BRIEF MEMORANDUM -- SEISTAN FEATURES

Appendix No. 1 Iran Rep., Report on the Agricultural Situation in Seistan, Prepared by H. G. Bolster, American Agriculture Attache, after Investigation of the Area During August 30 to September 3, 1947.

Area. The land lying between Lake Hamun and the Afghan border comprises approximately 1,000,000 acres.

Soil. Soils vary from fine, sandy loam to silt. Fine, sandy soils predominate with numerous small moderately alkaline areas. "The area is apparently well drained and with adequate water it has been possible to keep injurious salts fairly well washed out."

Temperature. The records of the Directors of Agriculture at Zabol record temperatures from 8° C. to 50° C. during the past ten years.

Rainfall. Rainfall has ranged from 10.8 mm to 128.8 mm per annum during the past ten years.

ANNUAL PRECIPITATION AT ZABOL
1316 - 1325 (1937 - 1947)

Year	Precipitation in mm
1316 (1937-1938)	22.9
1317	91.2
1318	80.3
1319	51.5
1320	128.8
1321	103.5
1322	55.0
1323	10.8
1324	66.2
1325 (1946-1947)	17.6

Wind. A 120-day strong, steady northwesterly wind blows each year beginning in early June, causing extensive erosion.

Population. Census Department reports the population of Seistan in 1320 (1941-1942) at 191,492, and the population of Zabol at 15,966. Observers believe that during the last three years, because of the water shortage and bad grazing conditions, the population has decreased. In ancient times it was estimated at 250,000 to 300,000. In 1904 the British Boundary Mission estimated it at 91,000.

Agriculture. Available information indicates that in 1326 (1947) only 60,000 hectares were in crop in Seistan, owing to shortage of water. The area normally in crop totals 140,000 to 150,000 hectares. Approximately another 150,000 hectares lie fallow each year, making a total of about 300,000 hectares under cultivation.

Wheat and barley are the two principal crops. They are sown in the fall beginning about September 5th and extending for a period of about two months. Yields decrease ordinarily with delay in sowing. Harvesting takes place in May and June of the following year. The soil is prepared for sowing by thorough irrigation to facilitate plowing and leveling, and by plowing when the ground is dry enough to work.

Normal yield of wheat is reported at 35 bushels per hectare.

In addition to grain Seistan produces a variety of vegetables, melons, pulses, some cotton, and forage crops.

Livestock. Cattle, sheep and goats are raised. Large numbers of cattle are grazed on the native reeds which grow on the shores of Lake Hamun. According to the Director of Agriculture in Zabol, the cattle population of Seistan totaled about 124,000 on March 21, 1947.

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Flow in Seistan. Inspection of the river on August 31, 1947, verified previous reports that the river was completely dry, except for standing water in some of the deeper holes in the river bed. Canals showed no signs of having carried any water during the previous month and many were blown full of sand.

Lake Hamun, which is normally 12 meters deep on average, had receded to a point where only the deeper depressions still contained water, which was said to be salty.

According to officials and landlords at Zabol, the river at the Iranian border was lower than normal during the past three years (1945, 1946, 1947). For the first 20 days in July 1946, the City of Zabol was without water and the Hirmand within the delta was said to have had no water in its bed for three days.

Effect of Shortage. The population had resorted to digging wells to supply water for domestic and stock water purposes. The wells were on an average about 12 feet deep. However, the water table was reported to be receding rapidly in some places. The water was both salty and highly contaminated. As a result, there had been a considerable increase in sickness.

Most of the livestock observed were in poor flesh, pasture conditions were poor and the reeds along Lake Hamun were mostly matured because of the recession of the lake. Water for all livestock was being supplied from wells. The water table was approximately 10 feet below the surface.

Only about 60% of the area planted was harvested in 1947 and the yield on the harvested acreage was only about 80% of normal, so that Seistan had no exportable surplus of grain. Furthermore, its other crops were almost a complete failure owing to lack of water. If water was not made available from September 5th on, the prospects for 1948 would be extremely discouraging.

Iranian - Afghan Activities. Representatives of Iran and Afghanistan met on Dey 27, 1325 (January 17, 1947) to carry out the provisions of the Temporary Mutual Agreement with each other of Chahrivar 5, 1315 (August 28, 1936), according to which water of the Hirmand at Bandar-i-Kamal Khan was to be measured and divided into equal parts for the use of both Seistan and Chakhansur. At that time the Hirmand was rising steadily and the division was postponed until the first part of Tir 1326 (last part of July 1947), when water requirements would be critical. The commission met on Mordad 11, 1326 (August 3, 1947) at Chale-Now, southeast of Zabol in Iranian territory. According to the written statement

signed by representatives of both countries, on Mordad 20, 1326 (August 12, 1947) at Deh Doosed Mohammad Khan, the members of the Joint Commission surveyed the Hirmand and the canals from Band-Kohak to Deh Doosed Mohammad Khan and found that all the canals were dry.

"The Afghan members of the commission proposed to measure the water of the Hirmand at Bandar-i-Kamal Khan, near Deh Doosed Mohammad Khan, and to divide the water equally between the two countries. They announced that the river had been measured by the Afghan engineers at Bandar-i-Kamal Khan on August 11, 1947 and that the rate flow at that time was 140 liters per second [0.14 cubic meters per second]. The Iranian members of the commission did not agree with this suggestion, claiming that the measurement must be made at Bandar-i-Kamal Khan, not at Deh Doosed Mohammad Khan, but above Chahar Borjak Canal." (Mr. Bolster is apparently under a misapprehension. Bandar-i-Kamal Khan is below Chahar Borjak, although it is some 20 miles above Deh Doosed Mohammad Khan.)

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Seraj Canal. Mr. Ghanimity, head of the Iranian Mission interviewed at Zabol, told Mr. Bolster that, according to travelers, the flow of the Hirmand was normal in 1947, but large volumes of water were being diverted at Band-i-Seraj, below Girishk. The width of Seraj Canal was 20 meters and observers reported that at the end of Mordad (August 23, 1947) the depth of water in the canal was about 1.50 meters.

Khawajeh Alli Ghazi Shirjan. The entire flow of the Hirmand is diverted by an earthen dam at this point. (Khwaja Ali is some 70 miles above Bandar-i-Kamal Khan on the Hirmand.)

Chakhansur Canals. The two canals of Juye-Now and Sabzeh-Ghazi, which took off from the Hirmand below Bandar-i-Kamal Khan, are now connected with Ghali-Fath (Quala-i-Fateh?) Canal, which takes off 12 km above Bandar-i-Kamal Khan. (Our map shows this point to be approximately 15 miles below Bandar-i-Kamal Khan.) The Shahi Canal is also being connected with Chahar Borjak Canal which takes off at a point 48 km above Bandar-i-Kamal Khan. (Our map shows Chahar Burjak to be 10 miles or 16 km above Bandar-i-Kamal Khan.)

Bolster's report indicates concern lest the Afghans are diverting excessive amounts of water above the point which they claim to be the point of division of the water.

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BRIEF MEMORANDUM -- IRAN'S SHARE OF WATER

Appendix No. 8(b) Iran Rep.,
Preliminary Report of Engineer
Tashakkori.

Based Upon Existing Flow. Adding the flow of water in the Seraj Canal in Mehr 1327 (September - October 1948) of 9 cubic meters per second, and the flow at Karodj of 15 cubic meters per second, and allowing for the increased irrigation in the upper regions of the Hirmand, Tashakkori estimates the total flow at 27 to 29 cubic meters per second, and concludes that the minimum supply for Seistan in the months of Mehr and Aban should be 13.5 and 14.5 cubic meters per second.

Afghan Intentions. According to Tashakkori, the Afghan Minister of Public Works agreed to the above supplies for Seistan when he was in Washington.

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Flow at Seistan. On 4/7/1327 (September 28, 1948) the flow at Karoudy, 8 km above Bandar-i-Kamal Khan was approximately 15 cubic meters per second. No canal takes off from the Hirmand between Karoudy and Bandar-i-Kamal Khan. Nevertheless, Iranian Seistan received from Band-i-Kehak only three cubic meters per second. It follows that more than half of the waters reaching Bandar-i-Kamal Khan have been diverted to Chakhansur through Kala-Fath, Khabgah and Shai Canals, above Band-i-Kehak.

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BRIEF MEMORANDUM -- RIVER FLOW

Appendix No. 8(a) Iran Rep., Report of Engineer Tashakkori, Dated 3/9/1327 (Probably November 26, 1948).

Flow at Girishk Bridge, which is 7 km below the mouth of the Boghra Canal. On 9/7/1327 (approximately October 2, 1948) Tashakkori estimated the flow of the river to be 26 cubic meters per second. He estimated that allowing for some canals taken off between that point and the mouth of the Boghra Canal, the flow of the river at the mouth of the canal was about 32 cubic meters per second.

Flow at Seistan. In Aban (October - November) 1948 about 22 cubic meters per second reached Seistan.

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Characteristics of the Basin. From the records of the Meteorological Department of the Ministry of Public Works (Afghan?), it appears that the drainage basin of the Hirmand is 129,600 scale km. The river originates west of Poghman Mountain and runs for 350 km through the Hezareh Mountains to a point 150 km above Girishk. It enters the plains at that point. After its juncture with the Argandab at Qala-Bist, it runs through a sandy plain and desert.

Rainfall. According to the data of the British Embassy, the average rainfall in Kabul during 1932 - 1947 was 265 mm. In 1946 and 1947 the rainfall was 202 and 192 mm, respectively, or 24% and 27% less than normal. The year 1947 was the driest year known.

A large part of the Hirmand flow in summer is obtained from melting snow in Hezareh. Below the Hezareh no snow falls and the rainfall is about 60 mm a year (according to a book of Mr. Foron).

Assuming 24% and 27% less water in the Hirmand leaving the Hezareh in 1946 and 1947, the effect on Seistan would be considerably greater because of the fact that they are at the end of the Hirmand's course. (Apparently Tashakkori figures

that transit losses by evaporation and seepage remain fairly constant.)

Flow of Hirmand. In 1947 the Hirmand was dry in Seistan. It did not have any water during the summer below a point 40 km below Girishk. According to the inhabitants, the river had not been as dry in the last fifty years.

Tashakkori concludes that the principal cause of the drought in Seistan during the summer of 1326 (1947) was a shortage of rainfall in the previous years. The expansion of agriculture from the Seraj Canal was a contributing factor.

BRIEF MEMORANDUM -- RECENT WATER SHORTAGE

Appendix No. 8(a) Iran Rep.,
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Characteristics of the Basin. From the records of the Meteorological Department of the Ministry of Public Works (Afghan?), it appears that the drainage basin of the Hirmand is 129,600 scale km. The river originates west of Poghman Mountain and runs for 350 km through the Hezareh Mountains to a point 150 km above Girishk. It enters the plains at that point. After its juncture with the Argandab at Qala-Bist, it runs through a sandy plain and desert.

Rainfall. According to the data of the British Embassy, the average rainfall in Kabul during 1932 - 1947 was 265 mm. In 1946 and 1947 the rainfall was 202 and 192 mm, respectively, or 24% and 27% less than normal. The year 1947 was the driest year known.

A large part of the Hirmand flow in summer is obtained from melting snow in Hezareh. Below the Hezareh no snow falls and the rainfall is about 60 mm a year (according to a book of Mr. Foron).

Assuming 24% and 27% less water in the Hirmand leaving the Hezareh in 1946 and 1947, the effect on Seistan would be considerably greater because of the fact that they are at the end of the Hirmand's course. (Apparently Tashakkori figures

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The canal takes off from the Hirmand about 40 km from the Road Kanehar-Girishk, opposite the confluence of the Musa-Qaleh and the Hirmand. The first 20 meters of the canal are covered. On 8/7/1327 (approximately October 26, 1948) the flow issuing from the covered portion of the canal was about 8 cubic meters per second.

The habitations of the area are mostly newly built. Only the lands situated at the beginning of the Seraj Canal were irrigated before its construction by a small preexisting canal. According to local people, the total water diverted by this earlier canal was not more than one cubic meter per second. Tashakkori deduces from this that Seistan has been deprived of 7 cubic meters per second, since the surface of the Hirmand River is not affected and consequently the loss by evaporation remains about the same as it was before.

Boghra Canal. Construction of this canal was begun at the beginning of the reign of the present Shah of Afghanistan. The canal is designed to take off from the Hirmand 6.5 km above Girishk, and runs 55.5 km beyond Girishk (a total of approximately 62 km). At the date of the survey the first 31 km had been dug. The width of the bottom of the canal is 26 meters. At km 31 several tributary canals will be branched off. The slope of the sides of the canal is 1/1. Tashakkori estimates that the rate of flow of water in the canal will be between 30 and 40 cubic meters per second.

"At the point where the canal is separated, the construction of a dam for changing the course of water is being considered on the River Helmand, half of which has been finished at the time of (my) survey." Perhaps this means only that the headworks for a canal were half finished.

The canal itself will contain drops where electricity will be generated. The report says 33 large siphons are to be built from km 3 to km 31. (Perhaps this merely means drops for the generation of electricity. It is possible that the siphons are designed to cross streams or irrigate territory, but since a large siphon is a very expensive undertaking, it seems unlikely that a canal system would be designed with so many siphons.)

Construction of Boghra Canal was begun under the supervision of German engineers who dug the first 5 or 6 km.

At the beginning of World War II Japanese engineers took charge, building to about km 24. About 14 months before Tashakkori's report (i.e. September 1947) Morrison-Knudsen took over construction. The company estimated that the canal and its branches would be finished two years from then (i.e. November 1950).

Boghra Canal does not irrigate for its first 31 km, since the adjacent land is irrigated by the old canals and Boghra Canal is intended to irrigate new lands beyond the former area of cultivation.

Kajki (Kajaki) Dam. The Americans noticed that in many years the Hirmand would not fully supply the Boghra Canal and that the river would be dry below Boghra Canal. They therefore made surveys of the upper Hirmand and the mountainous Hejareh. They chose a place about 100 km above Girishk. By constructing a dam of 100 meters a reservoir with a capacity of 2/8 million acre feet (does he mean 2.8 million acre feet?) or 3/4 milliard cubic meters will be created. Construction of the dam will make possible several other canals as large as Boghra. It will also (?) make possible securing a water supply for Seistan. If Iran shares half the expenses and hals the water of the reservoir, and uses this water for six months in the summer and autumn, it would have an additional supply in the summer of 105 cubic meters per second. It would supply five times more water than

was supplied in 1948. (Tashakkori's estimates are indefinite.)

Construction of an earth dam at Kajki was estimated by the Afghan Minister of Public Works to cost ten to twelve million dollars.

Other upstream diversions. The Afghans are not working on any other major upstream projects. However, the Afghan Government has encouraged settlement of the land and expansion of agriculture. According to the Kabul Year Book, some homeless peasant have been sent to the lands of Hejareh and to the upper Hirmand, and the cultivation area of that district has been increased. This cultivation does not depend on any new large canal, but on springs and natural streams. Moreover, old canals in Chakhansur have been dredged and kept capable of maximum use.

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BRIEF MEMORANDUM -- AGRICULTURE IN SEISTAN

Letter from Governor General of Baluchestan to Minister of War (Iran), Dated March 22, 1949.

Population. The population of Seistan is 250,000. (This is almost certainly a gross overestimate.)

Area of Cultivation. The "present surface of cultivation" of Seistan is 80,000 hectares.

Potential Cultivation. With a proper system of irrigation the "surface of cultivation" should be 160,000 hectares or more. (Does the phrase "surface of cultivation" mean area under cultivation or area in crop?)

If by agreement Iran could obtain a branch channel from the Helmand from a point above Band-i-Seistan for the land around Targhou and Howzdar, which is good arable land, those areas would provide the most important part of Seistan's cultivation.

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Notes on Material Examined at State Department, by Monroe Leigh, Dated February 1, 1950.

Joint Commission of 1947. (This account should be compared with that of Mr. Bolster, summarized in Brief Memorandum -- Recent Water Shortage, Appendix No. 1, Iran Rep.) A commission of engineers was organized under the terms of a verbal agreement made on August 3, 1947. (Bolster's account indicates that the commission met on that date, acting under an understanding arrived at earlier that year and under the temporary agreement of 1936.) The activities of the commission are embodied in a proces verbal signed August 12, 1947, which records that the commission set out to make a division of the waters. At Bandar Kamal Khan the water was measured by the Afghan engineers and found to be 140 liters per second. (Bolster's account says that the Afghan engineers announced that they had measured the water.) The Iranian delegates did not agree to measurement of the water at Bandar Kamal Khan and considered that Band-e-Kamal Khan was the place where the water should be measured.

> "Evidently the latter point is above the taking-off place of two streams -- Chahar Borjak and Qual'eh Fat'h. However, the Afghanistan engineers refused to allow the Iranian engineers to move further upstream than Bandar Kamal Khan. As a result, there was no joint measuring and no division of waters."

(Bolster's account indicates no disagreement as to the name of the place, Bandar-i-Kamal Khan, but disagreement as to its location.)

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Appendix No. 7(b) Iran Rep., Extract from Kabul Year Book, Page 190.

Seraj Canal. Construction of this canal was ordered in 1290 A.H. (1911). It begins at a point opposite the Doronteh Bridge, runs parallel to Sarak-Loghman, crosses the Sorkh-Rud, and passes by Shileh-Maghi, Shahmard-Khan Fort, Dasht-e-Shahmardan and Kariz. It irrigates approximately 14,000 acres.

The building of the canal was suspended from 1297 to 1302 (1918 to 1923), resumed in 1303 (1924), suspended again, and finally resumed in 1311 (1932). It was officially inaugurated on 10th Thowr 1313. (If Thowr means Saur, then the date would be approximately May 1, 1934.)

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Undated Cablegram from Teheran (to Embassy in United States?)

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