boulder Switchyard.
2. Demand charges, if any.
3. Transmission losses.
4. Distribution losses.
5. Labor for maintenance and operation.
7. Telephone line rental for load dispatcher.
8. Reasonable general overhead and administrative costs.
10. Pay roll taxes and insurance.
11. Operation of necessary automotive equipment.
12. Premiums for comprehensive and public liability insurance.

The following charges are not permissible as items of cost:
(a) State of Nevada and Clark County taxes on the transmission and distribution systems.
(b) Amortization charges on the transmission and distribution systems.
(c) Any profit from the power delivered to the plant lessees or War Assets Administration.
(d) Rectifier operation, unless paid for by the consumer.

The following items of cost are allowed in computing the cost of the operation of the water and sewage systems:
1. Labor for operation and maintenance.
2. Pay roll taxes and insurance.
3. Reasonable general overhead and administrative costs.
4. Materials for operation and maintenance.
5. Power for pumping and operation, at rates based on paragraphs above.
6. Operation of necessary automotive equipment.
7. The following charges are eliminated as items of cost:
(a) State of Nevada and Clark County taxes on water and sewage systems.
(b) Amortization charges on the water and sewage systems.
(c) Any profit to the Colorado River Commission or its agent from the sale of water to plant lessees or War Assets Administration.

E. Statement of the State Auditor of Nevada shall be furnished to War Assets Administration at the termination or expiration of this lease and annually thereafter in the event of extension thereof, showing the actual costs for the year. (Charges not justified by such audit shall be adjusted.)

F. The lease shall be permitted to enter into contracts with other parties for the sale of such power, or for the pumping of such water, with the approval of such contracts by the lessee.

G. The lease shall be permitted to charge the individual domestic and commercial consumers in the town of Henderson, Nevada, the legally established rates for electric and water services, such charges to cover the cost of purchased power for the town of Henderson, Nevada, and the expense of maintenance and operation of the utility facilities located therein.

(c) In addition to the charge for the generation of electrical energy stated herein, and herein called "generation charge" each State power contractor shall pay to the State the usual electrical energy charge at the firm energy rate in effect during the year of operation such energy is generated.

16. All State power contractors will make their own arrangements with the State for the withdrawal and relinquishment of electrical energy and horsepower to meet their requirements in accordance with the General Regulations.

17. In addition to the payments provided for in the agreement between the parties hereto, to which this is Supplementary, the Company shall pay to the State hereunder, as follows:
(a) For the period beginning January 1, 1946, and ending May 31, 1951, the sum of fifteen thousand ($15,000) dollars per month. It is agreed that said payment, as made by the Company to the State shall be immediately paid by the State to the United States, pursuant to Article 22 of the General Regulations.
(b) For the period commencing June 1, 1951, and until the termination of this Supplemental Agreement, the Company shall pay to the State the annual cost of amortization, replacement and operation of said Sections G-7 and T-7, as said costs shall be allocated by the United States to the State, pursuant to Article 17 of said General Regulations, provided, however, that the generating charges paid to the State by the Company under Section 17(a) herein, shall, at the option of the Company be reflected in the form of reduced generating charges to the Company after June 1, 1951, in a manner and in an amount determined by the Company, of which manner and amount, the Company will notify the State in writing; and provided further, that for the period commencing June 1, 1951, and until the termination of this Supplemental Agreement, the Company shall be entitled to a credit in an amount equal to the amount charged for all capacity from said Sections G-7 and T-7 sold by the State or contracted to be sold by the State to power contractors other than the Company.

18. The kilowatts of capacity to which the Company, the Overton Power District No. 5 and the Lincoln County Power District No. 1 are entitled in Sections G-3 and T-3.1-B.1 (Bank "Y") shall be deducted from their respective total withdrawals or their respective kilowatt demands, whichever is the greater, in computing the generation charge set forth in Section 15(b) hereof.

19. The State agrees that the present State power contractors will preserve to each other the proportions of generating and transforming capacity in Sections G-3 and T-3.1-B.1 and T-3.1-B.2 as such proportions existed during the year of operation ending May 31, 1947.

20. It is agreed between the parties hereto that should the Metropolitan Water District of Southern California exercise the option referred to in Article 305 of the "Agreement Arranging a Power Supply for Defense Plant Corporation," dated May 9, 1942, as the same may be amended, this Supplemental Agreement shall terminate as and when said Sections G-7 and T-7 shall have been taken over by said Metropolitan Water District of Southern California through the City of Los Angeles as Operating Agent.

21. It is understood and agreed by and between the parties hereto
that if the remaining capacity of said Sections G.7 and T.7 (to-wit: the amount in excess of 45,000 kilowatts) plus the amount of power offered the State from Davis Dam Project on or before June 1, 1951, is less than 20,000 kilowatts, then and in such event the parties hereto will renegotiate this contract as may be necessary to provide for an equitable distribution of the generating capacity of said Sections G.7 and T.7.

22. Except as herein specifically supplemented and amended the said contract of October 10, 1941, shall remain in full force and effect.

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

Attorney:

ALFRED MERRITT SMITH, Secretary.

VAIL PITTMAN, Chairman.

COLORADO RIVER COMMISSION OF NEVADA.

Attorney:

ALFRED MERRITT SMITH, Secretary.

SOUTHERN NEVADA POWER COMPANY.

Attorney:

C. WENGBART, Secretary.

I, the undersigned, the Honorable Vail Pittman, Governor of the State of Nevada, do hereby ratify and approve the foregoing Contract for Electrical Energy, under the power vested in me by Chapter 71 of the 1935 Statutes of Nevada, pages 147-152.

Dated the 6th day of May, 1948.

VAIL PITTMAN,
Governor of the State of Nevada.

Attorney:

JOHN KNODES, Secretary of State.

By MURIEL LIGHTFORD, Deputy.
that if the remaining capacity of said Sections G.7 and T.7 (to-wit: the amount in excess of 45,000 kilowatts plus the amount of power offered the State from Davis Dam Project on or before June 1, 1951, in less than 30,000 kilowatts, then and in such event the parties hereto will renegotiate this contract as may be necessary to provide for an equitable distribution of the generating capacity of the said Sections G.7 and T.7.

22. Except as herein specifically supplemented and amended the said contract of October 10, 1941, shall remain in full force and effect.

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

Attest:
ALFRED MERRITT SMITH,
Secretary.

VAIL PITTMAN,
Chairman.

Attest:
COLORADO RIVER COMMISSION OF NEVADA.
VAIL PITTMAN,
Chairman.

ALFRED MERRITT SMITH,
Secretary.

SOUTHERN NEVADA POWER
COMPANY.

S. J. LAWRENCE,
President.

C. WENDT,
Director.

G. ROGGO,
Director.

W. B. BRACHEN,
Director.

Attest:
C. WENDT,
Secretary.

I, the undersigned, the Honorable Vail Pittman, Governor of the State of Nevada, do hereby ratify and approve the foregoing contract for electrical energy, under the power vested in me by Chapter 71 of the 1935 Statutes of Nevada, pages 147-152. Dated this 6th day of May, 1948.

VAIL PITTMAN,
Governor of the State of Nevada.

Attest:
JOHN KNOTTS, Secretary of State.
By MUHEL LITTLEFIELD, Deputy.
The following items are to be allowed in computing the cost of supplying power:
1. Cost to Nevada for firm energy delivered at present delivery points in Boulder Switchyard.
2. Demand changes, if any.
3. Transmission losses.
4. Distribution losses.
5. Labor for maintenance and operation.
7. Telephone line rental for load dispatcher.
8. Reasonable general overhead and administrative costs.
10. Pay roll taxes and insurance.
11. Operation of necessary automotive equipment.
12. Premiums for comprehensive and public liability insurance.

The following charges are not permissible as items of cost:
(a) State of Nevada and Clark County taxes on the transmission and distribution systems.
(b) Amortization charges on the transmission and distribution systems.
(c) Any profit from the power delivered to the plant lessees or War Assets Administration.
(d) Rectifier operation, unless paid for by the consumer.

The following items of cost are allowed in computing the cost of the operation of the water and sewage systems:
1. Labor for operation and maintenance.
2. Pay roll taxes and insurance.
3. Reasonable general overhead and administrative costs.
4. Materials for operation and maintenance.
5. Power for pumping and operation, at rates based on paragraph C above.
6. Operation of necessary automotive equipment.
7. The following charges are eliminated as items of cost:
   (a) State of Nevada and Clark County taxes on water and sewage systems.
   (b) Amortization charges on the water and sewage systems.
   (c) Any profit to the Colorado River Commission or its agent from the sale of water to plant lessees or War Assets Administration.

E. Statement of the State Auditor of Nevada shall be furnished to War Assets Administration at the termination or expiration of this lease and annually thereafter in the event of extension thereof, showing the actual costs for the year. (Charges not justified by such audit shall be adjusted.)

F. The lease shall be permitted to enter into contracts with other parties for the sale of power, or for the pumping of such water, with the approval of such contracts by the lessee.

G. The lease shall be permitted to charge the individual domestic and commercial consumers in the town of Henderson, Nevada, the legally established rates for electric and water services, such charges to cover the cost of purchased power for the town of Henderson, Nevada, and the expenses of maintenance and operation of the utility facilities located therein.

(c) In addition to the charge for the generation of electrical energy stated herein, and herein called "generation charge" each State power contractor shall pay to the State the usual electrical energy charge at the firm energy rate in effect during the year of operation such energy is generated.

(b) For the period commencing August 1, 1941, and until the termination of this Supplemental Agreement, the Company shall pay to the State the annual cost of amortization, replacement and operation of said Sections G-7 and T-7, as said costs shall be allocated by the United States to the State, pursuant to Article 17 of said General Regulations, provided, however, that the generating charges paid to the State by the Company under Section 27(a) herein, shall, at the option of the Company be reflected in the form of reduced generating charges to the Company after June 1, 1951, in a manner and in an amount determined by the Company, of which manner and amount, the Company will notify the State in writing; and provided further, that for the period commencing June 1, 1951, and until the termination of this Supplemental Agreement, the Company shall be entitled to a credit in an amount equal to the amount charged for all capacity from said Sections G-7 and T-7 sold by the State or contracted to be sold by the State to power contractors other than the Company.

18. The kilowatts of capacity to which the Company, the Overton Power District No. 5 and the Lincoln County Power District No. 3 are entitled in Sections G-3 and T-1.B.1 (Bank "Y") shall be deducted from their respective total withdrawals or their respective kilowatt demands, whichever is the greater, in computing the generation charge set forth in Section 15(b) hereof.

19. The State agrees that the present State power contractors will preserve to each other the proportions of generating and transforming capacity in Sections G-3, T-1.B.1 and T-1.B.2 as such proportions existed during the year of operation ending May 31, 1947.

20. It is agreed between the parties hereto that should the Metropolitan Water District of Southern California exercise the option referred to in Article 305 of the "Agreement Arranging a Power Supply for Defense Plant Corporation," dated May 9, 1942, as the same may be amended, this Supplemental Agreement shall terminate as and when said Sections G-7 and T-7 shall have been taken over by said Metropolitan Water District of Southern California through the City of Los Angeles as Operating Agent.

21. It is understood and agreed by and between the parties hereto
shall be for the use of the Company in the performance of its obligation as a public utility to supply electric energy to the inhabitants of Clark County, Nevada, in accordance with the Certificate of Public Convenience and Necessity granted to the Company by the Public Service Commission of Nevada, under date of July 3, 1929. Portions of said 45,000 kilowatts, not in excess of a combined demand of 34,000 kilowatts, may be used by Lincoln County Power District No. 1 and Overton Power District No. 5 at a generation charge of $6 per kilowatt per year, or at the generation charge specified in paragraph 15(b) hereof, whichever is the smaller.

The remaining capacity of said Sections G-7 and T-7 may be used by other State power contractors at a generation charge of $6 per kilowatt per year, or at the generation charge specified in paragraph 15(b) hereof, whichever is the smaller; provided, however, that when the Company requires additional kilowatts of capacity in excess of the amount available to the Company from Sections G-3 and T-1-B-1 (Bank "Y") and Sections G-7 and T-7, then said remaining capacity of Sections G-7 and T-7 shall be for the use of the Company to the extent said remaining capacity has not then been contracted for by other State power contractors. During such times as the whole of the said 45,000 kilowatts of capacity of said Sections G-7 and T-7 is not required by the Company, as determined by the Company, other State power contractors may use such unused portions thereof, at a generating charge of $6 per kilowatt per year, or at the generation charge specified in said paragraph 15(b) hereof, whichever is the smaller, during such time as such unused portion is not required by the Company.

(b) During any year of operation in which the combined kilowatts withdrawn by or the kilowatt demand (whichever is the greater) of all purchasers of capacity from Section G-7 and T-7, multiplied by $6 per kilowatt will equal or exceed the total annual generating charges on said sections for such year of operation, then in such event the generation charge per kilowatt for such year, will be the total annual generating charge for said Sections divided by the combined kilowatts withdrawn by, or kilowatt demand (whichever is the greater) of all said purchasers. By the words "year of operation" as herein used shall be meant the period from June 1st of one year to May 31st of the next succeeding year, both dates inclusive.

(c) Each contract entered into by the State covering the sale of capacity in Sections G-7 and T-7, shall provide that each contractor shall be required to pay for the amount of capacity so contracted for throughout the life of such contract and that such contract may not be terminated, nor may the amount of capacity contracted for thereafter be relinquished, except upon the effective date of "Notice of Relinquishment," given as provided in Article 4(b)(iv) of the General Regulations. In each such contract, provision shall also be made that the contractor shall be obligated to pay for the kilowatts withdrawn for its account or for the kilowatts of actual demand, whichever is the greater.

(d) The State will not enter into contracts for the sale of capacity in Sections G-7 and T-7 for use in the area then being served by the Company, without its written consent.

H. In the event the Southern Edison Company does not submit a proposal deemed acceptable to lessor for the use of generator known as N-7, located at Hoover Dam, Nevada, whatever rights lessor may have to the use of this generator may be assigned to the lessee on a mutually agreeable basis.

J. Lessee at its own expense shall carry insurance on the property and equipment covered by this agreement against fire, windstorm and such other hazards in such companies and amounts as shall be satisfactory to lessor. Such insurance policies shall be made payable to the Treasurer of the United States for the protection of all interests and be delivered to lessor for safekeeping. In the event lessor fails to procure such insurance as it is obligated to procure, or pay any of the premiums when due, the lessor may at its option procure such insurance and pay any delinquent premiums and require lessee to immediately reimburse it for such cost, which cost shall be considered additional rental and immediately become payable. Lessee shall be obligated to save lessor harmless against any loss or damage because of injury to persons occurring on the said leased property during lessor's occupancy thereof. Lessee will procure and maintain at its cost public liability insurance and property damage insurance in such amounts and with such companies as lessee shall approve or require. Policies evidencing such insurance shall name Reconstruction Finance Corporation, acting by and through the War Assets Administration, as assured, and be delivered to lessor.

K. Lessee agrees to operate all the above-mentioned utilities, including but not limited to water treatment, softening and chlorination, to the satisfaction of the lessor or its representatives, and to grant free access at all times to any and all parts of the leased property to the lessor or its representatives for inspection of the premises and methods of operation. Lessee shall likewise be granted free access to enter any portion of lessor's properties known as Basic Magnesium Project for the purpose of carrying out the provisions of this agreement.

L. The lessee agrees to use diligence in promptly exercising its rights to withdrawal of electrical energy in order to provide an ample supply of power for Basic Magnesium Project at the lowest costs possible.

M. As long as this interim use lease is in force, lessee shall keep the leased property and equipment which it uses hereunder in a good state of repair, at its cost, for the period of such use, ordary wear and tear, damage or destruction by fire, flood, hurricane, acts of God, war, riot, insurrection or public disorder, or due to causes without lesse's fault or negligence excepted.

N. The lessor reserves the right to assume the obligations of any or all plant lessees, in whole or in part, for the furnishing of such utility services by lesse at any time.

This Letter of Intent is executed in triplicate and it is requested that you indicate your acceptance hereon by having the chairman and secretary of the Colorado River Commission execute and return to this administration three (3) counterparts hereof. Upon your acceptance, your possession of the above-described premises for the purposes
herein set forth and subject to the foregoing terms and conditions is authorized effective sixty (60) days after the execution of the interim power contract now under negotiation between War Assets Administration and Southern California Edison Company.

Sincerely yours,
M. L. Goodwin, Deputy Administrator,
Office of Real Property Disposal.

Accepted this 6th day of October, 1947.

Colorado River Commission.
Vail, Pittman, Chairman.
ALFRED MERRITT SMITH, Secretary.

Approved: State Board of Control.
Vail, Pittman, Chairman.
ALICE C. MAHER, Secretary.

may have rights to take Boulder Energy, and the receipts from such arrangements shall be credited to Defense Plant's obligation regarding said sections during said period ** *; and

10. WHEREAS, The said agreement dated May 9, 1942, also provides in said Article 305 thereof, in part as follows:

** * Said period of segregation shall terminate, and the District agrees to assume all generating costs for Sections G-7 and T-7, on June 1 of the year of operation following the year of operation in which either one of the following events has occurred:

(a) The usage by the District in the operation of its aqueduct system has exceeded 1,000,000,000 kilowatt-hours in any one year of operation;

(b) The integrated 30-minute demand in the operation of the District's aqueduct system has exceeded 150,000 kilowatts; but in no event later than June 1, 1946; provided, that at the option of the District it may terminate said period of segregation and assume said costs at an earlier date upon written notice of at least two years to the Secretary, through the City as Operating Agent; and

11. WHEREAS, The Colorado River Commission of Nevada, by letter dated February 20, 1948, addressed to the Metropolitan Water District of Southern California stated in part as follows:

At a regular meeting of the Colorado River Commission of Nevada, held in the Governor's Chambers, Carson City, Nevada, on February 18, 1948, this Commission voted to take over Sections G-7 and T-7 at Boulder (Hoover) Power Plant to be used in generating a power supply for the State of Nevada, providing above-mentioned Article 305 is amended so that the Metropolitan Water District of Southern California will be obligated to assume the generating costs of Sections G-7 and T-7 on May 31, 1946, or under any condition except through exercising an option upon written notice of five years; and

12. WHEREAS, It is contemplated that the Metropolitan Water District of Southern California will agree to such an amendment and as a result the generating costs of Sections G-7 and T-7 will then become the obligation of the State of Nevada;

AGREEMENT

13. Now, Therefore, In consideration of the premises and of the provisions, covenants and conditions herein contained, the parties hereto agree that the Agreement between the parties hereto dated October 10, 1941, be and the same is hereby supplemented and amended as follows, to-wit:

14. That the State shall arrange with the United States for the generating rights of Sections G-7 and T-7 at the Hoover Power Plant.

15. That:

(a) 45,000 kilowatts of the capacity of said sections G-7 and T-7
its use additional generating and transforming capacity at Hoover Power Plant to meet the growing demands of customers; and
7. Whereas, Lincoln County Power District No. 1, Overton Power District No. 5, and Southern Nevada Power Company, are joint users of Sections G-3, T-1-B.1 and T-1-B.2 and each pay their pro rata share of operation, amortization and replacement costs in the ratio of the number of kilowatt-hours of energy used by each; and
8. Whereas, Article 12 (a) of the contract dated October 10, 1943, referred to above provides as follows:

**Energy Rates and Generating Charges**

The rates and charges to be paid by the Company for electrical energy shall be as follows:

A. The cost to the State as charged the State by the United States Government, under the provisions of Exhibit 3, for all electrical energy contracted for by the Company or for all electrical energy delivered to it if such electrical energy is in excess of the minimum herein contracted for and such additional charge as the State may deem necessary, but not exceeding three-tenths mill ($0.0003) per kilowatt-hour, to apply toward reimbursing the State for the costs of administration incurred by the Colorado River Commission of Nevada.

The Company shall pay hereunder its pro rata share of the annual costs of operation, amortization and replacements of all facilities installed by the United States Bureau of Reclamation and required and used for the delivery of electrical energy to the Company, with the intent and purpose that said costs shall be borne equitably and on pro rata basis by all contractors of power using facilities through contracts with the State, or otherwise.

If, in the opinion of the State, any cost to be paid by the State to the United States cannot equally be apportioned between all contractors purchasing energy from the State in the ratio of the number of kilowatt-hours of energy used by each, then the Company shall pay such proportion of the said cost as the State may determine to be equitable and just; and

9. Whereas, Sections G-7 and T-7 (Unit N-7 and N-7-4) Transformer Bank and associated 230-Kv. Switchyards were installed by the United States for use by Defense Plant Corporation under an agreement to which the United States of America, Defense Plant Corporation, Metropolitan Water District of Southern California, therein called "District," the City of Los Angeles, therein called "City," and all other power allottees from Boulder Canyon Project are parties, entitled "Agreement Arranging and Power Supply for Defense Plant Corporation," dated May 9, 1942, which contract provides in Article 305 thereof, in part, as follows:

**During the period of segregation Sections G-7 and T-7 may be used to generate Boulder Energy, if any which Defense Plant may have procured, and during said period of segregation the Secretary may arrange for the use of said sections for other parties, including the United States, which**
actual cost of facilities furnished, or the rate should be reduced to a value of about $6 per kw. per year. Cost data in the report used the first method of limiting the yearly payment.

3. The City should relieve the State of any obligation to pay the City for property rendered idle.

Respectfully yours,

E. W. Rockwell,
Consulting Engineer.

ANALYSIS OF CITY'S PROPOSAL FOR GENERATING CAPACITY FOR NEVADA

In analyzing the City's proposition to furnish generating capacity for the electric power system which uses energy allocated to Nevada under the Boulder Canyon Project, a comparison has been made with generating equipment at Hoover Dam authorized and paid for by the Colorado River Commission of the State of Nevada. The generating systems compared were substantially equal insofar as each was suitable to supply power to the required load. There were minor differences in electrical characteristics and capacity furnished, but for the purpose of supplying power to the load both systems were suitable. The generating system proposed by the City of Los Angeles is shown in Exhibit A and consists of a full-sized generator unit, with standby capacity in the form of a 100,000 kva transformer bank connecting to Units A1 and A2. This system is referred to as the "City System," or simply "City." The generating system with which the comparison was made is shown in Exhibit B and consists of generating Unit N7 and Bank N7-8, half-sized Unit A9 and 40,000 kva of transformer capacity connecting to Units A1 and A2. This system is referred to as the "State's System," or simply "State." This system has two sources of generation, Unit N7 and Units A1 and A2 through Bank A9 that cannot be operated in parallel due to connection to systems paralleled at other places. However, it is believed that no great hardship will be imposed by operating the Nevada system with the loads divided between two generating systems.

In considering the two systems in regard to initial costs there is a rather odd situation; in that the City's proposal requires an initial expenditure by the State for metering equipment and extension of 230 kv lines at Hoover Dam and for a new 40,000 kva substation at Basic Magnesium amounting to about $500,000. On the other hand, the State's system requires no initial expenditure other than assuming the yearly costs of equipment at Hoover Dam. However, the estimated yearly costs for the two systems with 70,000 kw and 80,000 kw are:

| City       | $500,000  |
| State      | $600,000  |

In considering the costs of the two systems for different loads, the fixed yearly cost of the State's system favors lower cost power as the load increases regardless of load factor, provided that the system peak is within the capacity of the system; and the method of charging for generating capacity at the rate of $7.50 per kilowatt per year for the City system favors lower cost power as the load factor increases. This comparison is shown in Exhibit D.

APPENDIX 2


1. This supplemental agreement made this day of May, 1948, by and 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 supplemental 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 30, 1935, (Chapter 71, Statutes of Nevada, 1935) and acts amendatory thereof or supplemental thereto, (hereinafter referred to as the State), and the Southern Nevada Power Company, a corporation organized under and by virtue of the laws of the State of Nevada, and being empowered to carry on, conduct and transact the business of buying, selling, and transmitting electrical energy for profit as a public utility, (hereinafter referred to as the Company),

REGENTS

2. Whereas, The State and the Company did enter into a contract dated October 10, 1941, for the sale of electrical energy generated at Hoover Power Plant, and

3. Whereas, The State did, pursuant to the Boulder Canyon Project Act, enter into a contract with the United States of America for the sale to the State of electrical energy generated at Hoover Power Plant, and it is provided in said contract that the State of Nevada shall be entitled to purchase electrical energy by means of Section 6.3; and

4. Whereas, The kilowatts of generation capacity now available in Section 6.3 for use by the State at Hoover Power Plant is no longer sufficient to meet the State's power requirements and it is necessary to provide for additional generating machinery at Hoover Power Plant to meet the State's additional power requirements; and

5. Whereas, The transformer capacity of Section 7.1.1.1, commonly known as transformer bank "Y" through which the present State of Nevada Power contracts receive electrical energy is fully loaded and it is necessary to provide for additional transforming capacity at Hoover Power Plant to meet the State's additional power requirements; and

6. Whereas, The Company, in the performance of its obligation as a public utility to supply electric energy to the inhabitants of Clark County, Nevada, in accordance with a Certificate of Public Convenience and Necessity as granted by the Public Service Commission of Nevada, dated July 5, 1929, finds it necessary to request the State to provide for
The City's proposal is for one generator with stand-by. The proposed charge of $7.50 per kilowatt per year of maximum demand was based upon a firm output of 70,000 kilowatt and the estimated cost of one unit with stand-by capacity. No mention is made regarding the furnishing of additional generating capacity which the State most likely will require when it uses all of its firm allotment of Boulder energy. This energy averages about 700 million kilowatt-hours per year which at a load factor of .70 requires 150,000 kilowatts of generating capacity, an amount considerably above the firm capacity in the City's proposal. Should the City agree to furnish this additional generating capacity at $7.50 per kilowatt per year, the cost of two generating units with stand-by transformer capacity would be paid for completely by Nevada and the City would have the use of a large portion of the generating capacity. An estimate of the cost of the City's system with two full-sized units with stand-by capacity is shown in Exhibit E as $857,000 per year. This cost is equal to when the State takes 110,000 kilowatts at $7.50 per kilowatt-year. Therefore, it would appear reasonable to adjust the charges for the ultimate City system so that the State would not pay more than the total cost of capacity set aside for its use. This may be accomplished by continuing the charge of $7.50 per kilowatt-year, but limiting the total payment to the actual cost of equipment installed for the State. Another method would be to adjust the demand charge, using the total cost of equipment provided for the State and the maximum firm output of the equipment. This would give about $6 per kilowatt per year.

The City's generating capacity for the State's ultimate requirements would probably be set up as shown in Exhibit F, and consists of two generating units A3 and A4 with stand-by capacity of the original 100,000 kva transformer bank connecting to Units A1 and A2. The State's generating capacity for the same conditions is shown in Exhibit G and consists of Unit N8, Unit A3, and Unit A9. This gives a stand-by capacity of only 40,000 kva due to use of Unit A9, but it is believed that this amount of stand-by capacity will be ample. Both systems require an initial expenditure by the State of about $400,000 for 40,000 kva of transformer capacity at Boulder. The estimated yearly cost for the two systems with 110,000 kw and 140,000 kw are:

<table>
<thead>
<tr>
<th>City</th>
<th>$400,000</th>
<th>$407,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>900,000</td>
<td>900,000</td>
</tr>
</tbody>
</table>

The above comparison assumes that the City's charge is $7.50 per kilowatt per year but that the total charge does not exceed the cost of equipment furnished. A comparison of the cost of generating capacity under different loads is shown in Exhibit H.

The over-all cost of the City's and State's systems were compared for an estimated load-building program, which started in 1922 with 400 million kilowatt-hours and increased 20 million kilowatt-hours per year until 1967 when it reached 700 million kilowatt-hours at which point it remained until termination of Boulder Canyon Project contracts in 1967. The comparison was made with power used at load factors of .50, .60, .70, and .80, and in each case additional generating capacity was added to form the ultimate system when the load demand exceeded 82,000 kilowatts, the rating of a full-sized generating unit.
Generation costs for the ultimate City system assumed 87.50 per kilowatt per year but not to exceed the cost of equipment. Results are shown in Exhibit I.

From the foregoing data on cost of generating capacity, it is apparent that there is not a great difference in the cost of generating capacity furnished by the City or State, provided the City's proposition for ultimate generating capacity is reasonable. If it is believed that the load factor will be high, the City's proposition will probably be the lowest in cost.

In providing for State's generating capacity an agreement is required between the City and Municipalities for the apportionment of generation costs on Sections G1 and G3. The present regulations provide that apportionment be made on use or withdrawal of energy, whichever is greater. It is apparent that it is not reasonable for Nevada to use withdrawn energy for apportionment when such energy is in excess of that which can be generated on Sections G1 and G3. It is suggested that energy for apportionment of charges be either a fixed amount each year or an amount determined by the product of capacity available to Nevada from Sections G1 and G3 and the product of system load factor and 8,760 hours.

Should the City's proposal be accepted there are several items that should be covered:

1. Provision should be made for generating capacity in addition to the one unit and stand-by capacity. This should include the method of charging for the additional capacity. If no provision is made for additional capacity the State should have the right to terminate the contract when additional generating capacity is required.

2. It is possible that Arizona may require stand-by capacity and that the City would furnish it from stand-by capacity paid for by Nevada. Should Nevada's payments for such stand-by include capacity paid for by Arizona, there should be a reduction in Nevada's payments.

3. The State should be relieved of any liability resulting in the reapportionment of generating charges for Sections G1 and G3. This involves the determination, if any, of Nevada's and Kingman and Needles share of generation costs in Sections G1 and G3 so that the Municipalities will not be required to pay for that portion of generation used by others as covered in the 87.50 rate.

4. It would appear that the City, at this time, would be in a position to relieve the State of the possibility of paying for property rendered idle, insofar as the City is concerned.

5. An agreement must be made with Kingman and Needles as to the cost of generation. A charge of 87.50 per kw. year amounts to 87.50 x 5,000 kw. = 877,500 for 5,000 kw. of generating capacity. The load of Kingman and Needles is about 22 million kw.-hr. per year. This gives a cost of generation of

$$ \frac{877,500}{22 \text{ M kw.-hr.}} = 39.84 \text{ mills per kw.-hr.} $$

This is about twice as much as their present charge and does not allow anything for transmission over the Basic and Southern Nevada Power Company lines to their lines.
FACILITIES TO BE PROVIDED BY THE COMMISSION

9. The commission and its subcommittees, for the purposes hereof, will operate and maintain the electric facilities necessary to receive or carry the power contracted for hereunder away from the delivery point.

FACILITIES TO BE PROVIDED BY THE UNITED STATES

10. The United States, for the purpose of rendering electric service hereunder, will operate and maintain, or will attempt to obtain the use of, the electric facilities necessary to deliver the power contracted for hereunder to the delivery point.

POWER FACTOR

11. The United States will not be required to deliver power and energy at any point at a power factor less than ninety percent (90%) lagging. Provided, That delivery at lower power factors will be made when conditions are such, as determined by the contracting officer, that such lower power factors will not prevent the United States from making full use of its available generating and transmission facilities.

TERM OF CONTRACT

12. (a) This contract shall become effective and shall remain in effect until midnight of . Provided, That the commission may terminate this contract upon thirty (30) day's written notice.

(b) The date of initial service hereunder hereby is defined as the date upon which the United States is ready and able to furnish and the commission is ready and able to receive electric service.

LIABILITY

13. The United States, its officers, agents, and employees, or any of them, shall not be liable for any claims, demands, costs, losses, causes of action, damages, or liability of whatsoever kind or nature, arising out of or resulting from the operation and maintenance of the facilities of the commission or its subcontractors under this contract.

TRANSFER OF INTEREST IN CONTRACT

14. No voluntary transfer of this contract or of the rights of the commission hereunder shall be made without the written approval of the contracting officer, and any successor or assign of the rights of the commission, whether by voluntary transfer, judicial sale, foreclosure, or otherwise, shall be subject to all the provisions and conditions of this contract in the same extent as though such successor or assignee were the original contractor hereunder: Provided, That the execution of a mortgage or trust deed, or judicial or force sale made thereunder, shall not be deemed voluntary transfer within the meaning of this article.

UNCONTROLLABLE FORCES

15. Neither party shall be considered to be in default in respect to any obligation hereunder, if prevented from fulfilling such obligations by reason of uncontrollable forces, the term uncontrollable forces being

EXHIBIT C
Cost of City's and State's Systems—Initial Development

<table>
<thead>
<tr>
<th>CITY'S SYSTEM—INITIAL DEVELOPMENT</th>
<th>Investment</th>
<th>Yearly cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit A &amp; B at 267/283 kv Bank</td>
<td></td>
<td></td>
</tr>
<tr>
<td>267/283 kv Bank and 2-267 kv OCB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two transformer positions with two 260 kv OCB</td>
<td>1,075,000</td>
<td>72,980</td>
</tr>
<tr>
<td>A-3 generator with 100,000 kw Bank</td>
<td>4,247,000</td>
<td>286,000</td>
</tr>
<tr>
<td>Two line positions 260 kv</td>
<td>880,000</td>
<td>60,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>State's system, cost per kw...</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>State's system</td>
<td>1.33</td>
<td>1.31</td>
</tr>
<tr>
<td>City's system, cost per kw...</td>
<td>1.46</td>
<td>1.42</td>
</tr>
</tbody>
</table>

| EXHIBIT C | Cost of City's and State's Systems—Initial Development
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CITY'S SYSTEM—INITIAL DEVELOPMENT</td>
<td>Investment</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Unit A &amp; B at 267/283 kv Bank</td>
<td></td>
</tr>
<tr>
<td>267/283 kv Bank and 2-267 kv OCB</td>
<td></td>
</tr>
<tr>
<td>Two transformer positions with two 260 kv OCB</td>
<td>1,075,000</td>
</tr>
<tr>
<td>A-3 generator with 100,000 kw Bank</td>
<td>4,247,000</td>
</tr>
<tr>
<td>Two line positions 260 kv</td>
<td>880,000</td>
</tr>
</tbody>
</table>

For a 10 kw capacity, this gives 30 kw. of generation at 25 kw, which is 77 kw. per kw year.

| EXHIBIT C | Cost of City's and State's Systems—Initial Development
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CITY'S SYSTEM—INITIAL DEVELOPMENT</td>
<td>Investment</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Unit A &amp; B at 267/283 kv Bank</td>
<td></td>
</tr>
<tr>
<td>267/283 kv Bank and 2-267 kv OCB</td>
<td></td>
</tr>
<tr>
<td>Two transformer positions with two 260 kv OCB</td>
<td>1,075,000</td>
</tr>
<tr>
<td>A-3 generator with 100,000 kw Bank</td>
<td>4,247,000</td>
</tr>
<tr>
<td>Two line positions 260 kv</td>
<td>880,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>State's system, cost per kw...</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>State's system</td>
<td>1.33</td>
<td>1.31</td>
</tr>
<tr>
<td>City's system, cost per kw...</td>
<td>1.46</td>
<td>1.42</td>
</tr>
</tbody>
</table>

| EXHIBIT C | Cost of City's and State's Systems—Initial Development
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CITY'S SYSTEM—INITIAL DEVELOPMENT</td>
<td>Investment</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Unit A &amp; B at 267/283 kv Bank</td>
<td></td>
</tr>
<tr>
<td>267/283 kv Bank and 2-267 kv OCB</td>
<td></td>
</tr>
<tr>
<td>Two transformer positions with two 260 kv OCB</td>
<td>1,075,000</td>
</tr>
<tr>
<td>A-3 generator with 100,000 kw Bank</td>
<td>4,247,000</td>
</tr>
<tr>
<td>Two line positions 260 kv</td>
<td>880,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>State's system, cost per kw...</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>State's system</td>
<td>1.33</td>
<td>1.31</td>
</tr>
<tr>
<td>City's system, cost per kw...</td>
<td>1.46</td>
<td>1.42</td>
</tr>
</tbody>
</table>

For a 10 kw capacity, this gives 30 kw. of generation at 25 kw, which is 77 kw. per kw year.

| EXHIBIT C | Cost of City's and State's Systems—Initial Development
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CITY'S SYSTEM—INITIAL DEVELOPMENT</td>
<td>Investment</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Unit A &amp; B at 267/283 kv Bank</td>
<td></td>
</tr>
<tr>
<td>267/283 kv Bank and 2-267 kv OCB</td>
<td></td>
</tr>
<tr>
<td>Two transformer positions with two 260 kv OCB</td>
<td>1,075,000</td>
</tr>
<tr>
<td>A-3 generator with 100,000 kw Bank</td>
<td>4,247,000</td>
</tr>
<tr>
<td>Two line positions 260 kv</td>
<td>880,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>State's system, cost per kw...</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>State's system</td>
<td>1.33</td>
<td>1.31</td>
</tr>
<tr>
<td>City's system, cost per kw...</td>
<td>1.46</td>
<td>1.42</td>
</tr>
</tbody>
</table>

For a 10 kw capacity, this gives 30 kw. of generation at 25 kw, which is 77 kw. per kw year.

| EXHIBIT C | Cost of City's and State's Systems—Initial Development
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CITY'S SYSTEM—INITIAL DEVELOPMENT</td>
<td>Investment</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Unit A &amp; B at 267/283 kv Bank</td>
<td></td>
</tr>
<tr>
<td>267/283 kv Bank and 2-267 kv OCB</td>
<td></td>
</tr>
<tr>
<td>Two transformer positions with two 260 kv OCB</td>
<td>1,075,000</td>
</tr>
<tr>
<td>A-3 generator with 100,000 kw Bank</td>
<td>4,247,000</td>
</tr>
<tr>
<td>Two line positions 260 kv</td>
<td>880,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>State's system, cost per kw...</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>State's system</td>
<td>1.33</td>
<td>1.31</td>
</tr>
<tr>
<td>City's system, cost per kw...</td>
<td>1.46</td>
<td>1.42</td>
</tr>
</tbody>
</table>

For a 10 kw capacity, this gives 30 kw. of generation at 25 kw, which is 77 kw. per kw year.

| EXHIBIT C | Cost of City's and State's Systems—Initial Development
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CITY'S SYSTEM—INITIAL DEVELOPMENT</td>
<td>Investment</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Unit A &amp; B at 267/283 kv Bank</td>
<td></td>
</tr>
<tr>
<td>267/283 kv Bank and 2-267 kv OCB</td>
<td></td>
</tr>
<tr>
<td>Two transformer positions with two 260 kv OCB</td>
<td>1,075,000</td>
</tr>
<tr>
<td>A-3 generator with 100,000 kw Bank</td>
<td>4,247,000</td>
</tr>
<tr>
<td>Two line positions 260 kv</td>
<td>880,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>State's system, cost per kw...</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>State's system</td>
<td>1.33</td>
<td>1.31</td>
</tr>
<tr>
<td>City's system, cost per kw...</td>
<td>1.46</td>
<td>1.42</td>
</tr>
</tbody>
</table>

For a 10 kw capacity, this gives 30 kw. of generation at 25 kw, which is 77 kw. per kw year.
### STATE'S SYSTEM—INITIAL DEVELOPMENT

<table>
<thead>
<tr>
<th>Unit</th>
<th>Investment</th>
<th>Yearly cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit N7 with Bank N7-6</td>
<td>$8,082,233</td>
<td>$28,065</td>
</tr>
<tr>
<td>Unit A8</td>
<td>$2,390,000</td>
<td>$70,000</td>
</tr>
<tr>
<td>Bank A8, raising 400 kva, use 40 kva</td>
<td>$200,000</td>
<td>$10,000</td>
</tr>
<tr>
<td>Generation for Bank A8</td>
<td>$150,000</td>
<td>$15,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$65,605</strong></td>
<td></td>
</tr>
</tbody>
</table>

### EXHIBIT II

#### Cost of City's and State's Systems—Ultimate Development

**CITY'S SYSTEM—ULTIMATE DEVELOPMENT**

<table>
<thead>
<tr>
<th>Unit</th>
<th>Investment</th>
<th>Yearly cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>267/290 kv Bank and three 267 kv OCB</td>
<td>$1,875,000</td>
<td>$125,000</td>
</tr>
<tr>
<td>Two transformers, position with four 290 kv OCB</td>
<td>$1,575,000</td>
<td>$25,000</td>
</tr>
<tr>
<td>A4 generator with 100,000 kva Bank</td>
<td>$3,475,000</td>
<td>$90,000</td>
</tr>
<tr>
<td>Two line positions, 290 kv</td>
<td>$525,000</td>
<td>$20,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$6,425,000</strong></td>
<td></td>
</tr>
</tbody>
</table>

#### STATE'S SYSTEM—ULTIMATE DEVELOPMENT

<table>
<thead>
<tr>
<th>Unit</th>
<th>Investment</th>
<th>Yearly cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit N8 with Bank N8-6</td>
<td>$2,055,233</td>
<td>$25,300</td>
</tr>
<tr>
<td>Unit A8 with 400 kva Bank</td>
<td>$2,390,000</td>
<td>$70,000</td>
</tr>
<tr>
<td>Bank A8, raising 400 kva, use 400 kva</td>
<td>$2,500,000</td>
<td>$100,000</td>
</tr>
<tr>
<td>267/290 kv Bank for A4 with two OCB</td>
<td>$2,125,000</td>
<td>$70,000</td>
</tr>
<tr>
<td>Old 500 kva Bank at Chief</td>
<td>$150,000</td>
<td>$15,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$8,620,233</strong></td>
<td><strong>$250,600</strong></td>
</tr>
</tbody>
</table>

5. With respect to the resale of electric energy it is recognized that the commission does not now propose to operate an electrical transmission or distribution system itself, but that delivery via systems of private and public agencies, hereafter called its subcontractors, will be made to the ultimate consumers. The commission agrees that it will give preference in its resale of power contracted for hereunder to public agencies and cooperatives in accordance with the provisions of Reclamation Law and will limit the margin between the cost of power under the terms of this contract and the resale price to its subcontractors to no more than a reasonable amount to cover the commission's costs of handling the transactions involved.

### MODIFICATION OF RATES

6. Should the United States, during the term of this contract, modify the rates for furnishing electric service from the project, under terms and conditions similar to those under which electric service is furnished hereunder, as conclusively determined by the contracting officer, it will promptly notify the commission thereof. The commission may, if it so elects, receive the advantage of such modified rates, effective as of the date the rates were so modified by the United States. The commission shall be deemed to have elected to take advantage of the modified rates if it does not advise the contracting officer in writing to the contrary within sixty (60) days after the date of such notification.

### BILLING AND PAYMENTS

7. The United States will bill the commission on or before the tenth day of each month for electric service furnished hereunder during the preceding month, and payments will be due and payable by the commission on the first day of the month immediately succeeding the date each bill is submitted. If the commission fails to pay any bill when due, (a) an interest charge of one percent (1%) of the amount unpaid shall be added thereto as liquidated damages, and thereafter, as further liquidated damages, an additional interest charge of one-half of one percent (1 1/2%) of the principal sum unpaid shall be added on the first day of each succeeding calendar month until the amount due, including interest, is paid in full, and (b) the United States shall have the right to discontinue furnishing electric service to the commission and any or all of its subcontractors only after fifteen (15) days' advance written notice of nonpayment of bills, and to refuse to resume service so long as any part of said amount due remains unpaid. Such a discontinuance of electric service will not relieve the commission of liability for the minimum charge during the time said electric service is so discontinued. The rights given herein to the United States shall be in addition to all other remedies available to the United States, either at law or equity, for the breach of any of the provisions hereof.

### MEASUREMENT OF ELECTRIC POWER AND ENERGY

8. The electric power and energy delivered hereunder to the commission will be measured as subsequently agreed by the parties hereto.
not be deemed to establish in the commission any right thereto and the commission shall cause any such greater use to be made of the same for the periods of time requested by the contracting officer.

(c) The electric service will be furnished continuously except (1) for interruptions or reductions due to uncontrollable forces, as herein defined, and (2) for temporary interruptions or reductions which, in the opinion of the contracting officer, are necessary or desirable for the purpose of maintenance, repairs, replacements, installation of equipment, or investigation and inspection. Proceeded, That the United States, except in cases of emergency as determined by the contracting officer, will give the commission reasonable advance notice of such temporary interruptions or reductions and will remove the cause thereof with diligence.

SCHEDULE OF RATES

4. Beginning with the date of initial service as hereinafter defined and except as specified in other articles of this contract, the commission shall pay for the electric service furnished hereunder at rates, charges, and upon conditions as follows:

(a) For power and energy furnished at the delivery point, billed in accordance with schedule R3-F1, which is attached hereto and made a part hereof.

(b) For a fractional part of a billing period at the beginning or end of service hereunder, the demand charge, the kilowatt-hour blocks of the energy charge, and the minimum charge shall each be proportionately adjusted in the ratio that the number of hours that electric service is furnished to the commission in such fractional billing period bears to the total number of hours in the billing period involved.

(c) Should the delivery of electric energy be interrupted or reduced, because of conditions on the power system of the United States, below the contract rate of delivery or below the rate of delivery required by the commission at the time of such reduction, whichever is the lesser, for a period or periods of one (1) hour or longer in duration each, the total number of hours of interrupted service in any billing period shall be determined by adding the sum of the number of hours of interrupted service to the product of the number of hours of reduced service multiplied by the percentage of said reduction below said contract rate of delivery or below the rate of delivery required by the commission at the time of such reduction, whichever is the lesser. The demand charge, the kilowatt-hour blocks of the energy charge, and the minimum charge shall each be proportionately adjusted in the ratio that the total number of hours of such curtailed service as herein determined bears to the total number of hours in the billing period involved. The commission shall make written claim, within thirty (30) days after receiving the monthly bill, for reduction on account of any curtailment to service, for a period or periods of one (1) hour or longer in duration each, alleged to have occurred and which is not reflected in such bill. Failure to make such written claim within said thirty (30) day period shall constitute a waiver thereof. All curtailments to service, for any reason whatsoever, which are due to conditions on the power system of the United States, shall be subject to the provisions of this section (c) and the commission shall be limited in its remedy therefor to the relief granted by this section (c).
### REPORT OF STATE ENGINEER

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>100,000 kva Bank and 3–3260 kva Oil Circuit Breakers</td>
<td>$900,000</td>
</tr>
<tr>
<td>1–30,305 kva 250/120 kV transformers at $4.00 per kva</td>
<td>$120,000</td>
</tr>
<tr>
<td>1–250 kV oil circuit breakers at $250,000 each</td>
<td>$250,000</td>
</tr>
<tr>
<td>2–250 kV disc switches at $15,000 each</td>
<td>$30,000</td>
</tr>
<tr>
<td>Sewerage protection</td>
<td>$100,000</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>$100,000</td>
</tr>
<tr>
<td>Installation</td>
<td>$150,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$1,800,000</strong></td>
</tr>
</tbody>
</table>

City's estimate: $1,800,000

Amortization: $600,000
Replacement: $512,000
Office and maintenance: $23,000

**Total** $1,800,000

### APPENDIX 6

United States Department of the Interior, Bureau of Reclamation—Central Valley Project, California—Contract for Electric Service to Colorado River Commission of Nevada.

1. This Contract, made this day of 19

in pursuance of the Act of Congress approved June 17, 1902 (32 Stat. 368) and Acts amendatory thereof or supplementary thereto and particularly pursuant to the Acts of Congress approved August 28, 1937 (50 Stat. 844, 856), entitled "An Act authorizing the construction, repair and preservation of certain public works on rivers and harbors, and for other purposes," as amended, and August 4, 1939 (53 Stat. 1187) entitled "Reclamation Project Act, 1939" all collectively herein styled the Federal Reclamation Law, between the United States of America, hereinafter called the United States, represented by the officer executing this contract, his duly appointed successor, or his duly authorized representative, hereinafter called the contracting officer, and the Colorado River Commission of Nevada, a public body duly organized, created and existing under and by virtue of the laws of the State of Nevada, hereinafter called the Commission, its successors and assigns:

WITNESSETH:

2. In consideration of the mutual covenants herein set forth, the parties hereto agree as follows:

### ELECTRIC SERVICE TO BE FURNISHED

3. (a) The United States, under the terms and conditions stipulated herein, will furnish electric service to the Commission from and after the date of initial service as hereinafter defined, at or near Donner Pass, California, the specific point to be agreed upon by the parties hereto.

(b) The electric energy involved hereunder will be delivered as three-phase, alternating current, at a nominal frequency of sixty (60) cycles per second, and at a nominal delivery voltage to be agreed upon by the parties hereto.

The electric energy will be so delivered in amounts which the commission may from time to time require upon delivery of a maximum rate of delivery, hereinafter called contract rate of delivery, of __________ kilowatts. Provided, that if power thereof is available, as conclusively determined by the contracting officer, said contract rate of delivery may be increased at any time by the signing of a request therefor by the commission with the contracting officer and subsequent approval thereof by the contracting officer. Said request shall include a proper showing of the commission's need for such increase. Said increased contract rate of delivery shall immediately become effective after the date of its approval by the contracting officer. The commission may from time to time, in the absence of objection by the contracting officer, use energy at rates greater than the contract rate of delivery in effect, but such greater use shall

---

### UNITED STATES DEPARTMENT OF THE INTERIOR

Bureau of Reclamation

Central Valley Project, California

Contract for Electric Service to Colorado River Commission of Nevada

1. This Contract, made this day of __________ , 19

in pursuance of the Act of Congress approved June 17, 1902 (32 Stat. 368) and Acts amendatory thereof or supplementary thereto and particularly pursuant to the Acts of Congress approved August 28, 1937 (50 Stat. 844, 856), entitled "An Act authorizing the construction, repair and preservation of certain public works on rivers and harbors, and for other purposes," as amended, and August 4, 1939 (53 Stat. 1187) entitled "Reclamation Project Act, 1939" all collectively herein styled the Federal Reclamation Law, between the United States of America, hereinafter called the United States, represented by the officer executing this contract, his duly appointed successor, or his duly authorized representative, hereinafter called the contracting officer, and the Colorado River Commission of Nevada, a public body duly organized, created and existing under and by virtue of the laws of the State of Nevada, hereinafter called the Commission, its successors and assigns:

WITNESSETH:

2. In consideration of the mutual covenants herein set forth, the parties hereto agree as follows:

### ELECTRIC SERVICE TO BE FURNISHED

3. (a) The United States, under the terms and conditions stipulated herein, will furnish electric service to the Commission from and after the date of initial service as hereinafter defined, at or near Donner Pass, California, the specific point to be agreed upon by the parties hereto.

(b) The electric energy involved hereunder will be delivered as three-phase, alternating current, at a nominal frequency of sixty (60) cycles per second, and at a nominal delivery voltage to be agreed upon by the parties hereto.

The electric energy will be so delivered in amounts which the commission may from time to time require upon delivery of a maximum rate of delivery, hereinafter called contract rate of delivery, of __________ kilowatts. Provided, that if power thereof is available, as conclusively determined by the contracting officer, said contract rate of delivery may be increased at any time by the signing of a request therefor by the commission with the contracting officer and subsequent approval thereof by the contracting officer. Said request shall include a proper showing of the commission's need for such increase. Said increased contract rate of delivery shall immediately become effective after the date of its approval by the contracting officer. The commission may from time to time, in the absence of objection by the contracting officer, use energy at rates greater than the contract rate of delivery in effect, but such greater use shall
27. Purchaser warrants that it has not employed any person to solicit or secure this sale upon any agreement for a commission, percentage, brokerage, or contingent fee.

28. Purchaser agrees that in the performance of the terms of this sale that it will comply with and give all stipulations and representations required by applicable Federal laws, and that it will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin.

29. No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this sale or to any benefit that may arise therefrom.

30. It is understood and agreed that when and if you accept and approve this Letter of Intent, a formal contract, in accordance with the provisions hereof, will be drawn and executed as promptly as possible.

31. This Letter of Intent is executed in quadruplicate and it is requested that you indicate your acceptance hereon by having the chairman and secretary of the Colorado River Commission execute and return to this Administration three (3) counterparts hereof.

Accepted this 30th day of March, 1948.

COLORADO RIVER COMMISSION,

VAIL FITZMA, Chairman.

ALFRED MERRITT SMITH, Secretary.
APPENDIX 5

Letter of Intent For Colorado River Commission To Purchase

Enrico Basic Magnesium Project

COLORADO RIVER COMMISSION, Carson City, Nevada.

Attention: Governor Vail Patman.

GENTLEMEN: Reference is made to the proposal dated October 7, 1947, wherein the War Assets Administration, acting for and on behalf of the Reconstruction Finance Corporation, under and pursuant to Reorganization Plan 1 of 1947 (12 F. R. 4534), and the powers and authority contained in the provisions of the Surplus Property Act of 1944, as amended (50 Stat. 765), and War Assets Administration Regulation One, as amended (11 F. R. 469), hereinafter called Seller, offered the State of Nevada, acting by and through its Colorado River Commission, hereinafter called Purchaser, an opportunity to negotiate for the purchase or lease of the entire holdings of the United States Government known as Planor 203, Basic Magnesium Plant, located at Henderson, Nevada. On November 6, 1947, the Colorado River Commission, through its Secretary, Mr. Alfred Merrill Smith, advised that such commission, at a formal meeting held on October 7, 1947, had determined that it desired to negotiate for the purpose of taking over this property. Subsequent to negotiations, it was determined that the entire facility would be sold and transferred to the State of Nevada, acting by and through its Colorado River Commission, upon the following terms and conditions:

1. Title shall vest in the Colorado River Commission in absolute fee ownership with the Purchaser being obligated to pay the Seller at the time of the execution of the instruments of transfer, One Dollar ($1) in cash and thereafter, as an additional consideration all of the net rentals, revenues, or other emoluments derived from the operation of the property through sale, lease, or otherwise (except return on minerals) for a period of twenty (20) years, or until a sum of $2,000,000.00 has been paid to the Seller, whichever is earlier.

2. The conveyance of the property shall be in absolute ownership with the Purchaser having the full right of sale or lease of the property conveyed to it, or any part thereof, subject to the approval of the Seller upon terms and conditions to be mutually agreed upon.

3. The Seller shall reserve all minerals and mineral rights for its exclusive benefit and all interest in such minerals or mineral rights, either through homestead, royalties, or sales, shall go to the Seller. This reservation shall be subject to the understanding that any development of the property for mineral purposes shall be conducted in such manner as not to unreasonably interfere with the use of this property as an industrial plant.

4. Seller shall retain title to all chapels located within the boundaries of this facility. The ultimate determination as to which denominations may purchase these chapels shall be made by the Chief of Chaplains in Interior to negotiate for the acquisition of the entire transmission system. Such acquisition shall be subject to the provisions of a Letter of Intent entered into by and between the parties hereto dated September 16, 1947, which Letter of Intent shall be suspended upon the execution of this agreement. In the event this facility shall be conveyed to Seller prior to termination of the Letter of Intent dated September 16, 1947, such contract shall be reactivated and remain in full force and effect until the termination date thereof.

22. Six (6) months after the execution of the firm power contracts under which an adequate supply of power will be assured for the operation of this facility, Purchaser will submit a concrete plan for advertising sale of this facility. This plan shall be submitted to Seller for approval. In the event Seller approves the plan submitted, Purchaser hereby obligates itself to advertise the facility for sale in accordance with such plan within four months from the date of such approval. Failure to comply with this provision shall cause for termination of this agreement or reconveyance of the property to the Seller at its option.

23. Seller shall place Purchaser in possession of the premises on a date to be determined mutually by War Assets Administration and Purchaser, and the Purchaser from and after such date shall be responsible for all maintenance and upkeep of the property.

24. It is mutually agreed that Seller shall retain the right to keep a representative or representatives on the premises until the full purchase price is paid or for such shorter term as may be determined by Seller. Such representative or representatives shall have control over Seller's interest in this facility and Purchaser shall consult with this representative regarding all matters requiring the approval of Seller. Seller shall vest such representative or representatives with adequate authority to make decisions and sign documents at the plant site which will facilitate all actions. Purchaser further agrees to furnish adequate office space together with necessary heating, light and such other usual facilities essential to the operation of an office to Seller's representative without cost.

25. Purchaser will obtain at its own expense and affix to the Quit-claim Deed transferring title such revenue and documentary stamps as may be required by law, and will pay all recording fees incidental to recordation. Seller will make available for Purchaser's inspection and use such abstract of title and other title papers as are in its custody, and will cause to be transferred to Purchaser whatever title insurance policies Seller now has covering the Planor involved, but it is understood that Seller will not be obligated to furnish any later or continuation title report, title insurance, or pay for any title expense pertaining to this transaction.

26. Upon the expiration of the present agreement between Seller, Southern California Edison Company, and the Department of the Interior, providing for the use by the Southern California Edison Company of sections 6-7 and 7-7 located at Hoover Dam and the assumption by Southern California Edison Company of the generating costs pertaining thereto, Seller will transfer to Purchaser, on a mutually agreeable basis, whatever rights Seller may have to the use of said electrical equipment.
this Letter of Intent shall not exceed the sum of $24,000,000 as required in paragraph 1 hereof.

17. Purchaser shall be responsible for necessary insurance coverage, taxes, maintenance and other expenses of this facility from and after the date that Purchaser is put into possession of this property. The minimum insurance requirements shall be approved by Seller but in any event there shall be ample coverage on all leased and rented portions of the plant and all buildings and facilities essential in its operation.

18. Included at the present time in plant inventories are certain items of machinery, equipment and spare parts which are not considered to be essential to future operation of subject facility. Title to such items shall be retained in Seller and Seller shall dispose of and remove such items at its own expense. There are other items of machinery, equipment and spare parts presently located at subject facility which are considered to be a part of the realty or which may be essential to future use, operation, maintenance or disposal of the plant. Title to the latter machinery, equipment and spare parts shall be conveyed to Purchaser. Plant site records at the date Purchaser is placed in possession of the premises adjacent by mutual agreement as to the surplus items, will be the basis of such conveyance of title to Purchaser. Opportunity will be granted to Purchaser to verify plant site records and such verification, as well as determination of surplus and transfer of title shall be completed within six (6) months from the date of this agreement.

19. The Seller shall not warrant, expressly or impliedly, that the future use by Purchaser or others of any equipment, machinery or other facilities incorporated in or of any process to be practiced at said plant, is free from patent infringements or obligations to pay royalties, and does not assume any liability to protect, defend, or save harmless Purchaser or others against any claims, demands or causes of action predicated on such use arising out of any United States Patent. Purchaser agrees to hold harmless and defend the Government in any suit under any United States patent directed to the sale of the future use of any equipment, machinery or other facilities incorporated in or at any processes to be practiced in said plant or for the collection of profits, damages or royalties arising out of such sale or use. Purchaser assumes and agrees to indemnify the Government against any and all existing obligations (including obligations to pay royalties) affecting the future use, transfer or resale of the equipment, machinery or other facility which were entered into expressly or impliedly by Seller with the approval or on behalf of Defense Plant Corporation or Reconstruction Finance Corporation.

20. A complete list of leases, options to purchase and all agreements of every kind and character hereinafter made by representatives of the United States Government to others than the Purchasers, shall be supplied to Purchaser by Seller, and such leases and agreements shall be assigned to the Purchaser by appropriate assignments effective as of the date of delivery of possession of the premises hereunder; and Purchaser agrees to take this Government-owned facility subject to all conditions as are agreed upon by Seller.

21. The transfer of this property shall be made subject to the agreement to permit the Bureau of Reclamation of the Department of the Interior to occupy said property for an indefinite period of time to be used in connection with the normal day-to-day operations of said Department of the Interior, in accordance with the provisions of War Assets Administration Regulation 5. Order 16. The seller shall also retain title to the hospital and adequate grounds therefor. It is proposed to transfer the hospital to Rene de Lima Hospital, a corporation, with agreement that hospital facilities be made available to Henderson residents.

5. Net rents, revenues, profits and other emoluments shall be turned over to the Seller for the period of years hereinafter set out, as proceeds of this disposition, within the meaning of the Surplus Property Act of 1944, as amended, and shall be deemed to mean all gross rent, revenue, and other emoluments of any kind received by the Purchaser in the leasing, operation or sale of all or any part of the facility and including, but not limited to, furnishing utilities or rendering services in connection with the operation of the facility, less deductions for (a) the usual and ordinary costs (including direct labor, materials and overhead) of current upkeep, insurance, maintenance and operation of the facility by the Purchaser; (b) administrative costs at the facility not to exceed quarterly the sum expended for such costs during the last quarter of 1947 which has been estimated to be $850,000; (c) costs of promotional work and other activities in obtaining tenants or making sales, which costs shall not exceed $25,000 per year. Administrative costs allowable in (b) above shall be limited to the following departments: Executive, Cashier, Purchasing, Accounting, Billing and Statistics, Personnel, Timekeeping and Pay Roll, and Disposal Negotiations and which include the following expenses: salaries of the above departments, travel expenses of employees on official business, office supplies and expenses, postage, telephone rental and tolls, telegrams, auditing expenses, legal and collection expenses, taxes (other than ad valorem), bad debts, and sundry general expenses. Any administrative costs not covered by the foregoing shall be subject to the approval of Seller.

6. In the event the revenue produced from the property through sale, lease, or operation does not provide sufficient funds for the proper upkeep and maintenance of the property, the Purchaser shall have the right and option at any time to (a) supply the deficiency in the amount necessary for upkeep and maintenance from its own funds, or (b) to reconvey the plant and property to the Seller subject to such dispositions as may have been made and such leases as may be outstanding upon three (3) months’ written notice of its intention, and in the event the option to reconvey is exercised the Purchaser shall, upon reconveyance being effected, be released from any and all further responsibility with respect to the property.

7. An Arbitration Committee shall be appointed for the purpose of settling any controversial questions of fact that may arise in carrying out any of the provisions of this Letter of Intent. This Arbitration Committee shall consist of three persons; one to be appointed by each party to this Letter of Intent and the third to be appointed by the Senior Judge of the Circuit Court of Appeals for the Ninth Federal Circuit. If either party hereto shall refuse or neglect to appoint an arbitrator within thirty (30) days after the other party shall have appointed an arbitrator and served written notice thereof upon the other party requiring it to appoint an arbitrator, then, upon request
to the Senior Judge of the Circuit Court of Appeals for the Ninth Federal Circuit, said Judge shall appoint such arbitrator within a period of twenty (20) days. The finding or an award of a majority of the arbitrators shall be binding upon the parties.

6. It is understood and agreed that Seller shall be granted one (1) year from and after the date of the execution of this Letter of Intent, or until the Nevada State Legislature shall meet and enact legislation to permit the Colorado River Commission to sell or dispose of subject facilities, whichever date may first occur, within which to obtain a bona fide purchaser for this entire facility from private industry who will agree to continue the operation of the plant in productive industrial enterprise. In the event Seller procures such a purchaser from private industry within the period hereinabove set out, Purchaser agrees to reconvey the facility subject to any outstanding lease, to Seller, or convey same to such purchaser as Seller may designate upon sixty (60) day's written notice. The entire electric transmission and distribution system, the water supply system and the sewerage disposal system which are covered by that certain Letter of Intent entered into by and between the War Assets Administration and the Colorado River Commission on September 16, 1947, are hereby excluded specifically from the transfer provided for in this paragraph. In the event this facility is reconveyed to Seller within one (1) year under the provisions of this paragraph, an accounting shall be made at the time of such reconveyance.

9. At any time after three (3) years from the date of the execution of this Letter of Intent, the Arbitration Committee, duly appointed as hereinabove set forth in paragraph 5, may meet at the discretion of the Seller and determine in an equitable manner the total minimum payment to be made by Purchaser under the terms of this agreement, which shall in no event exceed $24,000,000.

10. In the event the revenue produced from the property, whether through sale, lease or operation, is not adequate to provide sufficient funds for payments to Seller as hereinabove set out in paragraphs 5 and 9, and extraordinary maintenance as provided in paragraph 14 for a period of three (3) years, Seller shall have the right to require reconveyance of the property upon three (3) months written notice to Purchaser by the Seller.

11. Purchaser shall be obligated to promote and develop sales or leases for the property in good faith at no less than the minimum values to be established and if such values are adhered to Seller will approve the disposal. If at any time Seller should determine that Purchaser is not exercising diligence and reasonable effort in disposing of any of the property, Seller shall serve notice to that effect on Purchaser and call upon Purchaser to appoint an arbitrator to meet with two other arbitrators, as provided in paragraph 7 hereof, who shall constitute an Arbitration Committee for the purpose of determining if the Purchaser has not been promoting disposal of the property in good faith and with diligence. Should this Arbitration Committee find that the Purchaser is unable to fulfill its obligation in this respect, then Seller shall have the right to either (a) develop bona fide disposals for any part of the property in line with the minimum value and upon recommendation of such disposal Purchaser will consummate the disposal immediately, Seller to receive the net proceeds from all disposals after allowable deductions set forth in paragraph No. 5 herein, or (b) Seller may require the Purchaser to reconvey all the property which has not been sold subject to any outstanding leases.

12. The Munitions Board has placed a portion of this facility under the provisions of the National Security Clause. In the event the Munitions Board does not remove this restriction prior to the date of actual transfer, Purchaser hereby agrees to accept this facility subject to all conditions contained therein.

13. On such portions of the property or facilities to which the National Security Clause is not applicable, the Purchaser shall have the right to erect structures or make any improvements it may desire on the property subject to the approval of Seller and shall have the right to deduct from any rents, revenues, or any moneys received from the lease of such new structures or improvements, (a) interest at the rate of five (5) percent per annum on the amount invested on any construction and improvements, and (b) five percent per annum for the amortization of the same with any balance remaining to be considered as a part of the gross rents, revenues, and emoluments from the facility.

14. The Purchaser shall establish a fund in the amount of $300,000 for the purpose of providing extraordinary maintenance and other contingencies not covered by existing leases. This fund shall be created by permitting the Purchaser to retain not in excess of $75,000 for any one year from the net rents, revenues, and emoluments. Any expenditures made from this fund shall have prior approval of Seller and this fund shall become the property of Seller in the event of reconveyance.

15. Purchaser shall be required to remit within forty-five (45) days after the close of each quarter-year the net rents, revenues and other emoluments received from the property after deduction from such net revenues, one-quarter of the annual amount of the extraordinary maintenance fund as set out in paragraph 14 above, all of such remittances to be accompanied by proper accounting statements signed by a duly authorized representative of Purchaser. Should there remain no net rents, revenues or other emoluments at the close of a quarter after allowable deductions are made, a proper accounting statement to that effect shall be submitted. Purchaser shall further be required to submit to Seller within 120 days after the close of each calendar year a statement duly certified by the State Auditor of the State of Nevada, or a certified public accountant selected and compensated by the Purchaser, and approved by Seller, verifying or rectifying the accuracy of the quarterly annual statements submitted by the Purchaser for such calendar year. In the event that it is found there has been an error in the net revenue paid or due, it shall be adjusted at the time of the next quarterly annual statement.

16. Any sums remaining in operating maintenance funds provided for hereinabove at the time of final settlement will be turned over to the Seller along with any other moneys which may be due at that time, provided that the total amount to be paid to Seller pursuant to paragraphs 5, 9, and 14.
to the Senior Judge of the Circuit Court of Appeals for the Ninth Federal Circuit, said Judge shall appoint such arbitrator within a period of twenty (20) days. The finding or an award of a majority of the arbitrators shall be binding upon the parties.

6. It is understood and agreed that Seller shall be granted one (1) year from and after the date of the execution of this Letter of Intent, or until the Nevada State Legislature shall meet and enact legislation to permit the Colorado River Commission to sell or dispose of subject facilities, whichever date may first occur, within which to obtain a bona fide purchaser for this entire facility from private industry who will agree to continue the operation of the plant in productive industrial enterprise. In the event Seller procures such a purchaser from private industry within the period hereinabove set out, Purchaser agrees to reconvey the facility subject to any outstanding leases, to Seller, or convey same to such purchaser as Seller may designate upon sixty (60) day's written notice. The entire electric transmission and distribution system, the water supply system and the sewerage disposal system which are covered by that certain Letter of Intent entered into by and between the War Assets Administration and the Colorado River Commission on September 16, 1947, are hereby excluded specifically from the transfer provided for in this paragraph. In the event this facility is reconveyed to Seller within one (1) year under the provisions of this paragraph, an accounting shall be made at the time of such reconveyance.

9. At any time after three (3) years from the date of the execution of this Letter of Intent, the Arbitration Committee, duly appointed as hereinabove set forth in paragraph 7, may meet at the discretion of the Seller and determine on an equitable basis the total minimum payment to be made by Purchaser under the terms of this agreement, which shall in no event exceed $24,000,000.

10. In the event the revenue produced from the property, whether through sale, lease or operation, is not adequate to provide sufficient funds for payments to Seller as hereinabove set out in paragraphs 5 and 9, and extraordinary maintenance as provided in paragraph 14 for a period of three (3) years, Seller shall have the right to require reconveyance of the property upon three (3) months written notice to Purchaser by the Seller.

11. Purchaser shall be obligated to promote and develop sales or leases for the property in good faith at no less than the minimum values to be established and if such values are adhered to Seller will approve the disposal. If at any time Seller should determine that Purchaser is not exercising diligence and reasonable effort in disposing of any of the property, Seller shall serve notice to that effect on Purchaser and call upon Purchaser to appoint an arbitrator to meet with two other arbitrators, as provided in paragraph 7 hereof, who shall constitute an Arbitration Committee for the purpose of determining if the Purchaser has not been promoting disposal of the property in good faith and with diligence. Should this Arbitration Committee find that the Purchaser is unable to fulfill its obligation in this respect, then Seller shall have the right to either (a) develop bona fide proposals for any part of the property in line with the minimum value and upon recommendation of such disposal Purchaser will consummate the disposal immediately. Seller to receive the net proceeds from all disposals after allowable deductions set forth in paragraph No. 5 herein, or (b) Seller may require the Purchaser to reconvey all the property which has not been sold subject to any outstanding leases.

12. The Munitions Board has placed a portion of this facility under the provisions of the National Security Clause. In the event the Munitions Board does not remove this restriction prior to the date of actual transfer, Purchaser hereby agrees to accept this facility subject to all conditions contained therein.

13. On such portions of the property or facilities to which the National Security Clause is not applicable, the Purchaser shall have the right to erect structures or make any improvements it may desire on the property subject to the approval of Seller and shall have the right to deduct from any rents, revenues, or any moneys received from the lease of such new structures or improvements, (a) interest at the rate of five (5) percent per annum on the amount invested on any construction and improvements, and (b) five percent per annum of the cost thereof for the amortization of the same with any balance remaining to be considered as a part of the gross rents, revenues, and emoluments from the facility.

14. The Purchaser shall establish a fund in the amount of $300,000 for the purpose of providing extraordinary maintenance and other contingencies not covered by existing leases. This fund shall be created by permitting the Purchaser to retain not in excess of $75,000 for any one year from the net rents, revenues, and emoluments. Any expenditures made from this fund shall have prior approval of Seller and this fund shall become the property of Seller in the event of reconveyance.

15. Purchaser shall be required to remit within forty-five (45) days after the close of each quarter-year the net rents, revenues and other emoluments received from the property after deduction from such net revenues, one-quarter of the annual amount of the extraordinary maintenance fund as set out in paragraph 14 above, all of such remittances to be accompanied by proper accounting statements signed by a duly authorized representative of Purchaser. Should any rents, revenues or other emoluments at the close of a quarter after allowable deductions are made, a proper accounting statement to that effect shall be submitted. Purchaser shall further be required to submit to Seller within 120 days after the close of each calendar year, a statement duly certified by the State Auditor of the State of Nevada, or a certified public accountant selected and compensated by the Purchaser, and approved by Seller, verifying or certifying the accuracy of the quarterly annual statements submitted by the Purchaser for such calendar year. In the event that it is found there has been an error in the net revenue paid or due, it shall be adjusted at the time of the next quarterly annual statement.

16. Any sums remaining in extraordinary maintenance funds provided for hereinabove at the time of final settlement will be turned over to the Seller along with any other moneys which may be due at that time, provided that the total amount to be paid to Seller pursuant to this agreement shall be not less than $24,000,000.
this Letter of Intent shall not exceed the sum of $24,000,000 as required
in paragraph 1 hereof.
17. Purchaser shall be responsible for necessary insurance coverage,
taxes, maintenance and other expenses of this property from and after
the date that Purchaser is put into possession of the property. The
minimum insurance requirements shall be approved by Seller but in
any event there shall be ample coverage on all leased portions of the
plant and all buildings and facilities essential in its operation.
18. Included at the present time in plant inventories are certain items
of machinery, equipment and spare parts which are not considered
to be essential to future operation of subject facility. Title to such
items shall be retained in Seller and Seller shall dispose of and remove
such items at its own expense. There are other items of machinery,
equipment and spare parts presently located at subject facility which
are considered to be a part of the realty or which may be essential
to future use, operation, maintenance or disposal of the plant. Title
to the latter machinery, equipment and spare parts shall be conveyed
to Purchaser. Plant site records at the date Purchaser is placed in
possession of the premises adjacent to a mutual agreement as to the
surplus items, will be the basis for conveyance of title to Pur-
chaser. Opportunity will be granted to Purchaser to verify plant
site records but such verification, as well as determination of surplus
and transfer of title shall be completed within six (6) months from
the date of this agreement.
19. The Seller shall not warrant, expressly or impliedly, that the
future use by Purchaser or others of any equipment, machinery or
other facilities incorporated in or of any process to be practiced at
said plant, is free from patent infringements or obligations to pay
royalties, and does not assume any liability to protect, defend, or save
harmless Purchaser or others against any claims, demands or causes of
action predicated on such use arising out of any United States Patent.
Purchaser agrees to hold harmless and defend the Government in any
unit under any United States patent directed to the sale of the future
use of any equipment, machinery or other facilities incorporated in or
at any processes to be practiced in said plant or for the collection of
profits, damages or royalties arising out of such sale or use. Pur-
chaser assumes and agrees to indemnify the Government against any
and all existing obligations (including obligations to pay royalties)
affected the future use, transfer or resale of the equipment, machinery
or other facility which were entered into expressly or impliedly by
Seller with the approval or on behalf of Defense Plant Corporation
or Reconstruction Finance Corporation.
20. A complete list of leases, options to purchase and all agree-
ments of every kind and character heretofore made by representatives of the
United States Government to others than the Purchasers, shall be
supplied to Purchaser by Seller, and such leases and agreements
shall be assigned to the Purchaser by appropriate assignment agree-
ments effective as of the date of delivery of possession of the premises
hereunder; and Purchaser agrees to take this Government-owned facility subject to all

21. The transfer of this property shall be made subject to the agree-
ment to permit the Bureau of Reclamation of the Department of the
accordance with the provisions of War Assets Administration Regulation
5, Order 16. The seller shall also retain title to the hospital and
adequate grounds therefor. It is proposed to transfer the hospital to
Rene de Lima Hospital, a corporation, with agreement that hospital
facilities be made available to Henderson residents.
2. Net rents, revenues, profits and other emoluments shall be turned
over to the Seller for the period of years hereinabove set out, as
proceeds of this disposition, within the meaning of the Surplus Prop-
erty Act of 1944, as amended, and shall be deemed to mean all gross
rent, revenue, and other emoluments of any kind received by the Pur-
chaser in the leasing, operation or sale of all or any part of the facility
and including, but not limited to, furnishing utilities or rendering
services in connection with the operation of the facility, less deduc-
tions for (a) the usual and ordinary costs (including direct labor,
materials and overhead) of current upkeep, insurance, maintenance
and operation of the facility by Purchaser; (b) administrative costs at the fac-
tility not to exceed quarterly the sum expended for such
costs during the last quarter of 1947 which has been estimated to be
$60,000; (c) costs of promotional work and other activities in obtain-
ing tenants or making sales, which costs shall not exceed $20,000 per
year. Administrative costs allowable in (b) above shall be limited to
the following departments: Executive, Cashier, Purchasing,
Accounting, Billing and Statistics, Personnel, Timekeeping and Pay
Roll, and Disposal Negotiations and which include the following
expenses: salaries of the above departments, travel expenses of
employees on official business, office supplies and expenses, postage,
telephone rental and tolls, telegrams, auditing expenses, legal and
collection expenses, taxes (other than ad valorem), bad debts, and
sundry general expenses. Any administrative costs not covered by
the foregoing shall be subject to the approval of Seller.
6. In the event the revenue produced from the property through
sale, lease, or operation does not provide sufficient funds for the
proper upkeep and maintenance of the property, the Purchaser shall
have the right and option at any time to (a) supply the deficiency in
the amount necessary for upkeep and maintenance from its own
funds, or (b) to convey the plant and property to the Seller subject
to such dispositions as may have been made and such leases as may
be outstanding upon three (3) months’ written notice of its intention,
and in the event the option to convey is exercised the Purchaser
shall, upon reconveyance being effectuated, be released from any and all
further responsibility with respect to the property.
7. An Arbitration Committee shall be appointed for the purpose of
settling any controversial questions of fact that may arise in carrying
out any of the provisions of this Letter of Intent. This Arbitration
Committee shall consist of three persons; one to be appointed by each
party to this Letter of Intent and the third to be appointed by the
Senior Judge of the Circuit Court of Appeals for the Ninth Federal
Circuit. If either party hereto shall refuse or neglect to appoint an
arbitrator within thirty (30) days after the other party shall have
appointed an arbitrator and served written notice thereof upon the
other party requiring it to appoint an arbitrator, then, upon request
APPENDIX 5
Letter of Intent For Colorado River Commission To Purchase
Arizona Basic Magnesium Project
(Printed and Hand Draft)
COLORADO RIVER COMMISSION, COTTONWOOD, ARIZONA.
Attention: Governor Vail Pettman.
GENTLEMEN: Reference is made to the proposal dated October 7, 1947, wherein the War Assets Administration, acting for and on behalf of the Reconstruction Finance Corporation, under and pursuant to Reorganization Plan I of 1947 (32 F. R. 4534), and the powers and authority contained in the provisions of the Surplus Property Act of 1944, as amended (50 Stat. 765), and War Assets Administration Regulation One, as amended (11 F. R. 466), hereinafter called Seller, offered the State of Nevada, acting by and through its Colorado River Commission, hereinafter called Purchaser, an opportunity to negotiate for the purchase or lease of the entire holdings of the United States Government known as Planor 201, Basic Magnesium Plant, located at Henderson, Nevada. On November 6, 1947, the Colorado River Commission, through its Secretary, Mr. Alfred Merritt Smith, advised that such commission, at a formal meeting held on October 7, 1947, had determined that it desired to negotiate for the purpose of taking over this property. Subsequent to negotiations, it was determined that the entire facility would be sold and transferred to the State of Nevada, acting by and through its Colorado River Commission, upon the following terms and conditions:

1. Title shall vest in the Colorado River Commission in absolute fee ownership with the Purchaser being obligated to pay the Seller at the time of the execution of the instruments of transfer, One Dollar ($1) in cash and therefor, as an additional consideration all of the net rentals, revenues, or other emoluments derived from the operation of the property through sale, lease, or otherwise (except return on minerals) for a period of twenty (20) years, or until a sum of $24,000,000 has been paid to the Seller, whichever is earlier.

2. The conveyance of the property shall be in absolute ownership with the Purchaser having the full right of sale or lease of the property conveyed to it, or any part thereof, subject to the approval of the Seller upon terms and conditions to be mutually agreed upon.

3. The Seller shall reserve all minerals and mineral rights for its exclusive benefit and all such minerals or mineral rights, either through homestead, royalties, or sales, shall go to the Seller. This reservation shall be subject to the understanding that any development of the property for mineral purposes shall be conducted in such manner as to not unreasonably interfere with the use of this property as an industrial plant.

4. Seller shall retain title to all chapels located within the boundaries of this facility. The ultimate determination as to which denominations may purchase these chapels shall be made by the Chief of Chaplains in Interior to negotiate for the acquisition of the entire transmission system. Such acquisition shall be subject to the provisions of a Letter of Intent entered into by and between the parties hereto dated September 16, 1947, which Letter of Intent shall be suspended upon the execution of this agreement. In the event this facility shall be reconveyed to Seller prior to termination of the Letter of Intent dated September 16, 1947, such contract shall be reactivated and remain in full force and effect until the termination date thereof.

22. Six (6) months after the execution of the firm power contracts under which an adequate supply of power will be assured for the operation of this facility, Purchaser will submit a concrete plan for advertising sales of this facility. This plan shall be submitted to Seller for approval. In the event Seller approves the plan submitted, Purchaser hereby obligates itself to advertising the facility for sale in accordance with such plan within four months from the date of such approval. Failure to comply with this provision shall be cause for termination of this agreement or reconveyance of the property to the Seller at its option.

23. Seller shall place Purchaser in possession of the premises on a date to be determined mutually by War Assets Administration and Purchaser, and the Purchaser from and after such date shall be responsible for all maintenance and upkeep of the property.

24. It is mutually agreed that Seller shall retain the right to keep a representative or representatives on the premises until the full purchase price is paid or for such shorter term as may be determined by Seller. Such representative or representatives shall have control over Seller's interest in this facility and Purchaser shall consult with this representative regarding all matters requiring the approval of Seller. Seller shall vest such representative or representatives with adequate authority to make decisions and sign documents at the plant site which will facilitate all actions. Purchaser further agrees to furnish adequate office space together with necessary heating, light and other such usual facilities essential to the operation of an office to Seller's representative without cost.

25. Purchaser will obtain at its own expense and affix to the Quitclaim Deed transferring title such revenue and documentary stamps as may be required by law, and will pay all recording fees incidental to recordation. Seller will make available for Purchaser's inspection and use such abstract of title and other title papers as are in its custody, and will cause to be transferred to Purchaser whatever title insurance policies Seller now has covering the Plant or involved, but it is understood that Seller will not be obligated to furnish any later or continuation title report, title insurance, or pay for any title expense pertaining to this transaction.

26. Upon the expiration of the present agreement between Seller, Southern California Edison Company, and the Department of the Interior, providing for the use by the Southern California Edison Company of sections 0-7 and 7-7 located at Hoover Dam and the assumption by Southern California Edison Company of the generating costs pertaining thereto, Seller will transfer to Purchaser, on a mutually agreeable basis, whatever rights Seller may have to the use of said electrical equipment.
27. Purchaser warrants that it has not employed any person to solicit or secure this sale upon any agreement for a commission, percentage, brokerage, or contingent fee.

28. Purchaser agrees that in the performance of the terms of this sale that it will comply with and give all stipulations and representations required by applicable Federal laws, and that it will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin.

29. No member of or delegate to Congress or resident commissioner shall be admitted to any share of or part of this sale or to any benefit that may arise therefrom.

30. It is understood and agreed that when and if you accept and approve this Letter of Intent, a formal contract, in accordance with the provisions hereof, will be drawn and executed as promptly as possible.

31. This Letter of Intent is executed in quadruplicate and it is requested that you indicate your acceptance hereto by having the chairman and secretary of the Colorado River Commission execute and return to this Administration three (3) counterparts hereof.

Accepted this 30th day of March, 1948.

COLORADO RIVER COMMISSION,

VAIL PITTMAN, Chairman.

ALFRED MERRETT SMITH, Secretary.

---

REPORT OF STATE ENGINEER

Cost of Unit A-5, Section G6 and T6

Section G6: $2,135,113 Factor 1.2: 2.6
Section T6: 207,811 Factor 1.2: 2.8

Total: $2,342,924

Generator: $1,650,000
Transformer: $460,000

Amortization: $20,000
Replacement: $25,000
Office and Maintenance: $40,000

Common facilities: $171,000

Cost of Unit A9, Sections G6 and T6

Section G6: $389,070 x 1.75 = 33
Section T6: 207,811 x 1.2 = 30

Total: $514,381

Cost of Unit NT, Sections G7 and T7

Section G7: $1,045,181
Section T7: 789,022

Total: $1,834,203

Yearly cost:

Section G7: $37,603
Section T7: 75,959
Common facilities: 15,110

Total: $138,672

Office and maintenance, Section T7A: 24,000

Total: $162,672

40,000 kva 230/69 kv Bank at Baseline

- Transformer 133.655 kva 230/69 kv G 46:06: $200,000
- 1-230 kv OCB: 60,000
- 1-230 kv disc section: 12,000
- 1-69 kv OCB: 12,000
- 1-69 kva disc switch #4 poles: 2,000
- Miscellaneous: 50,000
- Installation: 50,000

Total: $364,000

Trufiy cost: 36 x $430,000 = $43,000

Assume monthly cost of present 40,000 kva 133.655 kv
Bank at Baseline to be: $15,000

Moving 230 kv OCB and disc switches to Arizona side: $10,000

Extending Baseline 230 kV lines to Arizona side: $40,000
### REPORT OF STATE ENGINEER

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Unit Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>100,000 kva 287/330 kV Bank and 3–33 kV Oil Circuit Breakers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4–33 kV Oil transformers @ $4.50 per kVA</td>
<td></td>
<td></td>
<td>60,000</td>
</tr>
<tr>
<td>2–287 kV Oil circuit breakers @ $200,000</td>
<td></td>
<td></td>
<td>200,000</td>
</tr>
<tr>
<td>1–287 kV disc switch @ $15,000</td>
<td></td>
<td></td>
<td>15,000</td>
</tr>
<tr>
<td>5–33 kV disc switches @ $10,000</td>
<td></td>
<td></td>
<td>50,000</td>
</tr>
<tr>
<td>1–287 kV switchyard position</td>
<td></td>
<td></td>
<td>100,000</td>
</tr>
<tr>
<td>2–287 kV switchyard position</td>
<td></td>
<td></td>
<td>570,000</td>
</tr>
<tr>
<td>1–287 kV switchyard position</td>
<td></td>
<td></td>
<td>570,000</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td></td>
<td></td>
<td>100,000</td>
</tr>
<tr>
<td>Installation</td>
<td></td>
<td></td>
<td>100,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>$1,602,000</strong></td>
</tr>
</tbody>
</table>

City's estimate: **$1,406,000**

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Unit Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amortization</td>
<td></td>
<td></td>
<td>3,000</td>
</tr>
<tr>
<td>Replacement</td>
<td></td>
<td>$72,000</td>
<td></td>
</tr>
<tr>
<td>Office and maintenance</td>
<td></td>
<td>22,400</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>$125,000</strong></td>
</tr>
</tbody>
</table>

280 kV Switchyard Position with 3-OCB

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Unit Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>4–33 kV OCB @ $100,000</td>
<td></td>
<td></td>
<td>400,000</td>
</tr>
<tr>
<td>2–287 kV disc switch @ $10,000</td>
<td></td>
<td></td>
<td>20,000</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td></td>
<td></td>
<td>50,000</td>
</tr>
<tr>
<td>Installation</td>
<td></td>
<td></td>
<td>100,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>620,000</td>
</tr>
</tbody>
</table>

City's estimate: **$540,000**

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Unit Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amortization</td>
<td></td>
<td></td>
<td>3,000</td>
</tr>
<tr>
<td>Replacement</td>
<td></td>
<td>$33,000</td>
<td></td>
</tr>
<tr>
<td>Office and maintenance</td>
<td></td>
<td>8,700</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>$33,700</strong></td>
</tr>
</tbody>
</table>

Unit 2A with 100,000 kVA Bank

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Unit Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>4–33 kV transformers 220/16.1 kV @ $4.20 per kVA</td>
<td></td>
<td></td>
<td>84,000</td>
</tr>
<tr>
<td>2–27 kV OCB</td>
<td></td>
<td>30,000</td>
<td></td>
</tr>
<tr>
<td>27 kV enclosed ods</td>
<td></td>
<td>50,000</td>
<td></td>
</tr>
<tr>
<td>Miscellaneous</td>
<td></td>
<td>50,000</td>
<td></td>
</tr>
<tr>
<td>Installation</td>
<td></td>
<td>100,000</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>280,000</td>
</tr>
</tbody>
</table>

City's estimate: **$233,000**

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Unit Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-3 generator</td>
<td></td>
<td>$45,000</td>
<td></td>
</tr>
<tr>
<td>Total for Unit A-3</td>
<td></td>
<td>285,000</td>
<td></td>
</tr>
</tbody>
</table>

City's estimate: **$285,000**

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Unit Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yearly cost (City's estimate)</td>
<td></td>
<td></td>
<td><strong>$285,000</strong></td>
</tr>
</tbody>
</table>

Transformer Bank A-3 100,000 kVA

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Unit Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>4–33 kV transformers 220/16.1 kV @ $4.20 per kVA</td>
<td></td>
<td></td>
<td>84,000</td>
</tr>
<tr>
<td>2–27 kV OCB</td>
<td></td>
<td>30,000</td>
<td></td>
</tr>
<tr>
<td>27 kV enclosed ods</td>
<td></td>
<td>50,000</td>
<td></td>
</tr>
<tr>
<td>Miscellaneous</td>
<td></td>
<td>50,000</td>
<td></td>
</tr>
<tr>
<td>Installation</td>
<td></td>
<td>100,000</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>280,000</td>
</tr>
</tbody>
</table>

Yearly cost .07 x $280,000 = **$20,000**

### APPENDIX 6

United States Department of the Interior, Bureau of Reclamation—Central Valley Project, California—Contract for Electric Service to Colorado River Commission of Nevada.

This Contract, made this day of November 19, 1939, in pursuance of the Act of Congress approved June 17, 1932 (33 Stat. 368) and Acts amendatory thereof or supplementary thereto and particularly pursuant to the Acts of Congress approved August 26, 1937 (50 Stat. 444, 556), entitled "An Act authorizing the construction, repair and preservation of certain public works on rivers and harbors, and for other purposes," as amended, and August 4, 1939 (53 Stat. 1187) entitled "Reclamation Project Act, 1939," all collectively herein styled the Federal Reclamation Law, between the United States of America, hereinafter called the United States, represented by the officer executing this contract, his duly appointed successor, or his duly authorized representative, hereinafter called the contracting officer, and the Colorado River Commission of Nevada, a public body duly organized, created and existing under and by virtue of the laws of the State of Nevada, hereinafter called the Commission, its successors and assigns.

Witnesseth:

1. In consideration of the mutual covenants herein set forth, the parties hereto agree as follows:

#### ELECTRIC SERVICE TO BE FURNISHED

3. (a) The United States, under the terms and conditions stipulated herein, will furnish electric service to the Commission from and after the date of initial service as hereinafter defined, at or near Donner Pass, California, the specific point to be agreed upon by the parties hereto.

(b) The electric energy involved hereunder will be delivered as three-phase alternating current, at a nominal frequency of sixty (60) cycles per second, and at a nominal delivery voltage to be agreed upon by the parties hereto. The electric energy will be so delivered in amounts which the commission may from time to time require up to a maximum rate of delivery, hereinafter called contract rate of delivery, of _______ kilowatts. Provided, that if power therefor is not available, as conclusively determined by the contracting officer, said contract rate of delivery may be increased at any time by the filing of a request therefor by the Commission with the contracting officer and subsequent approval thereof by the contracting officer. Said request shall include a proper showing of the commission's need for such increase. Said increased contract rate of delivery shall immediately become effective after the date of its approval by the contracting officer. The commission may from time to time, in the absence of objection by the contracting officer, use energy at rates greater than the contract rate of delivery in effect, but such greater use shall
not be deemed to establish in the commission any right thereto and
the commission shall cease any such greater use whenever and for the
periods of time requested by the contracting officer.

c. The electric service will be furnished continuously except (1)
for interruptions or reductions due to uncontrollable forces, as herein
defined, and (2) for temporary interruptions or reductions which, in
the opinion of the contracting officer, are necessary or desirable for
the purpose of maintenance, repairs, replacements, installation of
equipment, or investigation and inspection: Provided, That the United
States, except in cases of emergency as determined by the contracting
officer, will give the commission reasonable advance notice of such
temporary interruptions or reductions and will remove the cause
thereof with diligence.

SCHEDULE OF RATES

4. Beginning with the date of initial service as hereinafter defined
and except as specified in other articles of this contract, the commission
shall pay for the electric service furnished hereunder at rates, charges,
and upon conditions as follows:

(a) For power and energy furnished at the delivery point, billed
in accordance with schedule R2-F1, which is attached hereto and made
a part hereof.

(b) For a fractional part of a billing period at the beginning or end
of service hereunder, the demand charge, the kilowatt-hour blocks
of the energy charge, and the minimum charge shall each be propor-
tionately adjusted in the ratio that the number of hours that electric
service is furnished to the commission in such fractional billing period
bears to the total number of hours in the billing period involved.

(c) Should the delivery of electric energy be interrupted or reduced,
because of conditions on the power system of the United States, below
the contract rate of delivery or below the rate of delivery required by
the commission at the time of such reduction, whichever is the lesser,
for a period or periods of one (1) hour or longer in duration each,
the total number of hours of the service in any billing period
shall be determined by adding the sum of the number of hours of
interrupted service to the product of the number of hours of reduced
service multiplied by the percentage of said reduction below said
contract rate of delivery or below the rate of delivery required by the
commission at the time of such reduction, whichever is the lesser. The
demand charge, the kilowatt-hour blocks of the energy charge, and
the minimum charge shall each be proportionately adjusted in the
ratio that the total number of hours of such interrupted service as herein
determined bears to the total number of hours in the billing period
involved. The commission shall make written claim, within thirty
(30) days after receiving the monthly bill, for reduction on account
of any curtailment to service, for a period or periods of one (1) hour
or longer in duration each, alleged to have occurred and which is not
reflected in such bill. Failure to make such written claim within
said thirty (30) day period shall constitute a waiver thereof. All
curtailments to service, for any reason whatsoever, which are due to
conditions on the power system of the United States, shall be subject
to the provisions of this section (c) and the commission shall be limited
in its remedy therefor to the relief granted by this section (c).
<table>
<thead>
<tr>
<th>Unit</th>
<th>Investment</th>
<th>Yearly cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>NT 7 with Bank NT-8</td>
<td>$692,233</td>
<td>$28,692</td>
</tr>
<tr>
<td>Unit A9 with 40,000 kva Bank</td>
<td>$2,750,000</td>
<td>$108,000</td>
</tr>
<tr>
<td>Bank A9, rating 100,000 kva, use 40 kva</td>
<td>$770,000</td>
<td>$31,000</td>
</tr>
<tr>
<td>Generation for Bank A9</td>
<td>$150,000</td>
<td>$6,000</td>
</tr>
<tr>
<td>Old 60,000 kva Bank at Basic</td>
<td>$150,000</td>
<td>$6,000</td>
</tr>
<tr>
<td>Total</td>
<td><strong>$660,685</strong></td>
<td></td>
</tr>
</tbody>
</table>
FACILITIES TO BE PROVIDED BY THE COMMISSION

9. The commission and its subcontractors, for the purpose hereof, will operate and maintain the electric facilities necessary to receive or carry the power contracted for hereunder away from the delivery point.

FACILITIES TO BE PROVIDED BY THE UNITED STATES

10. The United States, for the purpose of rendering electric service hereunder, will operate and maintain, or will attempt to obtain the use of, the electric facilities necessary to deliver the power contracted for hereunder to the delivery point.

POWER FACTOR

11. The United States will not be required to deliver power and energy at any point at a power factor less than ninety percent (90%) lagging. Provided, that delivery at lower power factor will be made when conditions are such, as determined by the contracting officer, that such lower power factor will not prevent the United States from making full use of its available generating and transmission facilities.

TERM OF CONTRACT

12. (a) This contract shall become effective and shall remain in effect until midnight of __________________________. Provided, that the commission may terminate this contract upon thirty (30) day's written notice.

(b) The date of initial service hereunder hereby is defined as the date upon which the United States is ready and able to furnish, and the commission is ready and able to receive electric service.

LIABILITY

13. The United States, its officers, agents, and employees, or any of them, shall not be liable for any claims, demands, costs, losses, causes of action, damages, or liability of whatsoever kind or nature, arising out of or resulting from the operation and maintenance of the facilities of the commission or its subcontractors under this contract.

TRANSFER OF INTEREST IN CONTRACT

14. No voluntary transfer of this contract or of the rights of the commission hereunder shall be made without the written approval of the contracting officer, and any successor or assign of the rights of the commission, whether by voluntary transfer, judicial sale, foreclosure, or otherwise, shall be subject to all the provisions and conditions of this contract to the same extent as though such successor or assignee were the original contractor hereunder: Provided, That the execution of a mortgage or trust deed, or judicial or foreclosure sale at any point, shall not be deemed voluntary transfers within the meaning of this article.

UNCONTROLLABLE FORCES

15. 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

EXHIBIT C

Cost of City's and State's Systems—Initial Development

<table>
<thead>
<tr>
<th>CITY'S SYSTEM—INITIAL DEVELOPMENT</th>
<th>UNITS</th>
<th>Investmet</th>
<th>Yearly Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>267/260 kv Bank and 2-267 kv OCB</td>
<td></td>
<td>$280,000</td>
<td>$128,000</td>
</tr>
<tr>
<td>Two transformer positions with 260 kv OCB</td>
<td></td>
<td>1,075,000</td>
<td>425,000</td>
</tr>
<tr>
<td>A-3 generator with 260,000 kw Bank</td>
<td></td>
<td>1,427,000</td>
<td>561,000</td>
</tr>
<tr>
<td>Two line positions 260 kv</td>
<td></td>
<td>$260,000</td>
<td>$96,000</td>
</tr>
</tbody>
</table>

For a 40,000 kw capacity this gives $75.00 per kw year.

<table>
<thead>
<tr>
<th>STATE'S SYSTEM</th>
<th>UNITS</th>
<th>Investment</th>
<th>Yearly Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extension of lines and meeting</td>
<td></td>
<td>$30,000</td>
<td>$5,000</td>
</tr>
<tr>
<td>Old 40,000 kw Bank at 260 kv</td>
<td></td>
<td>160,000</td>
<td>20,000</td>
</tr>
<tr>
<td>New 40,000 kw Bank at 260 kv</td>
<td></td>
<td>160,000</td>
<td>20,000</td>
</tr>
</tbody>
</table>

Total for City's System $657,000

*Breakers are moved from TTA; price is too much money.
of the plant site property and the townsite facilities, including utility services, has been appraised at $8,064,559. However, these appraisals were made without giving any consideration to the National Security Clause. The offer to negotiate for purchase, upon which the negotiations between the State of Nevada and the United States Government will be based, states that the sale of property will be subject to the restrictions of the National Security Clause. The restrictions imposed vitally affect the appraised value of the project, as any portion of the property cannot be disposed of, for a period of twenty years, without the written approval of Secretary of War. Therefore, in arriving at a "fair-use" value of the Henderson townsite and the plant site, the value of the property must be determined by the revenue that can be produced during the life of the plant. After considering the present revenue, operating expenses, and potential additional revenue, we recommend the value of the facilities be placed at not more than $2,500,000, payable over a period of fifteen years.

As a result of our investigation of the present condition of the Basic Magnesium Plant, we have concluded that, if the Colorado River Commission carries out the program outlined, the State of Nevada proceeds with the purchase of Henderson townsite and the Basic plant. This recommendation is predicated upon the assumption that if the State decides to purchase the townsite and plant, it will immediately appoint and install its general manager, so that he may become familiar with the plant and present personnel, and be in a position to assume control at the time a formal transfer of management is made.

Very truly yours,
McNeil, Construction Co.
L. G. McNeil, President.

Exhibits attached for ready reference:
A. War Assets Administration's offer to the State of Nevada dated October 1, 1947.
B. Copy of written lease between War Assets Administration and State of Nevada, leasing electrical distribution system, water distribution system, and sewerage distillation system.
C. Plan of Magnesium plant and Henderson, showing land to be purchased.
D. Plan of Magnesium plant, showing buildings under lease at present time.
E. Proposed organization chart for management of plant and facilities.
F. Copy of National Security Clause.

List of additional information:

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 for the generation of the electric power and energy herein contracted for and conclusively determined by the contracting parties, failure of facilities, flood, earthquake, storm, lighting, 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 factors shall exercise due diligence to remove such inability with all reasonable dispatch.

WAIERS
16. Any waiver at any time by either party hereto of its rights with respect to a default or any other matter arising in connection with this contract shall not be deemed to be a waiver with respect to any subsequent default or matter.

NOTICES
17. Any notice, demand or request required or authorized by this contract shall be deemed properly given if mailed, postage prepaid, to the Regional Director, Bureau of Reclamation, P. O. Box 211, Sacramento 10, California, on behalf of the United States, except where otherwise herein specifically provided, and to the Secretary, Colorado River Commission of Nevada, Carson City, Nevada, on behalf of the commission. The designation of the person to be notified or the address of such person may be changed at any time by similar notice.

CONTINGENT UPON APPROPRIATIONS
18. Where the operations of this contract extend beyond the current fiscal year, the contract is made contingent upon Congress making the necessary appropriation for expenditures hereunder after such current year shall have expired. In case such appropriation may be necessary to carry out this contract is not made, the commission hereby releases the United States from all liability due to the failure of Congress to make such appropriation.

OFFICIALS NOT TO BENEFIT
19. 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. 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: ____________________________
Attest:
Secretary of the Interior.

COLORADO RIVER COMMISSION
By: ____________________________
Ratified and approved this day of _______________, 1948.
Chairman, Governor of the State of Nevada.
for the townsite and plant occupants, with all expenses incurred and revenues received by the sewage disposal company.

d. The operation of the telephone system be assumed by the Southern Nevada Telephone Company with all expenses incurred and revenue received by the telephone company.

e. The operation of the railroad facilities be assumed by the Union Pacific Railroad Company with all expenses incurred and all revenues received by the railroad company.

f. Revise townsite rental agreements to discontinue free utilities. Charges for electric lights, water and sewerage can be handled directly by the public utility companies as recommended above. Existing housing rental rates shall be retained. Revise plant site agreements to provide for the purchase of electrical requirements direct from the public utility company.

g. Discontinue all maintenance on property and equipment which cannot be utilized for the production of income.

h. Install a new management to provide minimum forces necessary to operate and maintain the facilities in use and available for use. The proposed organization upon which this report is based is shown in the attached Exhibit No. E.

i. Provide cash reserves from net revenues for current operations, before payment on the principal amount to the United States government. Cash reserves should be for current operating expenses, financing accounts receivable, and contingent maintenance costs. We estimate this cash reserve should be not less than $250,000.

j. Start negotiations for electric power at a rate of 3.5 mills per kwh or less, to be made available for the present and potential lessees of the plant facilities. Present power rates are higher than rates in other comparable industrial areas. During the month of October, the Stauffer Chemical Company paid 4.80 mills per kwh for power at the plant, and other smaller users are paying 7.00 mills per kwh.

k. Start an intensive drive to encourage new industries to make use of the facilities available at the Basic Plant. In setting up the proposed organization, we have included a promotion manager and secretary, whose duties would be to encourage new industries to locate at the Basic Magnesium Plant. A large number of potential industries are considering moving from the east coast to the Los Angeles area and should be encouraged to locate at the Basic Magnesium Plant. At the present time only approximately three-quarters of the facilities are being utilized. Buildings now occupied, with the respective leesees, are shown on the attached Exhibit No. D.

l. The sale and transfer of all plant equipment and material be immediately stopped. Negotiations have been completed for the transfer of major equipment which will vitally affect the future income of the plant. The David Taylor Model Basin, United States Navy, Washington, D. C., has completed negotiations for the purchase of five Allis-Chalmers motor generator sets. These must be kept at the plant site.

m. The fair value of the plant site property and the townsite facilities, including utility services, has been appraised by the Industrial Research Corporation at $35,227,648. The maximum salvage or re-use value of the plant site property and the town facilities, including utility services, has been appraised at $12,447,849.
February 1, 1947, to November 1, 1947. The reports reviewed by us were based on actual cash income and output, and did not take into account county property taxes or depreciation on buildings and equipment.

The financial statement for the operation of towns and plant indicated the following for the last nine months:

a. Average monthly income: $417,045.39
b. Average monthly expense: $82,377.29

c. Average monthly loss: $55,168.90

The last current month (October 1, 1947, to October 31, 1947):

a. October income: $181,387.70
b. October expense: 199,868.40

c. October loss: $18,480.70

The reduction in the monthly loss in the month of October is due to a considerable reduction in the personnel, and a reduction in the services rendered to lessees. Our survey indicates that the loss of $38,000 per month will be an approximate average under the present method of operation without depreciation.

After reviewing all the current leases, income, and expenses, and studying the function of each department of the management, we believe that a simplified program can be put into effect which will result in the following financial condition:

Proposed Program (exclusive of children):

a. Average monthly income: $70,100.75
b. Average monthly expense: 67,616.25

c. Average monthly profit: $2,484.50

The above monthly profit can result only if the following recommendations are carried out:

a. The operation of the Electrical Transmission and Distribution System be assumed by a public utility company. As stated herein before, this assumption was made in our report. However, negotiations should be completed as soon as possible so as to provide for an independent electrical service from the existing plant at the customer with all expenses incurred and revenue received by the management of the public utility company.

b. The operation of the Water Distribution System be assumed by a public utility company. As stated herein before, this assumption was made in our report. However, negotiations should be completed as soon as possible so as to provide for an independent water supply from Lake Mead through the reservoir and treatment plant to consumers in the Henderson towns and to the main plant site with all expenses incurred and income received by the management of the water company.

c. The operation of the sanitary sewage disposal system be assumed by a public utility company. As stated herein before, this assumption was made in our report. However, negotiations should be completed as soon as possible so as to provide for independent sewage disposal.

APPENDIX 7

Pacific Gas and Electric Company—Sierra Pacific Power Company Power Contract

This agreement made by and between Pacific Gas and Electric Company, a California corporation, hereinafter called Pacific, and Sierra Pacific Power Company, a Maine corporation, doing business in the State of California, hereinafter called Sierra.

WHEREAS, Pacific owns and operates two 60 kv circuits delivering power from its dam and Spaulding generating plants, respectively, to Summit, all in Placer and Nevada Counties, State of California, each of said circuits having a capacity of 15,000 kw and both of said circuits combined having a capacity of 30,000 kw of electrical energy for delivery to Sierra; which is insufficient to meet Sierra's present demands on Pacific of approximately 22,000 kw; and

WHEREAS, The parties hereto have herebefore entered into an agreement dated June 6, 1938, hereinafter called Former Contract, pursuant to which Pacific promised to sell and deliver to Sierra, and Sierra promised to purchase and receive from Pacific electric energy, during a period expiring November 1, 1938, for use in the conduct of Sierra's utility electric business, and Sierra had the right to purchase power from other parties than Pacific subject to payment to Pacific, in addition to a prescribed stand-by charge, of a sum of not less than $75,000 for each year during which such purchases might be made from other parties; and

WHEREAS, The parties hereto desire to supersede said Former Contract by the agreement hereto set forth.

Now, therefore, in consideration of the premises and of the respective promises of the parties hereto, they mutually agree as follows, to-wit:

1. Pacific shall sell and deliver to Sierra and Sierra shall purchase and receive from Pacific all of the electric energy which Sierra shall, during the term hereof, require for resale to its customers and for use in the conduct of its electric business, except such electric energy as Sierra may generate in its existing electric generating plants, and such quantity of electric energy as Sierra now purchases or may hereafter purchase from others under minor stand-by and minor exchange agreements.

2. All electric energy delivered and received hereunder shall be three phase, sixty cycle, alternating current, and shall be delivered and metered at a nominal electro-motive force of approximately 90 kv and 110 kv, slight variations in frequency to be allowed. Points of delivery and metering to be as hereinafter provided.

3. All of such electric energy shall be sold and delivered to and purchased and paid for by Sierra in accordance with Pacific's applicable rules and regulations duly and regularly established from time
to time by or under authority of law and on file with the Public Utilities Commission of the State of California.

4. For all electric energy delivered hereunder, Sierra will pay Pacific in accordance with the following schedule of rates:

**Demand Charge**
- First 2,000 kw of maximum demand $1,338.75 per month; all excess kw of maximum demand $0.34 per kw per month.

**Plus**
- **Stand-by Charge**
  - For not more than 4,000 kw payable in equal monthly installments, $30,000 per year.

**Plus**
- **Energy Charge**
  - First 150 kwh per kw per month 6.79 mills per kwh.
  - Next 150 kwh per kw per month 4.88 mills per kwh.
  - All over 300 kwh per kw per month 3.98 mills per kwh.

Except that for all energy furnished in excess of 8,000,000 kwh per month, the above energy rates shall be reduced by 455 mills per kwh.

**Minimum Charge**
- Applicable when the maximum demand in the current month or in the preceding 12 months has exceeded 25,000 kw; 41 per month per kw of such maximum demand.

**Special Conditions**

(a) **Demand**: The maximum demand in any month will be the average kw delivery of the 30-minute interval in which such delivery is greater than in any other 30-minute interval in the month. The maximum demand to be used in computing charges under the above rates will be the mean of the actual maximum so determined for the current month and the highest such demand occurring in the year ending with the current month.

(b) **Off Peak Demand**: Demands occurring between 10:30 p.m. of one day and 6:30 a.m. of the next following day, and on Sundays and legal holidays, will be ignored in determining the demand used for computing charges.

(c) **Power Factor**: The total charge for any month as computed on the above rates will be decreased or increased, respectively, by 0.25% (0.2% if energy used in the month exceeded 8,000,000 kwh) for each 1% that the average power factor of customer’s load in that month was greater or less than 85%, such average power factor to be computed (to the nearest whole percent) from the ratio of lagging kilovolt-ampere-hours to kilowatt-hours consumed in the month; provided, however, that no power factor correction will be made for any month when customer’s maximum demand was less than 10% of the highest in the preceding eleven months.

Sierra shall at all times so conduct its operations that the power factor at the time of peak loads each day at the point of delivery hereunder shall not be less than 95 percent.

5. The stand-by requirements of Sierra may at the option of either

---

**APPENDIX 9**

Summary of L. G. McNeil’s Report on Basic Magnesium Project

December 8, 1947.

COLORADO RIVER COMMISSION, COTTON CREEK, COLORADO,

ATTENTION: Hon. W. T. Pattsman, Chairman.

GENTLEMEN: In accordance with your request of October 24, 1947, we have given careful consideration to the War Assets Administration’s offer to the State of Nevada to negotiate for the purchase of the entire holdings of the United States Government, known as the Basic Magnesium Plant, located in the southern part of Nevada, and we submit herewith our findings and recommendations of the action to be taken by the State of Nevada.

In order to determine whether it was economically feasible to manage the property at a profit, we analyzed the present income and expenses of the Henderson Townsite proper, the plant, and the utilities facilities involved in the operations of the electrical transmission and distribution systems, the water supply system, the sewage disposal system. These utilities have already been taken over by the State of Nevada under a lease dated September 10, 1947, and it is our understanding that these facilities will be operated separate and distinct from the plant operations, either by a department of the State or a public utility company.

The assets offered by the War Assets Administration to the State of Nevada consist of approximately 8,800 acres of land, the Henderson Townsite, and the plant; Victory Village and Carver Park Housing project are not included.

We have not included a list or detailed analysis of the component parts of the Henderson Townsite or the Magnesium Plant, as these are set forth in the very comprehensive report made by the Industrial Development Corporation, submitted to the War Assets Administration on October 1, 1947. This report was made available to us, and should be referred to for a more detailed description of the assets to be transferred to the State of Nevada.

At the present time, the properties included in this offer are under the control of the War Assets Administration, acting for and on behalf of the Reconstruction Finance Corporation. The management consists of representatives of War Assets Administration, the Reconstruction Finance Corporation, and the organization of an independent contractor, employed to operate the facilities. The total number of employees as of November 20, 1947, was 337. All financial reports which we have reviewed included the income and expenses of these three organizations. However, in making our analysis we used only the income and expenses that directly pertained to the management of the Henderson Townsite and the Magnesium Plant. Expenses incurred by the War Assets Administration and the Reconstruction Finance Corporation in the disposal of surplus property, the management of the manganese ore plant, and the warehousing of surplus materials are not included. Accurate financial reports are only available from
Rockwell's considered opinion is that our course should be to offer no objection to the proposed contract.

5. The Washoe County Water Conservation District has transmitted a copy of a resolution passed by their board of directors, addressed to the Colorado River Commission, expressing satisfaction with the Sierra-P. O. & E. contract and a desire to have it approved.

18. Section 8 of the proposed contract calls for the construction by P. O. & E. of a second 110 kv line from Summit to a substation in California, if certain proposed improvements in transmission should not be adequate. Sierra will then enlarge its own transmission facilities to take the extra power. It is then provided that the time of contract shall be extended 15 years from the time P. O. & E. puts in this extra line. If the extra line should not be needed for several years, when built it would extend the time of contract accordingly. It could have the effect of making it a 20-year contract. It was suggested that this be discussed with Sierra, the feeling being that a 15-year contract should be ample, unless good reasons are shown for a longer term.

party heretofore be reviewed and adjusted at the end of each successive three (3) year period during the term hereof.

In the event that during any such three (3) year period it shall be demonstrated by actual experience that Sierra's stand-by requirements exceed 4,000 kilowatts, then such greater number of kilowatts shall be deemed to be the stand-by requirements of Sierra and the stand-by charge shall be increased proportionately until again adjusted, as provided in the preceding paragraph, to such lesser or greater number of kilowatts and stand-by charge as may be mutually agreed upon.

6. Sierra shall upon receipt of bill thereafter pay Pacific monthly at its office in San Francisco, California, for all electric energy delivered heretofore.

7. Pacific shall, at its sole cost and expense, construct a three-phase, 110 kv pole and wire electric transmission line (hereinafter called first 110 kv line) of a capacity of approximately 40,000 kw, extending from its Drum Power House to the said point of delivery at Summit, and shall endeavor to complete the same ready for operation by October 1, 1949, or as soon thereafter as circumstances permit, which first 110 kv line shall at all times be and remain the sole property of Pacific. Inasmuch as it will be impracticable, on account of winter and other conditions existing at Summit, for Pacific to build, maintain and operate a substation at Summit for the purpose of transforming said electric energy from 110 kv to 60 kv for delivery hereunder, after said first 110 kv line of Pacific shall have been constructed, it is therefore agreed that Sierra will, at its sole cost and expense, construct a three-phase, 110 kv pole and wire electric transmission line, of approximately 40,000 kw capacity (hereinafter called Sierra's first 110 kv line) extending from Summit to a substation to be constructed by Sierra at a convenient point within the State of California, and Sierra will also construct said substation (hereinafter called California Substation) with a capacity of 40,000 kw for the purpose of reducing from 110 kv to 60 kv the voltage of the power to be transmitted over Sierra's first 110 kv line. Sierra's first 110 kv line and California Substation shall at all times be and remain the sole property of Sierra, and shall be operated and maintained by it. In consideration of the construction, operation and maintenance by Sierra of Sierra's first 110 kv line and California Substation, Pacific will pay to Sierra each month, from the date said line and substation are placed in operation and for the remaining term of this agreement (however not to exceed a period of fifteen (15) years), a sum equal to one-twelfth of annual costs of operation of said substation, plus one-twelfth of the annual fixed charges for interest, depreciation, maintenance and taxes, based on the installed cost of said substation. The amount of said annual fixed charges for this purpose shall be deemed to be ten percent of Sierra's investment in said substation (estimated to be approximately $3000,000), but in no event shall the combined one-twelfth of said costs of operation and of said fixed charges exceed $2,500 per month, $30,000 per year.

At any time during the term hereof Sierra shall require more power and electric energy than Pacific can supply reasonably through
the said two existing 60 kv lines and Pacific's said first 110 kv line, to be constructed by it hereunder as aforesaid, then Pacific shall either construct, maintain and operate a second 110 kv transmission line to Summit, or convert one of said existing 60 kv lines to 110 kv (either of which lines, as shall be thus constructed or converted, shall herein after be designated second 110 kv line), and Sierra will, correspondingly either construct a second 110 kv transmission line, or will convert to 110 kv one of Sierra's existing 60 kv lines, in order to receive the electric energy which Pacific will deliver from said second 110 kv line to Sierra at Summit, provided that if such further construction or conversion of said second 110 kv line is required of Pacific after January 1, 1950, Sierra will then extend the present contract for a period of fifteen (15) years from the date when said second 110 kv line goes into service.

In the event that further additions to the capacity of California substation, or any other 110/60 kv substation, are required by reason of the construction of second 110 kv line, said additions shall be constructed, operated, and maintained by Sierra without any additional compensation from Pacific.

9. All electric energy purchased hereunder shall be delivered to Sierra at the point where Pacific's lines contact those of Sierra at the location known as "Summit" in Placer County, California. All electric energy delivered hereunder from Pacific's existing two 60 kv circuits to Sierra's 60 kv lines shall be metered at Summit, and all electric energy delivered hereunder from Pacific's first 110 kv line, when constructed as hereinbefore provided, shall, for the mutual convenience of the parties hereto, be metered at 60 kv at California substation. If during the term hereof, Pacific shall be required, as hereinbefore provided, to construct a second 110 kv line, then Pacific shall deliver and meter at 110 kv at Summit such electric energy as is delivered by means of said second 110 kv line. The readings of all meters referred to in this section 9 shall be combined, and simultaneous demands shall be used, for billing purposes hereunder.

10. Sierra, in the event of selling, leasing, or otherwise disposing of its business of selling electric energy, may assign this agreement to the lessee or purchaser thereof, provided such lessee or purchaser shall have assumed and covenant to perform this agreement but otherwise Sierra shall not assign this agreement without Pacific's written consent.

11. This agreement shall be and remain in full force and effect until December 31, 1964, or fifteen (15) years after the date when the first 110 kv line goes into service, whichever is later, unless extended as herein provided, and this contract shall supersede said former contract.

12. This agreement shall become effective as of January 1, 1948, upon the procurement of an order by the Public Utilities Commission of the State of California authorizing the parties hereto to carry out the terms and conditions hereof. This agreement shall at all times be subject to such changes and/or modifications as said commission may from time to time direct in the exercise of its jurisdiction.

Time of the essence of the respective provisions hereof.
whether Federal power should invade established private market fields. The fight over this in California (P. G. & E. Co. versus the Bureau of Reclamation) is bitter. The administration, motives and the plans of the Bureau are under violent attack. This controversy may have the results of blocking, or at least delaying the Bureau’s suggested line into Reno.

5. There is a feeling among the farming elements in California that Shasta Dam was built for them for irrigation and flood control on the Sacramento River. They are required to pay the cost of this dam under the reclamation law. The power developed is incidental, was never designed to be firm power, after irrigation and flood control releases of water are met. They consider it their power. That they greatly need it for irrigation pumping cannot be denied.

6. In order to secure transmission line stand-by for Nevada necessary for dependable service, assuming that dependable power might be available, the Bureau would have to build two complete lines into Reno, greatly increasing the cost and possibly further decreasing the chance of getting an appropriation to do it.

7. If the Bureau fails to build a line, the other alternative is to have the Bureau’s energy brought in over the P. G. & E. and S. P. P. Co. lines, which cannot be done without the consent of both. These companies have both decisively declined to wheel Bureau power over their lines.

8. Assuming for discussion that P. G. & E. would consent to wheel Bureau power, a reasonable charge would have to be paid for transmission based on investment, operation, and maintenance. When this charge is computed and added to the Bureau rate now offered, the total rate will practically the same as the rate under the new Pacific and Sierra contract. The lowest figure for stand-by would be around 20 percent of all other charges.

9. The dependability of service under the Pacific and Sierra contract is better, for as Pacific has more surplus power, many interconnected power plants. To these will be added the generation at Shasta Dam. This will lessen the danger of another brown-out, but will not prevent one. California power supply cannot catch up with its growing needs, and Nevada’s needs will also grow. An acute water shortage in the future may put us in the same bad fix that we have been in, unless diesel or steam stand-by is provided, or a greatly expanded hook up with other power systems is accomplished.

10. Other conditions being equal, the State has no desire to incur in any way the present large taxing utility so long as it supplies reasonably adequate service. Nevada has too few taxable resources and cannot afford to cut into them.

11. With added new facilities, and more power available, Sierra should soon be able to extend lines and service into new areas as development warrants, and at reasonable rates, which are always under regulation by the people through the Public Service Commission.

12. At present the commission cannot make a resale contract for sufficient power to justify the Federal expense, outside of Sierra’s franchise and field of service.

13. Nevada needs more power at once, and this cannot be supplied under the Bureau’s proposed contract. We cannot wait two or three
APPENDIX 8


In this matter it was the desire of the commission to investigate the possibility of obtaining, for use in northern Nevada, power allotted to it by the Bureau of Reclamation from Shasta Dam Power plant under the terms of a proposed contract for withdrawal of up to 90,000 kilowatts. The contract had been submitted by the Bureau as a basis for negotiations. An engineering committee appointed by Governor Littman was asked to look into the merits and the possibilities of the proposal. I was designated to act as chairman of that committee.

The only present market of sufficient magnitude to justify the State in making such a contract with the Bureau is the area now served by Sierra Pacific Power Company. Furthermore, the law does not permit the California Power Commission to make a contract for purchase of power unless the same is correspondingly covered and protected by resale contracts.

Preliminary talks with Sierra Pacific Power Company and with the Bureau brought out that Sierra Pacific Gas & Electric Company of California do not wish to use their facilities across the mountains, which link Nevada with Shasta Dam for the entry of competitive Federal power. Pacific Gas & Electric Company has gone on record by letters to the Bureau that it declines to have its transmission lines used to give power to its customer, Sierra Pacific Company for the purpose of separating it from its own market.

The two companies then entered into a new contract, under which better service and more electricity will be made available to Northern California. The contract will require the expenditure of much money for new transmission lines, for which a bond issue of $3,500,000 is contemplated. The contract, under California law, requires approval by the Public Utilities Commission of California.

The Public Service Commission of Nevada, the California Power Commission and representatives of several municipalities served by Sierra Pacific appeared before the California Public Utilities Commission on April 15, 1945, and requested that action on the contract be delayed until its probable effect on Nevada could be looked into, particularly in view of the possibility of securing Federal power at lower cost. The request for delay was opposed by both power companies, but a stay of action was granted until May 3 by the California Commission, probably due to the Nevada people having only received the proposed contract a few days, and not having had time to go into it.

Acting for the engineering committee, I submitted all of our data and letters on the Shasta Dam power situation to E. W. Rockwell, Electrical Engineer, Metropolitan Water District of Southern California, who has been employed at various times over a period of years by the River Commission. On April 20, 1946, A. J. Shafer, Resident Engineer for the River Commission at Las Vegas, called on E. W. Rockwell to discuss the Shasta power problem. Rockwell said he had not had time to get all he needed for a report, but so far as he had gone, the following are the conclusions he had reached, which so far as Shafer and I have gone into, are also our own opinions. We hope to have a written report from Rockwell very soon.

I have numbered the paragraphs in order to facilitate discussion and reference. They all point toward approval of the proposed contract between the two power companies, rather than the attempt to obtain transmission lines from Shasta Dam (Power Plant) on the Sacramento River.

1. Bureau power will be available only from one source, which is Shasta Dam power plant, on the Sacramento River.

2. Reports upon the water available in Shasta Reservoir, after irrigation needs have been supplied, indicate that for some months each year there would be a lack of water to supply the present California power contract requirements. Here is a record of the testimony of R. L. Bole, Director Region No. 2, U. S. Bureau of Reclamation, March 12, 1948, transcript pages 15-16.

Sworn testimony of R. L. Bole, Regional Director of Bureau of Reclamation, March 12, 1948, transcript pages 15-16.

<table>
<thead>
<tr>
<th>GENERATION AT SHASTA POWER PLANT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract requirements</td>
</tr>
<tr>
<td>Date</td>
</tr>
<tr>
<td>---------------------------------</td>
</tr>
<tr>
<td>January</td>
</tr>
<tr>
<td>February</td>
</tr>
<tr>
<td>March</td>
</tr>
<tr>
<td>April</td>
</tr>
<tr>
<td>May</td>
</tr>
<tr>
<td>June</td>
</tr>
<tr>
<td>July</td>
</tr>
<tr>
<td>August</td>
</tr>
<tr>
<td>September</td>
</tr>
<tr>
<td>October</td>
</tr>
<tr>
<td>November</td>
</tr>
<tr>
<td>December</td>
</tr>
</tbody>
</table>

* * * * *

3. From these figures by the Bureau, which are substantiated by the California Utilities Commission engineer, Mr. McNaughton, firm power would not be available to Nevada from Shasta Dam Power Plant, even if the Bureau signs a contract to supply Nevada with firm energy. In order to make it firm the Bureau or the State would have to obtain additional power from some other source, which would increase the cost.

4. The construction of 175 kv transmission lines from Elverta, California, to Reno, Nevada, which is being studied by the Bureau, would depend upon Congress appropriating the money for it. Such an appropriation is doubtful unless markets for enough energy to justify it are assured. There is also a division of opinion in Congress as to
APPENDIX 8


In this matter it was the desire of the commission to investigate the possibility of obtaining, for use in Northern Nevada, power allotted to it by the Bureau of Reclamation from Shasta Dam Power plant under the terms of a proposed contract for withdrawal of up to 90,000 kilowatts. The contract had been submitted by the Bureau as a basis for negotiations. An engineering committee appointed by Governor Dixie Wilson was asked to look into the merits and the possibilities of the proposal. I was designated to act as chairman of that committee.

The only present market of a sufficient magnitude to justify the State in making such a contract with the Bureau is the area now served by Sierra Pacific Power Company. Furthermore, the law does not permit the Colorado River Commission to make a contract for purchase of power unless the same is correspondingly received and protected by resale contracts.

Preliminary talks with Sierra Pacific Power Company and with the Bureau brought out that Sierra and Pacific Gas & Electric Company of California do not wish to use their facilities across the mountains, which link Nevada with Shasta Dam for the entry of competitive Federal power. Pacific Gas & Electric Company has gone on record by letters to the Bureau that it declines to have its transmission lines used to give power to its customer, Sierra Pacific Company, for the purpose of separating it from its own market.

The two companies then entered into a new contract, under which better service and more electricity will be made available to Northwestern Nevada. The contract will require the expenditure of much money for new transmission lines, for which a bond issue of $8,500,000 is contemplated. The contract, under California law, requires approval by the Public Utilities Commission of California.

The Public Service Commission of Nevada, the Colorado River Commission, and representatives of several municipalities served by Sierra Pacific appeared before the California Public Utilities Commission on April 15, 1948, and requested that action on the contract be delayed until its probable effect on Nevada could be looked into, particularly in view of the possibility of securing Federal power at lower cost. The request for delay was opposed by both power companies, but a stay of action was granted until May 3 by the California Commission, probably due to the Nevada people having only received the proposed contract a few days, and not having had time to go into it.

Acting for the engineering committee, I submitted all of our data and letters on the Shasta Dam power situation to E. W. Rockwell, Electrical Engineer, Metropolitan Water District of Southern California, who has been employed at various times over a period of years by the River Commission. On April 20, 1948, A. J. Shaver, Resident Engineer for the River Commission at Las Vegas, called on E. W. Rockwell to discuss the Shasta power problem. Rockwell said he had had no time to get all he needed for a report, but that as he had gone, the following are the conclusions he had reached, which so far as Shaver and I have gone into, are also our own opinions. We hope to have a written report from Rockwell very soon.

1. Bureau power will be available only from one source, which is Shasta Dam power plant on the Sacramento River.

2. Reports upon the water in Shasta Reservoir, after irrigation needs have been supplied, indicate that for some months each year there would be a lack of water to supply the present California power contract requirements. Here is a record of the testimony of R. L. Bole, Director Region No. 2, U. S. Bureau of Reclamation, March 12, 1948, transcript pages 15-19.

Sworn testimony of R. L. Bole, Regional Director of Bureau of Reclamation, March 12, 1948, transcript pages 15-16.

<table>
<thead>
<tr>
<th>Generation at Shasta Power Plant</th>
<th>Contract</th>
<th>Delivery</th>
<th>Excess over contract</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>requirements kwh</td>
<td>kwh</td>
<td>contract</td>
</tr>
<tr>
<td>January</td>
<td>80,000,000</td>
<td>94,450,000</td>
<td>14,450,000</td>
</tr>
<tr>
<td>February</td>
<td>80,000,000</td>
<td>68,962,000</td>
<td>11,038,000</td>
</tr>
<tr>
<td>March</td>
<td>74,000,000</td>
<td>77,000,000</td>
<td>3,000,000</td>
</tr>
<tr>
<td>April</td>
<td>74,000,000</td>
<td>132,000,000*</td>
<td>58,000,000</td>
</tr>
<tr>
<td>May</td>
<td>60,000,000</td>
<td>135,400,000*</td>
<td>75,400,000</td>
</tr>
<tr>
<td>June</td>
<td>35,000,000</td>
<td>145,150,000*</td>
<td>110,150,000</td>
</tr>
<tr>
<td>July</td>
<td>110,000,000</td>
<td>177,070,000</td>
<td>67,070,000</td>
</tr>
<tr>
<td>August</td>
<td>110,000,000</td>
<td>117,070,000</td>
<td>7,000,000</td>
</tr>
<tr>
<td>September</td>
<td>100,000,000</td>
<td>114,012,000</td>
<td>64,012,000</td>
</tr>
<tr>
<td>October</td>
<td>100,000,000</td>
<td>100,000,000</td>
<td>0</td>
</tr>
<tr>
<td>November</td>
<td>85,000,000</td>
<td>85,000,000</td>
<td>0</td>
</tr>
<tr>
<td>December</td>
<td>80,000,000</td>
<td>80,000,000</td>
<td>0</td>
</tr>
</tbody>
</table>

*Excess of Bureau transmission lines between Shasta and Shasta station, authorized by Congress July 1947, and not expected to be completed by Bureau until November 1948;

3. From these figures by the Bureau, which are substantiated by the California Utilities Commission engineer, Mr. McNaughton, firm power would not be available to Nevada from Shasta Power Plant, even if the Bureau signs a contract to supply Nevada with firm energy. In order to make it firm the Bureau may be given an additional period of time, which would increase the cost.

4. The construction of 350 kV transmission line from Elvera, California, to Reno, Nevada, which is being studied by the Bureau, would depend upon Congress appropriating the money for it. Such an appropriation is doubtful unless markets for terminal energy to justify it are assured. There is also a division of opinion in Congress as to
whether Federal power should invade established private market fields. The fight over this in California (P. G. & E. Co. versus the Bureau of Reclamation) is bitter. The administration, motives and the plans of the Bureau are under violent attack. This controversy may have the results of blocking, or at least delaying the Bureau’s suggested line into Reno.

5. There is a feeling among the farming element in California that Shasta Dam was built for them for irrigation and flood control on the Sacramento River. They are required to pay the cost of this dam under the reclamation law. The power developed is incidental, was never designed to be firm power, after irrigation and flood control releases of water are met. They consider it their power. That they greatly need it for irrigation pumping cannot be denied.

6. In order to secure transmission line stand-by for Nevada necessary for dependable service, assuming that dependable power might be available, the Bureau would have to build two complete lines into Reno, greatly increasing the cost and possibly further decreasing the chance of getting an appropriation to do it with.

7. If the Bureau fails to build a line, the other alternative is to have the Bureau’s energy brought in over the P. G. & E. and S. P. P. Co. lines, which cannot be done without the consent of both. These companies have both repeatedly declined to wheel Bureau power over their lines.

8. Assuming for discussion that P. G. & E. would consent to wheel Bureau power, a reasonable charge would have to be paid for transmission based on investment, operation, and maintenance. When this charge is computed and added to the Bureau rate now offered, the total rate is practically the same as the rate under the new Pacific and Sierra contract. The lowest figure for stand-by would be around 30 percent of all other charges.

9. The dependability of service under the Pacific and Sierra contract is better, for as Pacific has more surplus power, many interconnected power plants. To these will be added the generation at Shasta Dam. This lessens the danger of another brown-out, but will not prevent one. California power supply cannot catch up with its growing needs, and Nevada’s needs will also grow. An acute water shortage in the future may put us in the same bad fix that we have been in, unless diesel or steam stand-by is provided, or a greatly expanded hook up with other power systems is accomplished.

10. Other conditions being equal, the State has no desire to injure in any way the present large taxpaying utility so long as it supplies reasonably adequate service. Nevada has too few taxable resources and cannot afford to cut into them.

11. With added new facilities, and more power available, Sierra should soon be able to extend lines and service into new areas as development warrants, and at reasonable rates, which are always under regulation by the people through the Public Service Commission.

12. At present the commission cannot make a resale contract for sufficient power to justify the Federal expense, outside of Sierra’s franchise and field of service.

13. Nevada needs more power at once, and this cannot be supplied under the Bureau’s proposed contract. We cannot wait two or three
the said two existing 60 kv lines and Pacific's said first 110 kv line, to be constructed by it hereunder as aforesaid, then Pacific shall either construct, maintain and operate a second 110 kv transmission line to Summit, or convert one of said existing 60 kv lines to 110 kv (either of which lines, as shall be thus constructed or converted, shall hereinafter be designated second 110 kv line), and Sierra will, correspondingly either construct a second 110 kv transmission line, or will convert to 110 kv one of Sierra's existing 60 kv lines, in order to receive the electric energy which Pacific will deliver from said second 110 kv line to Summit, provided that if such further construction or conversion of said second 110 kv line is required of Pacific after January 1, 1950, Sierra will then extend the present contract for a period of fifteen (15) years from the date when said second 110 kv line goes into service. In the event that further additions to the capacity of California substation, or any other 110/60 kv substation, are required by reason of the construction of said 110 kv line, said additions shall be constructed, operated, and maintained by Sierra without any additional compensation from Pacific.

9. All electric energy purchased hereunder shall be delivered to Sierra at the point where Pacific's lines contact those of Sierra at the location known as "Summit" in Placer County, California. All electric energy delivered hereunder from Pacific's existing two 60 kv circuits to Sierra's 60 kv lines shall be metered at Summit, and all electric energy delivered hereunder from Pacific's first 110 kv line, when constructed as hereinafter provided, shall, for the mutual convenience of the parties hereto, be metered at 60 kv at California substation. If during the term hereof, Pacific shall be required, as hereinafter provided, to construct a second 110 kv line, then Pacific shall deliver and meter at 110 kv at Summit such electric energy as is delivered by means of said second 110 kv line. The readings of all meters referred to in this section 9 shall be combined, and simultaneous demands shall be used, for billing purposes hereunder.

10. Sierra, in the event of selling, leasing, or otherwise disposing of its business of selling electric energy, may assign this agreement to the lessee or purchaser thereof, provided such lessee or purchaser shall have assumed and covenant to perform this agreement but otherwise Sierra shall not assign this agreement without Pacific's written consent.

11. This agreement shall be and remain in full force and effect until December 31, 1964, or fifteen (15) years after the date when the first 110 kv line goes into service, whichever is later, unless extended as herein provided, and this contract shall supersede said former contract.

12. This agreement shall become effective as of January 1, 1948, upon the procurement of an order by the Public Utilities Commission of the State of California authorizing the parties hereto to carry out the terms and conditions hereof. This agreement shall at all times be subject to such changes and/or modifications as said commission may from time to time direct in the exercise of its jurisdiction.

Time is of the essence of the respective provisions hereof.

years for them to build a line, even if Congress should appropriate money, which is doubtful. The present Sierra contract will give us the continuous energy we must have for steady growth.

14. The possibility of future use of Federal power is not foreclosed by accepting the Sierra contract. Studies should continue, and will continue. More and more power will be needed. Possibly some of the secondary power at Shasta Dam can be made available later on. The extension of lines from the Colorado River into northern Nevada will be in the picture, bigger than ever with the coming construction of Bridge Canyon Dam and with the completion of Davis Dam in 1950. We have made application for one-third of the total energy to be generated at Davis Dam, but as is the case with Shasta, we must have it sold before we can take it, and there must be sufficient present available markets to justify the investments in power lines. Federal and private power seem to get along together fairly well in Southern California. We hope that may happen here, but the Federal power must be low in cost and be dependable. We must take for granted, and as a permanent condition, the rivalry that exists between public and private power service. While our present form of government exists we shall have both types of power for keeps. They can and must compromise and get along together, and until this is done, the public will not get the best service.

15. A further delay to study or debate changes in the contract may have the effect of making Sierra's $3,000,000 bond issue less salable. I am advised by officials of the California Utilities Commission that the bond market is very sensitive, and if buyers feel there is something wrong with the project which delays the contract, they may not buy, or use such a condition as a means to buy at a lower price. Fulfillment of the contract ensuring prompt and ample power depends upon the sale of the bonds. Without it, Sierra's project cannot be built, and we would then be left just where we are now, with increasing power demands and far from enough power to meet them.

16. I do not believe further delay will change our opinion in this, although we know the time allotted us has been short. Mr. Rockwell, our consultant, has not been given time in which to prepare his report, but Mr. Shaver, electrical engineer for the Colorado River Commission, and I have twice been in consultation with Mr. Rockwell, and the foregoing comments are the result of our talks. Since last seeing Mr. Rockwell he has talked with Mr. Elmore, Chief of Power marketing, U. S. Bureau of Reclamation Region No. 2, at Sacramento, as a result of which he sent me the following telegram last Saturday afternoon:

Alfred Merrihitt Smith, El Ranchote, Carson City, Nevada:

Don't see how you can do other than accept power contract telephoned Elmore of Central Valley Project. He states that rate schedule submitted with their proposal covers power delivered at Donner Summit about three years would be required to provide for power delivery at Summit purchase of power from Central Valley in 1948 would save about 136,000,000 dollars or about 1.7 miles per kilowatt-hour.

R. W. Rockwell.
Rockwell's considered opinion is that our course should be to offer no objection to the proposed contract.

6. The Washoe County Water Conservation District has transmitted a copy of a resolution passed by their board of directors, addressed to the Colorado River Commission, expressing satisfaction with the Sierra-P. G. & E. contract and a desire to have it approved.

8. Section 8 of the proposed contract calls for the construction by P. G. & E. of a second 110 kv line from Summit to a substation in California, if certain proposed improvements in transmission should not be adequate. Sierra will then enlarge its own transmission facilities to take the extra power. It is then provided that the time of contract shall be extended 15 years from the time P. G. & E. puts in this extra line. If the extra line should not be needed for several years, when built it would extend the time of contract accordingly. It could have the effect of making it a 20-year contract. It was suggested that this be discussed with Sierra, the feeling being that a 15-year contract should be ample, unless good reasons are shown for a longer term.

The party hereto be reviewed and adjusted at the end of each successive three (3) year period during the term hereof.

In the event that during any such three (3) year period it shall be demonstrated by actual experience that Sierra's stand-by requirements exceed 4,000 kilowatts, then such greater number of kilowatts shall be deemed to be the stand-by requirements of Sierra and the stand-by charge shall be increased proportionately until again adjusted, as provided in the preceding paragraph, to such lesser or greater number of kilowatts and stand-by charge as may be mutually agreed upon.

6. Sierra shall upon receipt of bill thereafter pay Pacific monthly at its office in San Francisco, California, for all electric energy delivered hereunder.

7. Pacific shall, at its sole cost and expense, construct a three-phase, 110 kv pole and wire electric transmission line hereinafter called first 110 kv line, of a capacity of approximately 40,000 kw, extending from its Drum Power House to the said point of delivery at Summit, and shall endeavor to complete the same ready for operation by October 1, 1949, or as soon thereafter as circumstances permit, which first 110 kv line shall at all times be and remain the sole property of Pacific. Inasmuch as it will be impracticable, on account of winter and other conditions existing at Summit, for Pacific to build, maintain and operate a substation at Summit for the purpose of transforming said electric energy from 110 kv to 60 kv for delivery hereunder, after said first 110 kv line of Pacific shall have been constructed, it is therefore agreed that Sierra will, at its sole cost and expense, construct a three-phase, 110 kv pole and wire electric transmission line, of approximately 40,000 kw capacity (hereinafter called Sierra's first 110 kv line) extending from Summit to a substation to be constructed by Sierra at a convenient point within the State of California, and Sierra will also construct said substation (hereinafter called California Substation) with a capacity of 40,000 kw for the purpose of reducing from 110 kv to 60 kv the voltage of the power to be transmitted over Sierra's first 110 kv line. Sierra's first 110 kv line and California Substation shall at all times be and remain the sole property of Sierra, and shall be operated and maintained by it. In consideration of the construction, operation and maintenance by Sierra of Sierra's first 110 kv line and California Substation, Pacific will pay to Sierra each month, from the date said line and substation are placed in operation and for the remaining term of this agreement (however not to exceed a period of fifteen (15) years), a sum equal to one-twelfth of annual costs of operation of said substation, plus one-twelfth of the annual fixed charges for interest, depreciation, maintenance and taxes, based on the installed cost of said substation. The amount of said annual fixed charges for this purpose shall be deemed to be 10 percent of Sierra's investment in said substation (estimated to be approximately $500,000), but in no event shall the combined one-twelfth of said costs of operation and of said fixed charges exceed $2,500 per month, $30,000 per year.

8. At any time during the term hereof Sierra shall require more power and electric energy than Pacific can supply reasonably through
to time by or under authority of law and on file with the Public Utilities Commission of the State of California.

4. For all electric energy delivered hereunder, Sierra will pay Pacific in accordance with the following schedule of rates:

Demand Charge:
First 2,000 kw of maximum demand $1,338.75 per month; all excess kw of maximum demand 4.94 per kw per month.

Plus:

Standby Charge:
For not more than 4,000 kw payable in equal monthly installments, $36,000 per year.

Plus:

Energy Charge:
First 150 kw per kw per month 6.79 mills per kw.
Next 150 kw per kw per month 4.85 mills per kw.
All over 300 kw per kw per month 3.88 mills per kw.
Except that for all energy furnished in excess of 6,000,000 kw per month, the above energy rates shall be reduced by 485 mills per kw.

Minimum Charge:
Applicable when the maximum demand in the current month or in the preceding 12 months has exceeded 25,000 kw; 41 per month per kw of such maximum demand.

Special Conditions:
(a) Demand: The maximum demand in any month shall be the average kw delivery of the 30-minute interval in which such delivery is greater than any other 30-minute interval in the month. The maximum demand to be used in computing charges under the above rates will be the mean of the actual maximum so determined for the current month and the highest such demand occurring in the year ending with the current month.

(b) Off Peak Demand: Demands occurring between 8:00 a.m. and 4:00 p.m. of the next following day, and on Sundays and legal holidays, will be ignored in determining the demand used for computing charges.

(c) Power Factor: The total charge for any month as computed on the above rates will be decreased or increased, respectively, by 0.35% (0.2% if energy used in the month exceeded 6,000,000 kw) for each 1% that the average power factor of customer’s load in that month was greater than or less than 85%, such average power factor to be computed to the nearest whole percent from the ratio of lagging kilovolt-amperes-hours to kilowatt-hours consumed in the month; provided, however, that no power factor correction will be made for any month when customer’s maximum demand was less than 10% of the highest in the preceding twelve months.

Sierra shall at all times so conduct its operations that the power factor at the time of peak loads each day at the point of delivery hereunder shall not be less than 95 percent.

5. The stand-by requirements of Sierra may at the option of either

APPENDIX 9
Summary of L. G. McNeil's Report on Basic Magnesium Project
December 8, 1947.
COLORADO RIVER COMMISSION, Carson City, Nevada.
Attention: Hon. Vail Pittman, Chairman.

GENTLEMEN: In accordance with your request of October 24, 1947, we have given careful consideration to the War Assets Administration's offer to the State of Nevada to negotiate for the purchase of the entire holdings of the United States Government, known as the Basic Magnesium Plant, located in the southern part of Nevada, and we submit herewith our findings and recommendations of the action to be taken by the State of Nevada.

In order to determine whether it was economically feasible to manage the property at a profit, we analyzed the present income and expenses of the Henderson Townsite proper and the plant, but did not include in our analysis of the proposed program the operations of the electrical transmission and distribution systems, the water supply system, or the sewage disposal system. These utilities have already been taken over by the State of Nevada under a lease dated September 16, 1947, and it is our understanding that these facilities will be operated separate and distinct from the plant operations, either by a department of the State or a public utility company.

The assets offered by the War Assets Administration to the State of Nevada consist of approximately 6,600 acres of land, the Henderson Townsite, and the plant; Victory Village and Carver Park Housing project are not included.

We have not included a list or detailed analysis of the component parts of the Henderson Townsite or the Magnesium Plant, as these are set forth in a very comprehensive report made by the Industrial Research Corporation, submitted to the War Assets Administration on October 1, 1947. This report was made available to us, and should be referred to for a more detailed description of the assets to be transferred to the State of Nevada.

At the present time, the properties included in this offer are under the control of the War Assets Administration, acting for and on behalf of the Reconstruction Finance Corporation. The management consists of representatives of War Assets Administration, the Reconstruction Finance Corporation, and the organization of an independent contractor, employed to operate the facilities. The total number of employees as of November 20, 1947, was 337. All financial reports which we have reviewed included the income and expenses of these two organizations. However, in making our analysis we used only the income and expenses that directly pertained to the management of the Henderson Townsite and the Magnesium Plant. Expenses incurred by the War Assets Administration and the Reconstruction Finance Corporation in the disposal of surplus property, the management of the magnesium ore plant, and the warehousing of surplus materials are not included. Accurate financial reports are only available from
February 1, 1947, to November 1, 1947. The reports, reviewed by us, were based on actual cash income and output, and did not take into account any property taxes or depreciation on buildings and equipment.

The financial statement for the operation of the townsite and plant indicated the following for the last nine months:

a. Average total monthly income: $171,945.39
b. Average total monthly expense: $181,877.70
c. Average monthly loss: $55,131.90

The last current month (October 1, 1947, to October 31, 1947):

a. October income: $181,877.70
b. October expense: $199,884.40
c. October loss: $18,006.70

The reduction in the monthly loss in the month of October is due to a considerable reduction in the personnel, and a reduction in the services rendered to lessees. Our survey indicates that the loss of $58,000 per month will be an approximate average under the present method of operation without depreciation.

The reduction in the monthly loss in the month of October is due to a considerable reduction in the personnel, and a reduction in the services rendered to lessees. Our survey indicates that the loss of $58,000 per month will be an approximate average under the present method of operation without depreciation.

After reviewing the current leases, income, and expenses, and studying the function of each department of the management, we believe that a simplified program can be put into effect which will result in the following financial condition:

Proposed Program (Exclusive of Utilities):

a. Average monthly income: $70,100.75
b. Average monthly expense: $67,616.35
c. Average monthly profit: $2,484.50

The above monthly profit can result only if the following recommendations are carried out:

a. The operation of the Electrical Transmission and Distribution System be assumed by a public utility company. As stated herein before, this assumption was made in our report. However, negotiations should be completed as soon as possible so as to provide for an independent electrical service from the plant to the town site with all expenses incurred and revenue received by the management of the public utility company.

b. The operation of the Water Distribution System be assumed by a public utility company. As stated herein before, this assumption was made in our report. However, negotiations should be completed as soon as possible so as to provide for an independent supply from Lake Mead through the reservoir and treatment plant to consumers in the Henderson townsite and to the main plant site with all expenses incurred and income received by the management of the water company.

c. The operation of the sanitary sewage disposal system be assumed by a public utility company. As stated herein before, this assumption was made in our report. However, negotiations should be completed as soon as possible so as to provide for independent sewage disposal.

APPENDIX 7

Pacific Gas and Electric Company-Sierra Pacific Power Company Power Contract

This agreement made by and between Pacific Gas and Electric Company, a California corporation, hereinafter called Pacific, and Sierra Pacific Power Company, a Maine corporation, doing business in the State of California, hereinafter called Sierra.

Whereas, Pacific owns and operates two 60 kv circuits delivering power from its Drum and Spanning generating plants, respectively, to Summit, all in Placer and Nevada Counties, State of California, each of said circuits having a capacity of 15,000 kw and both of said circuits combined having a capacity of 30,000 kw of electric energy for delivery to Sierra, which is sufficient to meet Sierra's present demands on Pacific of approximately 29,000 kw; and

Whereas, The parties hereto have heretofore entered into an agreement dated June 6, 1938, hereinafter called Former Contract, pursuant to which Pacific promised to sell and deliver to Sierra, and Sierra promised to purchase and receive from Pacific electric energy, during a period expiring November 1, 1953, for use in the conduct of Sierra's utility electric business, and Sierra had the right to purchase power from other parties than Pacific subject to payment to Pacific, in addition to a prescribed stand-by charge, of a sum not less than $75,000 for each year during which such purchases might be made from other parties; and

Whereas, The parties hereto desire to supersede said Former Contract by the agreement hereto set forth.

Now, THEREFORE, in consideration of the premises and of the respective promises of the parties hereto, they mutually agree as follows, to-wit:

1. Pacific shall sell and deliver to Sierra and Sierra shall purchase and receive from Pacific all of the electric energy which Sierra shall, during the term hereof, require for sale to its customers and for use in the conduct of its electric business, except such electric energy as Sierra may generate in its existing electric generating plants, and such quantity of electric energy as Sierra now purchases or may hereafter purchase from others under minor stand-by and minor exchange agreements.

2. All electric energy delivered and received hereunder shall be three-phase, sixty cycle, alternating current, and shall be delivered and metered at a nominal electro-motive force of approximately 90 kw and 110 kv, slight variations in frequency to be allowed. Points of delivery and metering to be as hereinafter provided.

3. All of such electric energy shall be sold and delivered to and purchased and paid for by Sierra in accordance with Pacific's applicable rules and regulations duly and regularly established from time...
for the townsite and plant occupants, with all expenses incurred and
revenues received by the sewage disposal company.
  d. The operation of the telephone system be assumed by the Southern
Nevada Telephone Company with all expenses incurred and revenue
received by the telephone company.
  e. The operation of the railroad facilities be assumed by the Union
Pacific Railroad Company with all expenses incurred and all revenues
received by the railroad company.
  f. Revise townsite rental agreements to discontinue free utilities.
Charges for electric lights, water and sewerage can be handled directly
by the public utility companies as recommended above. Existing
housing rental rates shall be retained. Revise plant site agreements
to provide for the purchase of electrical requirements direct from
the public utility company.
  g. Discontinue all maintenance on property and equipment which
cannot be utilized for the production of income.
  h. Install a new management to provide minimum forces necessary
to operate and maintain the facilities in use and available for use. The
proposed organization upon which this report is based is shown in
the attached Exhibit No. E.
  i. Provide cash reserves from net revenues from current operations,
before payment on the principal amount to the United States govern-
ment. Cash reserves should be for current operating expenses, financ-
ing accounts receivable, and contingent maintenance costs. We estimate
this cash reserve should be not less than $250,000.
  j. Start negotiations for electric power at a rate of 3.5 mills per
kwh or less, to be made available for the present and potential losses
of the plant facilities. Present power rates are higher than rates in
other comparable industrial areas. During the month of October, the
Stauffer Chemical Company paid 4.80 mills per kwh for power at the
plant, and other smaller users are paying 7.00 mills per kwh.
  k. Start an intensive drive to encourage new industries to make use
of the facilities available at the Basic Plant. In setting up the pro-
gressed organization, we have included a promotion manager and secre-
tary, whose duties would be to encourage new industries to locate at
the Basic Magnesium Plant. A large number of potential industries
are considering moving from the east coast to the Los Angeles area
and should be encouraged to locate at the Basic Magnesium Plant.
At the present time only approximately three-quarters of the facilities
are being utilized. Buildings now occupied, with the respective lessees,
are shown on the attached Exhibit No. D.
  l. The sale and transfer of all plant equipment and material and be
immediately stopped. Negotiations have been completed for the trans-
fer of major equipment which will vitally effect the future income of the
plant. The David Taylor Model Basin, United States Navy, Wash-
ington, D. C., has completed negotiations for the purchase of five Allen-
Chalmers motor generator sets. These must be kept at the plant site.
  m. The fair value of the plant site property and the townsite facili-
ties, including utility services, has been appraised by the Industrial
Research Corporation at $55,257,648. The maximum salvage or re-use
value of the plant site property and the town facilities, including
utility services, has been appraised at $12,447,849. The scrap value
of the plant site property and the townsite facilities, including utility services, has been appraised at $8,654,399. However, these appraisals were made without giving any consideration to the National Security Clause. The offer to negotiate for purchase, upon which the negotiations between the State of Nevada and the United States Government will be based, states that the sale of property will be subject to the restrictions of the National Security Clause.

The restrictions imposed vitally affect the appraised value of the project, as any portion of the property cannot be disposed of, for a period of twenty years, without the written approval of Secretary of War. Therefore, in arriving at a “fair-use” value of the Henderson townsite and the plant site, the value of the property must be determined by the revenue that can be produced during the life of the plant. After considering the present revenue, operating expenses, and potential additional revenue, we recommend the use value of the facilities be placed at not more than $2,500,000, payable over a period of fifteen years.

As a result of our investigation of the present condition of the Basic Magnesium Plant, as indicated by the facts presented herein and our recommendations for the future operation of the plant, we recommend that, if the Colorado River Commission carries out the program outlined, that the State of Nevada proceed with the purchase of Henderson townsite and the Basic plant. This recommendation is predicated upon the assumption that the State decides to purchase the townsite and plant, it will immediately appoint and install its general manager so that he may familiarize himself with the plant and present personnel, and be in a position to assume control at the time a formal transfer of management is made.

Very truly yours,

McNeil Construction Co.,
L. G. McNeil, President.

Exhibits attached for ready reference:
A. War Assets Administration’s offer to the State of Nevada, dated October 1, 1947.
B. Copy of yearly lease between War Assets Administration and State of Nevada, leasing electrical distribution system, water distribution system, and sewerage distribution system.
C. Plot plan of Magnesium plant and Henderson, showing land to be purchased.
D. Plot plan of Magnesium plant, showing buildings under lease at present time.
E. Proposed organization chart for management of plant and facilities.
F. Copy of National Security Clause.

List of additional information:

This contract is 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 for the generation of the electric power and energy herein contracted for and conclusively determined by the contracting officer, 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 factors shall exercise due diligence to remove such inability with all reasonable dispatch.

WAIERS

16. Any waiver at any time by either party hereto of its rights with respect to a default or any other matter arising in connection with this contract shall not be deemed to be a waiver with respect to any subsequent default or matter.

NOTICES

17. Any notice, demand or request required or authorized by this contract shall be deemed properly given if mailed, postage prepaid, to the Regional Director, Bureau of Reclamation, P. O. Box 2511, Sacramento 10, California, on behalf of the United States, except where otherwise herein specifically provided, and to the Secretary, Colorado River Commission of Nevada, Carson City, Nevada, on behalf of the commission. The designation of the person to be notified or the address of such person may be changed at any time by similar notice.

CONTINGENT UPON APPROPRIATIONS

18. Where the operations of this contract extend beyond the current fiscal year, the contract is made contingent upon Congress making the necessary appropriation for expenditures hereunder after such current year shall have expired. In case such appropriation as may be necessary to carry out this contract is not made, the commission hereby releases the United States from all liability due to the failure of Congress to make such appropriation.

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.

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: .................................. Attest: ..................................
Secretary.
COLORADO RIVER COMMISSION of Nevada
By: .................................. Ratified and approved this day of 1948.
Chairman.
Governor of the State of Nevada.
APPENDIX 10

Allocation of Davis Dam Power by United States
Bureau of Reclamation

UNITED STATES DEPARTMENT OF THE INTERIOR.
BUREAU OF RECLAMATION
REGION III, BOULDER CITY, NEVADA

August 18, 1948.

COLORADO RIVER COMMISSION OF NEVADA, Carson City, Nevada.

Attention: Alfred Merritt Smith, Secretary.

GENTLEMEN: Receipt is acknowledged of your letter of March 13, 1948, transmitting to this office your application for electric power and energy from Davis Dam.

Following a detailed analysis of all applications, a recommendation for the allocation of Davis power and energy was made by the Commissioner of the Bureau of Reclamation to the Secretary of the Interior by a memorandum dated June 3, 1948. A copy of this memorandum is enclosed for your information. The secretary officially established the allocation of Davis power and energy by his approval of the memorandum on June 23.

The information in tables 1 and 2 of the memorandum shows that the total of all applications received was far in excess of the amount of power to be developed at Davis Dam. It was for this reason that direct allocations were recommended only to those applicants holding the highest priorities and considered to be in the greatest need for additional power and energy or those to whom the bureau had made previous contractual commitments.

In recommending allocations to the numerous applicants in Arizona, consideration was given to the legislative provisions which have been made by the State in creating the Arizona Power Authority as a marketing agent for electric power and energy generated on the Colorado River. The authority by combining its allocation of Davis power and energy with that which it is planning to obtain simultaneously from Hoover Dam is considered to be in a better position than the bureau to make equitable distribution of the available power and energy to applicants in Arizona.

The negotiations of contracts with those applicants listed in table 3 of the enclosed memorandum has been undertaken. I regret that every applicant for Davis power and energy could not be listed in table 3 as having been allotted the full amount of its application.

Very truly yours,

E. A. Morris, Regional Director.
MEMORANDUM


To: Secretary J. A. Krug, (Through Division of Power).
From: Commissioner.
Subject: Proposed allocation of Davis power and energy to applicants therefor—Davis Dam Project.

Following your approval on February 10, 1948, of the Interim Schedule of Rates for Wholesale Firm Power Service (Schedule B3-F3) for the Davis Dam Project, Regional Director Moritz dispatched a letter to all prospective applicants for Davis power announcing your approval of the schedule of rates and requesting completion of an application form by March 31, 1948. The letter, which was dated February 27, 1948, is enclosed and marked Exhibit A.

In response to the announcement and request, Mr. Moritz received applications for Davis power in a total amount far in excess of the 180,000 kilowatts that is expected to be available at the load centers from the Davis Power Plant. The individual applications and a summary thereof by applicants are enclosed and marked, respectively, Exhibits B and C. A summary of the applications filed, grouped by States, is shown in Table 1.

<table>
<thead>
<tr>
<th>TABLE 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary of Applications Filed. (Power in kilowatts and energy in millions of kilowatt-hours annually)</td>
</tr>
<tr>
<td>CLASSIFICATION OF PROSPECTIVE CUSTOMERS</td>
</tr>
<tr>
<td>State</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>Arizona</td>
</tr>
<tr>
<td>California</td>
</tr>
<tr>
<td>Nevada</td>
</tr>
<tr>
<td>Utah</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Table 2 shows the summary of applications in Table 1, after the elimination of the apparent duplications.
TABLE II
Summary of Applications After Elimination of Apparent Duplications
(Power in kilowatts and energy in millions of kilowatt-hours annually)

<table>
<thead>
<tr>
<th>State</th>
<th>Prospective Customers</th>
<th>Predicted Energy</th>
<th>Power</th>
<th>Energy</th>
<th>Total Energy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona</td>
<td>900,000</td>
<td>1,193</td>
<td>22,500</td>
<td>101</td>
<td>223,700</td>
</tr>
<tr>
<td>California</td>
<td>1,200,000</td>
<td>1,149</td>
<td>66,300</td>
<td>397</td>
<td>288,600</td>
</tr>
<tr>
<td>Nevada</td>
<td>60,000</td>
<td>395</td>
<td></td>
<td></td>
<td>60,000</td>
</tr>
<tr>
<td>Utah</td>
<td>10,000</td>
<td>32</td>
<td></td>
<td></td>
<td>10,000</td>
</tr>
<tr>
<td>Total</td>
<td>1,026,000</td>
<td>2,755</td>
<td>98,800</td>
<td>496</td>
<td>385,700</td>
</tr>
</tbody>
</table>

In view of the applications for Davis power far exceeding the amount which will be available, the power allotment of Davis capacity becomes a difficult problem. In considering this problem the bureau has used the following priorities:

(a) Fulfillment of commitments for power from other Colorado River sources in present contracts for Parker power.
(b) Federal agencies within the Department of the Interior.
(c) Other Federal agencies.
(d) Certain small contractors which have preference under reclamation law and are now served directly by the Parker power system.
(e) Other applicants which have preference under reclamation law.
(f) All other applicants.

Using these priorities and limiting allotments to applicants which could be either served directly by the Parker-Davis transmission system, which has been described to the Congress in requests for appropriations, or applicants in the State of California which manifestly could make transmission arrangements with other agencies, the bureau has prepared and recommends the allotment shown in Table 3.

TABLE III
Allocation of Davis Power (Kilowatts)

<table>
<thead>
<tr>
<th>State</th>
<th>Power (Kilowatts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona</td>
<td>2,500</td>
</tr>
<tr>
<td>California</td>
<td>4,000</td>
</tr>
<tr>
<td>Nevada</td>
<td>1,000</td>
</tr>
<tr>
<td>Utah</td>
<td>500</td>
</tr>
<tr>
<td>Total</td>
<td>8,000</td>
</tr>
</tbody>
</table>

Subtotal: 15,000
TABLE III—Continued

<table>
<thead>
<tr>
<th>(b) Federal agencies within the Department of Interior</th>
<th>9,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Carlos Indian Irrigation Project</td>
<td></td>
</tr>
<tr>
<td>(c) Other Federal agencies</td>
<td></td>
</tr>
<tr>
<td>Army Engineer Board, Imperial Dam, Arizona</td>
<td>3,000</td>
</tr>
<tr>
<td>Army Air Force Stations, California</td>
<td>15,000</td>
</tr>
<tr>
<td>Veterans Administration Center, Whipple, Arizona</td>
<td>225</td>
</tr>
<tr>
<td>(d) Certain small contractors which have preference under Reclamation Law, and also are now served directly by the Parker power system</td>
<td></td>
</tr>
<tr>
<td>Gila Valley Power District</td>
<td>2,000</td>
</tr>
<tr>
<td>Yuma Irrigation District</td>
<td>1,500</td>
</tr>
<tr>
<td>(e) Other applicants which have preference under Reclamation Law</td>
<td></td>
</tr>
<tr>
<td>State of Nevada through its Colorado River Commission*</td>
<td>45,000</td>
</tr>
<tr>
<td>Imperial Irrigation District!</td>
<td>15,000</td>
</tr>
<tr>
<td>State of Arizona through the Arizona Power Authority†</td>
<td>45,775</td>
</tr>
<tr>
<td>Total</td>
<td>180,000</td>
</tr>
</tbody>
</table>

*To be temporarily sold by the Bureau of Reclamation, as explained in the text.
**Subject to recapture by the Bureau if and when the Imperial Irrigation District places the proposed Pilot Knob Power Plant in operation.
†Includes 14,000 kilowatts subject to withdrawal by the Bureau upon two years' notice for use in the operation of the Gila Project.

After providing for the immediate requirements for operation of the pumping plants of the Gila Project, the requirements of applicants having rights to power from other sources in contracts for Parker power to the extent of the commitments in such contracts, and the applications of the San Carlos Indian Irrigation Project, the Army Engineer Board, the Veterans Administration Center, and two districts now being served by the Parker power system, aggregating in total 59,255 kilowatts, there remains 120,775 kilowatts for allotment to other applicants. Of this amount, 45,000 kilowatts is recommended for the State of Nevada (Nevada has applied for 60,000 kilowatts, or one-third of all Davis power), and 30,000 kilowatts is recommended for customers in the State of California. All of the remaining 45,775 kilowatts is recommended to be allotted to the State of Arizona because the most desperate need for power in the Davis market area, which has been described to the Congress as central and southern Arizona, southern Nevada, and southern California, is in Arizona.

It is understood that the State of Nevada does not contemplate immediate need for Davis power, but is conducting a campaign for introduction of additional industries in the Basic Magnesium Plant, predicated on the availability of Davis power to supplement its power from Hoover Dam. In view of this situation, it is recommended that the allocation to the State of Nevada be temporarily sold by the Bureau to the municipalities of Los Angeles, Burbank, Glendale, and Pasadena, subject to withdrawal by the State of Nevada upon one year's
notice in such increments as the State may desire. Such power would be apportioned among the four California municipalities in the ratio of the amounts requested by those municipalities and withdrawals would be made in the same proportion.

One-half of the 30,000 kilowatts allotted for use in the State of California is recommended for the Imperial Irrigation District, a preference customer. Since the capacity of the proposed Pilot Knob Power Plant and the plants at the Drops on the All-American Canal plus 15,000 kilowatts of Davis power under the commitment in the district's contract for Parker power would make ample hydroelectric capacity available to the district, it is recommended that the 15,000 kilowatts of Davis power over and above the 15,000-kilowatt Parker contract commitment be subject to repayment by the Bureau if and when the district places the proposed Pilot Knob Power Plant in operation.

The Arizona Power Authority has been allotted all of the 45,775 kilowatts recommended for Arizona to be made available to other applicants which have preference under Reclamation Law. After elimination of apparent duplication, such other preference applicants have applied to the Bureau for 122,000 kilowatts of Davis power. The Authority is in a better position than the Bureau to apportion such 45,775 kilowatts among all such applicants because the Authority can supplement Davis power and energy with its Hoover Dam energy for which it has not yet exercised its right to take. Such allotment of the entire amount to the Authority was recommended to you by the Arizona Electric Coordinating Committee in its letter of March 26, 1948, and such allotment has been advocated by representatives of the Rural Electrification Administration. It will be the Bureau's proposal in contracting with the Authority to require it to observe the preferences established in Reclamation Law in the resale of Davis power. It must be pointed out, however, that the preference provisions governing disposition of power by the Authority (section 6 (h) of the Arizona Power Authority Act, as amended) are not in all respects identical with the preference provisions of the Reclamation Law, although the Authority is itself a preference customer under Reclamation Law.

Accordingly, without an amendment to its Act, the Authority could lawfully follow the preference provisions of Reclamation Law only to the extent that such law is consistent with the Authority's powers under its own Act.

In order to assure the use in Arizona of Davis power which will be required for the operation of the pumping plants of the Gila Project as its development proceeds but which is not required at the present stage of development of the Project, such increased requirements of the Project for Davis power have been included in the 45,775 kilowatts allotted to the Arizona Power Authority. However, it is recommended that 14,000 kilowatts of the 45,775 kilowatts be subject to withdrawal by the Bureau upon two years' notice in such increments as are required for use in the operation of the Gila Project.

A detailed analysis of the applications granted or rejected, including the amounts thereof and the reasons therefor, is enclosed and marked Exhibit D.

It is recommended that you approve the allotment of Davis power
shown in Table 3 subject to the negotiation of acceptable contracts. Upon receipt of such approval the Bureau will immediately undertake negotiation of such contracts.

Walter Seymour, Director, Division of Power.


Copy of Division of Power.

Reg. Dir., Benoist City, Nevada.

I concur: June 17, 1948. W. E. W., O. L. C.

FINANCIAL TABLES
APPENDIX II

Proposed Basis For An Agreement For Furnishing Generator Capacity Stand-by Service and Additional Energy to the State of Nevada.

1. This agreement will become effective after completion of Unit A-3 and 230 kv switchgear on Arizona side of Hoover Dam power plant.

2. Prior to effective date of this agreement, an interim agreement will be made for supplying energy to Nevada in addition to that available from present equipment.

3. Immediately after completion of 230 kv and sources of energy to this rack, the State of Nevada will transfer all of State’s load to 230 kv lines and order discontinuance of service at 69 kv from existing equipment.

4. The transfer of Nevada’s 230 kv lines will be made by Nevada at no cost to the City.

5. All remaining 69 kv circuits for delivery of energy to USBR or special contractors will be transferred to Nevada’s 69 kv lines at no cost to the City. The distribution of charges and energy losses on these circuits and methods of measuring energy and maximum demands on same will be agreed upon by Nevada and parties concerned.

6. All payments to USBR for new 297.5 kv, 220 kv and additional generating equipment used for delivering energy to 230 kv switchgear will be transmitted by the City.

7. All energy delivered and maximum demands to the State of Nevada over the State’s 220 kv circuits will be measured by meters installed on Nevada’s circuits. The cost of all such metering equipment to be borne by Nevada.

8. Monthly maximum demands on energy delivered to Nevada shall be the highest half-hourly average simultaneous combined demand delivered over Nevada’s circuits, less deliveries over these circuits to special contractors or USBR.

9. On or before the 31st day of May of each year the State of Nevada will notify the City in writing the generating capacity required by Nevada for the next contract year (June 1-May 31). Such required kw will be less than effective withdrawals made by Nevada and is no event less than 60,000 kw.

10. The City agrees to deliver to Nevada all energy required by Nevada for which Nevada agrees to pay to USBR as follows:

10.1 For energy withdrawn by Nevada in accordance with regulations, firm energy rates in effect.

10.2 For energy taken in excess of withdrawals to the credit of the City for each 350 kw/h taken, an amount equal to the average cost of $2.50,000 bu. of fuel delivered to the City’s steam electric plants including taxes and delivery charges during the month such delivery of energy is made by the City. If no fuel is purchased by the City during such month, then the charge will be based on the delivered cost of the last 50,000 units of 6.250,000 bu. delivered.

11. For generation of all energy delivered to Nevada the State of
Nevada agrees to pay to USBR to the credit of the City the following generating charges:

11.1 For maximum demands requested in accordance with Article 9 hereof, $1.00 per kw per year, increased or decreased by a factor determined in Article 12 hereof.

11.2 For maximum demands in excess of requests made in accordance with Art. 9 hereof, $1.00 per kw per year, increased or decreased by a factor determined in Article 12 hereof.

11.3 Annual charges in accordance with Article 11.1 hereof, will be billed monthly at the rate of 1/12 of such annual charge each month.

11.4 Annual charges for overdrafts in accordance with Article 11.2 hereof shall be billed 1/12 of such charge for the month during which such overdraft occurs and a similar charge during each of 11 following months provided no higher overdraft occurs during these months.

12.4.0 percent of charges in accordance with 11.1 and 11.2 will be multiplied by a factor obtained by dividing the actual annual interest, amortization, replacement, operation and maintenance charges on newly installed 387.5 kv-220 kv 100,000 kva transformer bank including but not to exceed three (3) 100,000 kva circuit breakers by 129,000.

55.5 percent of charges in accordance with 11.1 and 11.2 will be multiplied by a factor obtained by dividing all annual charges on Unit A-3 and A-3 100,000 kva transformer bank by 296,000.

20.5 percent of charges in accordance with 11.1 and 11.2 will be multiplied by a factor obtained by dividing all annual charges on 220 kv switchyard, including 2 circuit breakers for the tie-bank, 2 circuit breakers for A-3 bank and all breakers on Nevada's 220 kv circuits, but excluding any and all equipment installed exclusively for use of Arizona, USBR, or special contractors by 110,000.

100.0 percent—$353,000.

In case this agreement becomes operative before some of the above major groups of equipment enumerated in Article 12 hereof are installed, then for the purpose of this agreement, the substitute equipment is assumed to be supplied by the City from its existing sources, and the factors enumerated in Article 12 are assumed to be unity.

14. Nevada agrees that any future withdrawals of energy by the State of Nevada in accordance with Article 4 of the Regulations, the time limitations for horsepower withdrawal, shall be in accordance with regulations and any energy withdrawals made either with or without withdrawal of horsepower capacity, shall be according to the following schedule:

**SCHEDULE OF WITHDRAWALS OF ENERGY**

<table>
<thead>
<tr>
<th>Energy Withdrawals</th>
<th>Period</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>4 months</td>
<td>0</td>
</tr>
<tr>
<td>0</td>
<td>6 months</td>
<td>0</td>
</tr>
<tr>
<td>80,000,000</td>
<td>12 months</td>
<td>0</td>
</tr>
<tr>
<td>128,000,000</td>
<td>18 months</td>
<td>0</td>
</tr>
<tr>
<td>192,000,000</td>
<td>24 months</td>
<td>0</td>
</tr>
<tr>
<td>256,000,000</td>
<td>36 months</td>
<td>0</td>
</tr>
</tbody>
</table>

This agreement does not waive the rights of the City, Southern California Edison Company, Ltd., or California Electric Power Company for compensation for idle plant as provided in Article 4(b) of Regulations.

16. Payments due to the City, in addition to those payable to USBR, shall be made before the first of the month after such bill has been rendered or within 30 days after receipt of such bill, whichever date is the latest, and if not paid within the above period, then 1 percent monthly shall be added to such unpaid bill.

17. Payments payable to USBR to the credit of the City shall be paid in accordance with payments due to USBR.

18. This agreement will not be affected by installation of additional equipment for service to State of Arizona.

19. City will not be held liable for failure to comply with provisions of this agreement caused by failure of equipment or other causes beyond control of the City.
Nevada agrees to pay to USBR to the credit of the City the following generating charges:

11.1 For maximum demands requested in accordance with Article 9 hereof, $7.50 per kw per year, increased or decreased by a factor determined in Article 12 hereof.

11.2 For maximum demands in excess of requests made in accordance with Art. 9 hereof, $11 per kw per year, increased or decreased by a factor determined in Article 12 hereof.

11.3 Annual charges in accordance with Article 11.1 hereof, will be billed monthly at the rate of 1/12 of such annual charge each month.

11.4 Annual charges for overdrafts in accordance with Article 11.2 hereof shall be billed 1/12 of such charge for the month during which such overdraft occurs and a similar charge during each of 11 following months provided no higher overdraft occurs during those months.

12. 4.0 percent of charges in accordance with 11.1 and 11.2 will be multiplied by a factor obtained by dividing the actual annual interest, amortization, replacement, operation and maintenance charges on newly installed 387.5 kv-220 kv 100,000 kva transformer bank including lease not to exceed three (3) 387.5 kv circuit breakers by $125,000.

5.5 percent of charges in accordance with 11.1 and 11.2 will be multiplied by a factor obtained by dividing all annual charges on Unit A-3 and A-3 100,000 kva transformer bank by $296,000.

20.5 percent of charges in accordance with 11.1 and 11.2 will be multiplied by a factor obtained by dividing all annual charges on 220 kv switchgear, including 2 circuit breakers for the tie bank, 2 circuit breakers for A-3 bank and all breakers on Nevada’s 220 kv circuits, but excluding any and all equipment installed exclusively for use of Arizona, USBR, or special contractors by $110,000.

10.0 percent—$535,000.

13. In case this agreement becomes operative before some of the above major groups of equipment enumerated in Article 12 hereof are installed, then for the purpose of this agreement, the substitute equipment is assumed to be supplied by the City from its existing sources, and the factors enumerated in Article 12 are assumed to be unity.

14. Nevada agrees that any future withdrawals of energy by the State of Nevada, in accordance with Article 4 of the Regulations, the time limitations for horse power withdrawals, will be in accordance with regulations and any energy withdrawals made either with or without withdrawal of horse power of capacity, shall be according to the following schedule:

<table>
<thead>
<tr>
<th>Schedule of Withdrawals of Energy</th>
<th>Notice Which Together With All Prior Notices Given by Nevada Within 12 Consecutive Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exceeds in bush bush withdraw</td>
<td>Period of notice</td>
</tr>
<tr>
<td>cycle</td>
<td>notice</td>
</tr>
<tr>
<td>0</td>
<td>6 months</td>
</tr>
<tr>
<td>32,000,000</td>
<td>6 months</td>
</tr>
<tr>
<td>80,000,000</td>
<td>12 months</td>
</tr>
<tr>
<td>125,000,000</td>
<td>18 months</td>
</tr>
<tr>
<td>256,000,000</td>
<td>24 months</td>
</tr>
<tr>
<td>256,000,000</td>
<td>36 months</td>
</tr>
</tbody>
</table>
APPENDIX 11

Proposed Basis For An Agreement For Furnishing Generator
Capacity Stand-By Service and Additional Energy to the
State of Nevada.

1. This agreement will become effective after completion of Unit A-3
and 220 kv switchgear on Arizona side of Hoover Dam power plant.
2. Prior to effective date of this agreement, an interim agreement
will be made for supplying energy to Nevada in addition to that avail-
able from present equipment.
3. Immediately after completion of 220 kv rack and sources of energy
to this rack, the State of Nevada will transfer all of State's load to
220 kv lines and orders discontinuance of service at 69 kv from existing
equipment.
4. The transfer of Nevada's 220 kv lines will be made by Nevada
at no cost to the City.
5. All remaining 69 kv circuits for delivery of energy to USBR or
special contractors will be transferred to Nevada's 69 kv lines at no
cost to the City. The distribution of charges and energy losses on
these circuits and methods of measuring energy and maximum demands
on same will be agreed upon by Nevada and parties concerned.
6. All payments to USBR for new 297.5 kv, 220 kv and additional
generating equipment used for delivering energy to 220 kv switchgear
will be assigned by the City.
7. All energy delivered and maximum demands to the State
of Nevada over the State's 220 kv circuits will be measured by meters
installed on Nevada's circuits. The cost of all such metering equip-
ment to be borne by Nevada.
8. Monthly maximum demands on energy delivered to Nevada shall
be the highest half-hourly average simultaneous combined demand
delivered over Nevada's circuits, less deliveries over these circuits to
special contractors or USBR.
9. On or before the 31st day of May of each year the State of
Nevada will notify the City in writing the generating capacity required
by Nevada for the next contract year (June 1-May 31). Such
required kw will not be less than effective withdrawals made by Nevada
and in no event less than 60,000 kw.
10. The City agrees to deliver to Nevada all energy required by
Nevada for which Nevada agrees to pay to USBR as follows:
10.1. For energy withdrawn by Nevada in accordance with regula-
tions, firm energy rates in effect.
10.2. For energy taken in excess of withdrawals to the credit of the
City for each 350 kw hr, an amount equal to the average cost
of $2,250,000 btu of fuel delivered to the City's steam electric plants
including taxes and delivery charges during the month such delivery
of energy is made by the City. If no fuel is purchased by the City
during such month, then the charge will be based on the delivered
cost of the last 50,000 units of 6,250,000 btu delivered.
11. For generation of all energy delivered to Nevada the State of
shown in Table 3 subject to the negotiation of acceptable contracts. Upon receipt of such approval the Bureau will immediately undertake negotiation of such contracts.

Report 300.

(Sgd.) Michael W. Stannard.

I concur: June 16, 1948.

Walter Seymour, Director, Division of Power.


Copy for Division of Power.

Rat. Dir., Bonneville City, Nevada.

I concur: June 17, 1948. W. E. W., O. L. C.

FINANCIAL TABLES
notice in such increments as the State may desire. Such power would be apportioned among the four California municipalities in the ratio of the amounts requested by those municipalities and withdrawals would be made in the same proportion.

One-half of the 30,000 kilowatts allotted for use in the State of California is recommended for the Imperial Irrigation District, a preference customer. Since the capacity of the proposed Pilot Knob Power Plant and the plants at the Drops on the All-American Canal plus 15,000 kilowatts of Davis power under the commitment in the district's contract for Parker power would make ample hydroelectric capacity available to the district, it is recommended that the 15,000 kilowatts of Davis power over and above the 15,000 kilowatt Parker contract commitment be subject to recovery by the Bureau if and when the district places the proposed Pilot Knob Power Plant in operation.

The Arizona Power Authority has been allotted all of the 45,775 kilowatts recommended for Arizona to be made available to other applicants which have preference under Reclamation Law. After elimination of apparent duplication, such other preference applicants have applied to the Bureau for 229,000 kilowatts of Davis power. The Authority is in a better position than the Bureau to apportion such 45,775 kilowatts among all such applicants because the Authority can supplement Davis power and energy with its Hoover Dam energy for which it has not yet exercised its right to take. Such allotment of the entire amount to the Authority was recommended to you by the Arizona Electric Coordinating Committee in its letter of March 28, 1948, and such allotment has been advocated by representatives of the Rural Electrification Administration. It will be the Bureau's proposal in contracting with the Authority to require it to observe the preferences established in Reclamation Law in the resale of Davis power. It must be pointed out, however, that the preference provisions governing disposition of power by the Authority (section 6(b) of the Arizona Power Authority Act, as amended) are not in all respects identical with the preference provisions of the Reclamation Law, although the Authority is itself a preference customer under Reclamation Law. Accordingly, without an amendment to its Act, the Authority could lawfully follow the preference provisions of Reclamation Law only to the extent that such law is consistent with the Authority's powers under its own act.

In order to assure the use in Arizona of Davis' power which will be required for the operation of the pumping plants of the Gila Project as its development proceeds but which is not required at the present stage of development of the Project, such increased requirements of the Project for Davis power have been included in the 45,775 kilowatts allotted to the Arizona Power Authority. However, it is recommended that 14,000 kilowatts of the 45,775 kilowatts be subject to withdrawal by the Bureau upon two years' notice in such increments as are required for use in the operation of the Gila Project.

A detailed analysis of the applications granted or rejected, including the amounts thereof and the reasons therefor, is enclosed and marked Exhibit D.

It is recommended that you approve the allotment of Davis power
TABLE III—Continued

<table>
<thead>
<tr>
<th>(b) Federal agencies within the Department of Interior</th>
<th>9,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Carlos Indian Irrigation Project</td>
<td>9,000</td>
</tr>
<tr>
<td>(c) Other Federal agencies</td>
<td></td>
</tr>
<tr>
<td>Army Engineer Board, Imperial Dam, Arizona</td>
<td>3,000</td>
</tr>
<tr>
<td>Army Air Force Stations, California</td>
<td>15,000</td>
</tr>
<tr>
<td>Veterans Administration Center, Whipple, Arizona</td>
<td>225</td>
</tr>
<tr>
<td>(d) Certain small contractors which have preference under Reclamation Law, and also are now served directly by the Parker power system</td>
<td></td>
</tr>
<tr>
<td>Gila Valley Power District</td>
<td>2,000</td>
</tr>
<tr>
<td>Yuma Irrigation District</td>
<td>1,500</td>
</tr>
<tr>
<td>(e) Other applicants which have preference under Reclamation Law</td>
<td></td>
</tr>
<tr>
<td>State of Nevada through its Colorado River Commission</td>
<td>45,600</td>
</tr>
<tr>
<td>Imperial Irrigation District</td>
<td>15,000</td>
</tr>
<tr>
<td>State of Arizona through the Arizona Power Authority</td>
<td>45,775</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>180,000</strong></td>
</tr>
</tbody>
</table>

*To be temporarily sold by the Bureau of Reclamation, as explained in the text.

Subject to recapture by the Bureau if and when the Imperial Irrigation District places the proposed Pinon Knob Power Plant in operation.

Includes 14,000 kilowatts subject to withdrawal by the Bureau upon two years' notice for use in the operation of the Gila Project.

After providing for the immediate requirements for operation of the pumping plants of the Gila Project, the requirements of applicants having rights to power from other sources in contracts for Parker power to the extent of the commitments in such contracts, and the applications of the San Carlos Indian Irrigation Project, the Army Engineer Board, the Veterans Administration Center, and two districts now being served by the Parker power system, aggregating in total 52,225 kilowatts, there remains 127,775 kilowatts for allotment to other applicants. Of this amount, 45,600 kilowatts is recommended for the State of Nevada (Nevada has applied for 60,000 kilowatts, or one-third of all Davis power), and 30,000 kilowatts is recommended for customers in the State of California. All of the remaining 45,775 kilowatts is recommended to be allotted to the State of Arizona because the great need for power in the Davis market area, which has been described to the Congress as central and southern Arizona, southern Nevada, and southern California, is in Arizona.

It is understood that the State of Nevada does not contemplate immediate need for Davis power, but is conducting a campaign for introduction of additional industries in the Basque Magnesium Plant, predicated on the availability of Davis power to supplement its power from Hoover Dam. In view of this situation, it is recommended that the allocation to the State of Nevada he temporarily sold by the Bureau to the municipalities of Los Angeles, Burbank, Glendale, and Pasadena, subject to withdrawal by the State of Nevada upon one year's
In view of the applications for Davis power far exceeding the amount which will be available, the power allotment of Davis capacity becomes a difficult problem. In considering this problem the bureau has used the following priorities:

(a) Fulfillment of commitments for power from other Colorado River sources in present contracts for Parker power.
(b) Federal agencies within the Department of the Interior.
(c) Other Federal agencies.
(d) Certain small contractors which have preference under reclamation law and are now served directly by the Parker power system.
(e) Other applicants which have preference under reclamation law.
(f) All other applicants.

Using these priorities and limiting allotments to applicants which could be either served directly by the Parker-Davis transmission system, which has been described to the Congress in requests for appropriations, or applicants in the State of California which manifested a willingness to make transmission arrangements with other agencies, the bureau has prepared and recommends the allotment shown in Table 3.

### Table II

<table>
<thead>
<tr>
<th>State</th>
<th>Power (kW)</th>
<th>Energy (MWH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona</td>
<td>300,280</td>
<td>1,193</td>
</tr>
<tr>
<td>Nevada</td>
<td>222,480</td>
<td>96,300</td>
</tr>
<tr>
<td>Utah</td>
<td>60,000</td>
<td>350</td>
</tr>
<tr>
<td>Total</td>
<td>582,760</td>
<td>2,559</td>
</tr>
</tbody>
</table>

### Table III

<table>
<thead>
<tr>
<th>Source</th>
<th>Power (kW)</th>
<th>Total (kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OIlia Project</td>
<td>2,000</td>
<td>2,000</td>
</tr>
<tr>
<td>Bagdad Copper Corporation (Contract 12r-13,919)</td>
<td>4,000</td>
<td>4,000</td>
</tr>
<tr>
<td>Colorado River Indian Irrigation Project (Contract 12r-0-13,919)</td>
<td>10,000</td>
<td>10,000</td>
</tr>
<tr>
<td>Imperial Irrigation District (Contract 12r-11,729)</td>
<td>10,000</td>
<td>10,000</td>
</tr>
<tr>
<td>San Carlos Indian Irrigation Project (Contract 12r-1,239)</td>
<td>10,000</td>
<td>10,000</td>
</tr>
<tr>
<td>Tucson Gas, Electric Light and Power Co. (Contract 12r-11,533)</td>
<td>15,000</td>
<td>15,000</td>
</tr>
</tbody>
</table>

Subtotal                                      40,500
MEMORANDUM


To: Secretary J. A. Krug (Through Division of Power).

From: Commissioner.

Subject: Proposed allocation of Davis power and energy to applicants therefor—Davis Dam Project.

Following your approval on February 29, 1948, of the Interim Schedule of Rates for Wholesale Firm Power Service (Schedule B3-73) for the Davis Dam Project, Regional Director Morris dispatched a letter to all prospective applicants for Davis power announcing your approval of the schedule of rates and requesting completion of an application form by March 31, 1948. The letter, which was dated February 29, 1948, is enclosed and marked Exhibit A.

In response to the announcement and request, Mr. Morris received applications for Davis power in a total amount far in excess of the 180,000 kilowatts that is expected to be available at load centers from the Davis Power Plant. The individual applications and a summary thereof by applicants are enclosed and marked, respectively, Exhibits B and C. A summary of the applications filed, grouped by States, is shown in Table 1.

### Table 1: Summary of Applications Filed

<table>
<thead>
<tr>
<th>State</th>
<th>Power (kW)</th>
<th>Energy (MWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona</td>
<td>501,235</td>
<td>2,394</td>
</tr>
<tr>
<td></td>
<td>125,500</td>
<td>2,978</td>
</tr>
<tr>
<td>California</td>
<td>222,460</td>
<td>1,149</td>
</tr>
<tr>
<td></td>
<td>68,300</td>
<td>1,046</td>
</tr>
<tr>
<td>Nevada</td>
<td>60,000</td>
<td>350</td>
</tr>
<tr>
<td></td>
<td>60,000</td>
<td>350</td>
</tr>
<tr>
<td>Utah</td>
<td>10,000</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>10,000</td>
<td>33</td>
</tr>
<tr>
<td>Total</td>
<td>794,165</td>
<td>3,926</td>
</tr>
</tbody>
</table>

Table 2 shows the summary of applications in Table 1, after the elimination of the apparent duplications.
APPENDIX 10

Allocation of Davis Dam Power by United States
Bureau of Reclamation

UNITED STATES DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION
REGION III, BOULDER CITY, NEVADA

August 18, 1948.

COLORADO RIVER COMMISSION OF NEVADA, Carson City, Nevada.
Attention: Mr. Alfred Merrill Smith, Secretary.

GENTLEMEN: Receipt is acknowledged of your letter of March 13, 1948, transmitting to this office your application for electric power and energy from Davis Dam.

Following a detailed analysis of all applications, a recommendation for the allocation of Davis power and energy was made by the Commissioner of the Bureau of Reclamation to the Secretary of the Interior by a memorandum dated June 3, 1948. A copy of this memorandum is enclosed for your information. The Secretary officially established the allocation of Davis power and energy by his approval of the memorandum on June 23.

The information in tables 1 and 2 of the memorandum shows that the total of all applications received was far in excess of the amount of power to be developed at Davis Dam. It was for this reason that direct allocations were recommended only to those applicants holding the highest priorities and considered to be in the greatest need for additional power and energy or those to whom the bureau had made previous contractual commitments.

In recommending allocations to the numerous applicants in Arizona, consideration was given to the legislative provisions which have been made by that State in creating the Arizona Power Authority as a marketing agent for electric power and energy generated on the Colorado River. The authority by combining its allocation of Davis power and energy with that which it is planning to obtain simultaneously from Hoover Dam is considered to be in a better position than the bureau to make equitable distribution of the available power and energy to applicants in Arizona.

The negotiations of contracts with those applicants listed in table 3 of the enclosed memorandum has been undertaken. I regret that every applicant for Davis power and energy could not be listed in table 3 as having been allotted the full amount of its application.

Very truly yours,

E. A. MORRIS, Regional Director.