May 29, 1922.

Mr. Delph E. Carpenter,
Colorado River Commissioner,
Greeley, Colo.

My dear Mr. Carpenter:

As of possible interest, I am enclosing a copy of a translation of an article on the irrigable lands in Mexico, which appeared in the April 1922 number of the "La Re Vista Agricola."

Very truly yours,

Clarence C. Stetson,
Executive Secretary,
COLORADO RIVER COMMISSION.

CGS-SVT.

(1 Encl.)
TRANSLATION FROM LA REVISTA AGRICOLA

Mexico City

April, 1922

MEXICAN LANDS IRRIGABLE BY THE COLORADO RIVER
(By Ignacio Mayo Lopez, Engineer)

The press of the capitol is now giving its attention to lower California and to the proposals of the United States to acquire this portion of our national territory. It is, therefore, opportune to publish the following data giving an idea of the present state of the lands irrigated by the Colorado river.

Mexican lands which can be irrigated by the Colorado River are in the region of Mexicali and in the northeastern part of the district of Altar in the State of Sonora.

Mexicali Region: The irrigable zone is bounded on the north by the international line between monuments Nos. 207 and 224; on the east by the bed of the Colorado River (which is the international line) continuing southward between the old bed on that River which is also the boundary between Sonora and lower California to a little beyond the river mouth; on the south by the Pintos Hills; and on the west by the foot of the Mayor and Cucapas Hills to Centinela Hill (signal mountain), and involving a small area between Mayor and Pintos Hills, which extends to Macuta or Salada Lagoon.

Sonora Region: This region includes the lands bounded on the north by the international line between monuments Nos. 203 and 205; on the east by irregular lines running over the sandy plain to the Puerto Isabel trail; on the south by the Gulf of California and the mouth of the Colorado River; on the west, following the old course of the Colorado River which is the line with lower California.
To clarify the foregoing there is attached map No. 1 on which has been entered the best data available with a view to giving an idea of the topographic configuration. On this map there appear two tracings of the bed of the Colorado River. One of them, shown in heavy lines, shows the course followed by the river as mapped in 1904. The other is the course last followed by the river in 1907. In 1908 it had definitely turned its course by way of the Abejas River and the Volcanes Lagoon, going thence by way of the Nevada and Hardy Rivers.

QUALITY OF THE LANDS.

The lands have been divided into various classes according to their agricultural qualifications as can be seen by table No. 2 herewith.

Lot No. 1: Bounded on the north by the international line and Andrade sand hills; on the east and southeast by the Saiz Levee and the border Volcano; on the southwest and west by the sandy foot hills of the Cusapaz and Signal mountain. These lands have their greatest elevation 35 meters above sea level in the extreme northeast. From there they descend gradually towards the west to Mexicali at sea level, and then continuing their descending toward the Imperial Valley where there is a point 80 meters below sea level. This lot is entirely protected against flooding from the river and has been in great part open to cultivation with the exception of some small sand hills and some small depressions scattered irregularly over it. It has a complete system of irrigation by gravity, but has some lands which can be irrigated only by a slight elevation of the water.

Lots Nos. 2, 3 and 4: These are mountainous lands with much mesquite, and free to a certain point from inundations from flooding. They are susceptible to cultivation and are of excellent quality. By returning the waters of the Colorado
River to the old channel these lands can be easily irrigated.

Lots Nos. 5, 6 and 7: These are the lands on the Sonora side which are considered cultivable. A large part of them are in the sand hills along that side of the river, and a small part of them at the foot of the hills to the south. In the various irrigation projects all of these lands have been considered as cultivable; but it will always be necessary to elevate the water in order to irrigate them.

Lots Nos. 8, 9 and 10: These lands have been subject to flood. They are good for cultivation, and could be put in good condition by confining the delta.

Lots Nos. 11 and 12: These lands are subject to flood, but by reason of the fact that the flood waters are saline, they require adequate treatment in order to be made productive. They should be considered as among the lands which could be benefited by the waters of the Colorado River.

Finally, Lot No. 15 is of condition similar to the foregoing. Effort is already being made to render part of this productive by building levees to prevent inundation and by the use of water from the Hardy River for irrigation, it being taken at a point called Mayor.

Mention must also be made of the lands marked with the numbers 14, 15, 17, 18 and 19. These are sandy and even stony, and cannot in any event be considered as cultivable. Profitable use of the lands marked No. 16, in the Volcanes Basin, is also remote.

All of the lands which have been referred to as cultivable are, agriculturally speaking, of good quality, with a deep covering of tillable soil, and almost entirely of alluvial formation. In great part they have an adobe base, that is, a clayey formation, well drained and broken up.
It is well to note here the classification of these lands made some time ago by Messrs. Garnett and Holmes. They are as follows:

Sandy mud: In the northeast of the valley, as far as Volcanes.

Mud: Still water, or water running over level places; Hardy, Fare-dones and Nueve Rivers.

Clayey mud: Level land.

Sand and gravel: Sandy plain to the east of the Gucapas.

Sand and Dunes: Of Aeolic origin; the dunes of Andrade and of Sonora.

OWNERS OF THE LANES.

The titles of the present owners or proprietors of these lands are based on the divers concessions granted by the Secretary of Fomento to companies which have undertaken to colonize this territory. These are:

Grants in favor of Senor Guillermo Andrade, of 395,736 hectares in Lower California and 52,500 in Sonora, - lands on the banks of the Colorado River. This document was issued August 7, 1886. Under its terms Andrade was required to colonize part of these lands, according to contract of March 22, 1897.

Grant issued June 2, 1886 in favor of the Mexican International Company, of Hartford, Connecticut, assignee of the grant of Luis Muller of 510,090 hectares in Lower California, known as "Section V." This concession embraced all of the lands of this capital territory from the international boundary to latitude 28, excepting the Andrade concession. The concession to the International Company was transferred to the Mexican Land and Colonization Company, also known as the "English Company." The concession of the company was declared lapsed by the
decision of April 12, 1917, thereby being replevied and now considered as national land.

The various properties are outlined on Plan No. 3, and are described as follows:

**LOWER CALIFORNIA**

Lots Nos. I, III and VI. With areas of 550, 240 and 3,629 hectares respectively, a total of 4,619 hectares, which come from the lapsed English Company and are now national lands. Those which are rented bring an annual rent of $15.00 per hectare.

Lot No. II, with an area of 4,047 hectares was acquired from the same lapsed company by the present owners, the Signal Mountain Company.

Lot No. IV, with an area of 765 hectares, comes from the same lapsed English Company, and forms the Sonora Colony, whose lands are divided in lots of 10 hectares and under. These lots are now occupied by poor people who, though they have possession in the character of renters, do not pay rent, on account of bad economic conditions of recent times.

Lot No. V, of 1,037 hectares, also contains replevied lands, which were divided in lots of 4 hectares and distributed among poor people under rental arrangements, but rents are not being paid. These lands comprise the Zaragoza Colony.

Lot No. VII, contains various parcels of private ownership of from 40 to 200 hectares, and with one of over 1,300 hectares. The titles to these lands are based on the first alienation made by Andrade, to a company of which he formed part, called the Irrigation and Land Society of Lower California. The successor of this company is now called the "Land and Water Company of Lower California."

Lot No. VIII, with an area of 33,510 hectares is owned by the foregoing company.
Company. A third of this land has been cut up into small lots of different sizes and sold, and is occupied by small farmers. The Land and Water Company of Lower California controls and administers the whole irrigation system.

Lot No. IX. These are sandy lands, of 27,750 hectares. It is not known that they have been sold, and it appears that they still belong to the Andrade heirs.

Lot No. X. The largest of those considered, is of 264,656 hectares. It forms the greater part of the lands granted to Guillermo Andrade, and is now owned by the Colorado River Land Company. This company is commonly known in that region as the C.R.

Lot No. XI comprises two properties. The large rectangle of 6,475 hectares belongs to the Imperial Development Company, and the small one to the northwest, of 404 hectares, belongs to the Imperial Valley Land Company. Both properties were acquired by the Colorado River Land Company, from which they were purchased. The lands of the first company are commonly known there as the "Cushky Ranch," or "Nechicora."

Lot No. XII, of about 55,000 hectares, known as the "Cucapas Lands," is now owned by the Colorado River Land Company, which acquired it from the lapsed "Land and Colonization Company."

Lot No. XIII. This forms part of the replevined lands (now national), and was a concession to "Chinn, Grivel and Company," with a view to improving them and fitting them for cultivation. As has been stated, they are protected from floods, and water from the Hardy River is used in irrigating them.

Lot No. XIII has always been composed of national lands. It is known by the name of "Second Section." These lands were alienated in 1913, but the matter was reconsidered and the sale was nullified, the lands returning to the national dominion.
SONORA

Lot No. XIV, of 40,000 hectares. These are part of the lands granted to Andrade in Sonora. Mr. Auerlio Sandoval has right to a third part of these lands by cession from Andrade. It appears that the remainder still belongs to the Andrade heirs. Near Monument No. 204 on the international boundary is found the military colony of San Luis.

Lot No. XV also forms a part of the Andrade concession and comprises 12,500 hectares, in the Puerto de Santa Isabel.

Lot No. XVI is land which was alienated. That in the north, on the Mesa, went to Manuel Martinez del Rio, who transferred the concession to the Mexican Land and Colonization Company, now lapsed. That in the south was granted to Mr. Sandoval. I understand that all of these lands have been replevinized and are now national property.

INDIVIDUAL CLASSIFICATION.

The attached table shows the quantity of lands according to the classifications which have been considered, and also shows their ownership.

The total of cultivated lands refers to lands open to cultivation, of which in 1920, the year of greatest development, 77,000 hectares were worked and made to produce.

In 1919 Mexicali produced 12,000 metric tons of cotton; 12,250 metric tons of cotton seed; 22,680 metric tons of alfalfa and 5,452 hectoliters of barley. Good results have been obtained in experimental cultivation of rice, garbanzos, and sugar-cane.

The lands indicated as cultivable are those which are considered as productive, but which require greater expenditure of labor and money than the "cultivated," especially in the matter of irrigation.

The project of putting the river back in its old channel is still on foot. If this is done it will facilitate the irrigation of much of the cultivable land, and
also render productive almost all of the lands subject to flood.

We will turn a moment from the description we have been following and make a comparison of the interests represented in the Lower California region. They are: The National Lands (I, III, IV, V and VI); the Colorado River Land Company (II, X and XII) — considering here the Signal Mountain Company as being closely connected with the Colorado River Company.

<table>
<thead>
<tr>
<th></th>
<th>Cultivated</th>
<th>Cultivable</th>
<th>Subject to Flood</th>
</tr>
</thead>
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<tr>
<td>National Lands</td>
<td>5</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Colorado River Land Co.</td>
<td>75</td>
<td>80</td>
<td>90</td>
</tr>
<tr>
<td>Other owners</td>
<td>20</td>
<td>29</td>
<td>4</td>
</tr>
</tbody>
</table>

As will be seen the Colorado River Land Company is the one most affected by anything relating to its lands. It should also be noted that with the exception of a part of the national lands, and an occasional lot owned by Mexicans, all of the lands which we have been considering are in the possession of American citizens or companies.

Summing up, taking the first three columns of the table, we have: In Lower California, 303,246 hectares; and Sonora 102,105 hectares, a total of 405,390 of lands which should take advantage of the waters of the Colorado River, and 106,150 hectares which can also be made productive agriculturally, giving a total of 511,540 hectares. Professor W. Nelson, Chief of the Biological survey, Washington, estimates at 1,500,000, or 607,000 hectares, the land in Lower California which could be irrigated.
Area of Mexican land irrigable by the waters of the Colorado River, classified by ownership and quality of these lands, in hectares, (a hectare being equivalent to 2.4 acres).

<table>
<thead>
<tr>
<th></th>
<th>Cultivated</th>
<th>Airable</th>
<th>Irrigable</th>
<th>Untiled</th>
<th>Nitrous</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Baja California</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I.-Nacionales</td>
<td>500</td>
<td>--</td>
<td>--</td>
<td>50</td>
<td>--</td>
<td>550</td>
</tr>
<tr>
<td>II.-Signal Mountain</td>
<td>3800</td>
<td>--</td>
<td>--</td>
<td>247</td>
<td>--</td>
<td>4047</td>
</tr>
<tr>
<td>III.-Nacionales para Colonia Zaragosa</td>
<td>--</td>
<td>240</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>240</td>
</tr>
<tr>
<td>IV.-Colonia Sonora</td>
<td>470</td>
<td>295</td>
<td>--</td>
<td>--</td>
<td>765</td>
<td></td>
</tr>
<tr>
<td>V.-Colonia Zaragosa</td>
<td>647</td>
<td>350</td>
<td>--</td>
<td>40</td>
<td>1037</td>
<td></td>
</tr>
<tr>
<td>VI.-Nacionales arrendados</td>
<td>5700</td>
<td>100</td>
<td>--</td>
<td>29</td>
<td>3829</td>
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<tr>
<td>VII.-Particulares: Cía. Ranchera</td>
<td>2330</td>
<td>1670</td>
<td>--</td>
<td>220</td>
<td>--</td>
<td>4420</td>
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<tr>
<td>VIII.-Cía. de Tierras y Aguas y otros propietarios</td>
<td>11016</td>
<td>11980</td>
<td>1760</td>
<td>8754</td>
<td>--</td>
<td>33510</td>
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<tr>
<td>IX.-Medanos Norte &quot;Andrade&quot;</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>27730</td>
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<td>X.-Colorado River Land</td>
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<td>115296</td>
<td>27398</td>
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<td>284656</td>
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<td>XI.-Imperial Development e Imperial Valley Company</td>
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<td>350</td>
<td>650</td>
<td>--</td>
<td>6880</td>
</tr>
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<td>XII.-Cucapas</td>
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<td>7150</td>
<td>--</td>
<td>47500</td>
<td>--</td>
<td>55000</td>
</tr>
<tr>
<td>XIII.-Baja California Sur</td>
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<td>--</td>
<td>--</td>
<td>7500</td>
<td>--</td>
<td>69500</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>90140</td>
<td>88200</td>
<td>124906</td>
<td>112618</td>
<td>76300</td>
<td>492164</td>
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<table>
<thead>
<tr>
<th></th>
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<th>Airable</th>
<th>Irrigable</th>
<th>Untiled</th>
<th>Nitrous</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XIV.-Andrade-Sandoval</td>
<td>220</td>
<td>25280</td>
<td>7750</td>
<td>6750</td>
<td>--</td>
<td>40000</td>
</tr>
<tr>
<td>XV.-Andrade-Santa Isabel</td>
<td>--</td>
<td>1700</td>
<td>3000</td>
<td>3700</td>
<td>5600</td>
<td>12000</td>
</tr>
<tr>
<td>XVI.-Nacionales</td>
<td>--</td>
<td>57300</td>
<td>6900</td>
<td>--</td>
<td>26250</td>
<td>90450</td>
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<tr>
<td><strong>Total</strong></td>
<td>220</td>
<td>84280</td>
<td>17680</td>
<td>10450</td>
<td>29850</td>
<td>142450</td>
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<tr>
<td><strong>Total</strong></td>
<td>90360</td>
<td>172480</td>
<td>142556</td>
<td>123068</td>
<td>106150</td>
<td>634614</td>
</tr>
</tbody>
</table>
cauzadas las aguas del Colorado por su antiguo curso, pueden ser fácilmente regadas estas tierras.

Porciones número 5, 6 y 7.—Son los terrenos que se consideran cultivables en el lado de Sonora. Una gran parte de ellos están en las mesas arenosas que han limitado debido al Delta.

Porciones núms. 11 y 12.—Son terrenos inundables, pero en virtud de que las aguas que las han bañado son salitreras, requieren un tratamiento adecuado para ser aprovechados y deben de consi

Por estar incluidas en las porciones expresadas y en consideraciones subsecuentes, hay que mencionar los terrenos marcados con los números 14, 15, 17, 18 y 19 que son arenosos y aún pedregosos, los cuales no pueden be ser de ninguna manera cultiva-

tado al río por ese lado y otra pequeña, al pie de las mesas del lado sur. Todos estos terrenos se han considerado en los diversos proyectos de irrigación como cultivables; pero siempre será preciso elevar el agua para regarlos.

Porciones núms. 8, 9 y 10.—Son las tierras que han sido inundables. También éstas son buenas para ser cultivadas y quedarían.

Para el aprovechamiento de los terrenos marcados con el número 16, que ocupa la laguna de los “Volcanes.”

Todas las tierras que hasta aquí se han considerado como cultivables, son, agrícola, hablando, de buena calidad, con una capa arable muy profunda, y en cuanto a su constitución, casi en su totalidad son de aluvión, y
cual es que están arrendados producirán una renta anual de $15.00 por hectárea.

La parcela núm. II, con superficie de 4,047 hectáreas, fue adquirida por la actual poseedora de los negocios en los últimos tiempos.

La porción núm. V, con 1,037 hectáreas de superficie, contiene también terrenos reivindicados, que fueron divididos en los que se fundan en la primera enajenación que hizo el señor Andrade de sus terrenos a una compañía de la cual el formó parte, denominada "Sociedad de Riego y Terrenos de la Baja California". La sucesora de esta Compañía se llama ahora "Compañía de Tierras y Aguas de la Baja California."

De las porciones núm. VIII, con una superficie total de 33,510 hectáreas, es poseedora la Compañía anterior. Una tercera parte de esta superficie ya fraccionada en lotes pequeños de diferentes ta-
maños ha sido enajenada y ocupada por pequeños agricultores. La Compañía de Tierras y Aguas de la Baja California es la que controla y administra todo el sistema de riego.

*Las porciones núm. IX, son terrenos arenosos en una extensión de 27,730 hectáreas. No se sabe que hayan sido enajenadas y parece que las conserva aún la Sucesión Andrade.*

*La porción núm. X, que es la mayor de las que se consideran, tiene una superficie de 284,656 hectáreas. Forma la mayor parte de los terrenos concedidos a don Guillermo Andrade, poseyendo los actualmente la compañía “Colorado River Land Co.” Esta compañía es conocida en la región vulgarmente con el nombre de C. M.*

*La porción núm. XI, comprende dos propiedades: el rectángulo mayor, de 6,475 hectáreas, pertenece a la compañía “Imperial Development, y el pequeño al noreste del anterior, con 404 hectáreas, pertenece a la “Imperial Valley Land Co.” Ambos terrenos fueron de los adquiridos por la “Colorado River Land Co.” a quien se les compraron. Los títulos, los posee ahora la “Colorado River Land Co.” habiéndolos adquirido de la caduca “Compañía de Terrenos y Colonización.”*