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ENGR

REFERENCE - NESAS (IB) 41-00 and PASA 306-005-2-00002 Helmand-Arghandab Regional Development Project and Improvement of Existing Irrigation Systems Project

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The Monthly Progress Report for October 1969, of the Bureau of Reclamation Advisory Team for Project 306-12-990-090 and 306-11-120-005 are contained in the attached contribution.

This report is submitted for your review and information. Distribution should be made to all AID/W offices concerned.

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OTHER AGENCY

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OFFICE BuRec/Lashkar Gah

PHONE NO. DATE 11/12/69

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UNITED STATES  
BUREAU OF RECLAMATION  
HELMAND VALLEY REGIONAL DEVELOPMENT PROJECT  
WATER RESOURCES ADVISORY ACTIVITY  
PROJECT NO. 306-12-995-090

PROJECT DEVELOPMENT PLANNING

General. Construction continued on the Manzel Bagh Spur of the Kandahar Drain. The Kabul Highway was crossed with only four days required to complete the crossing. Highway crews were repairing a section of the road next to the drain crossing that had been damaged by the high water table. This road work has forced traffic to by-pass for a week after the drain crossing was completed. Much progress was shown in the quality of work at this crossing compared to the first road crossing constructed. Also, the time required was less than half.

Irrigation Operations. Irrigation for planting wheat is the principal activity of the area. A very small amount of tail water is getting into the Kandahar drainage system, probably between two and three cubic feet per second. This is reflected in an increased measurement of the drainage discharge and a reduced quantity of salt in the water. This water is still being used in the Central Arghandab area, principally for wheat production. Water users have been cautioned about the use of this water. In those areas where it is being used there is already a great deal of salt in the land, and the water table is high considering the very small amount of irrigation water they have had in the past. Lack of drainage in the area is not a problem now but in a few months there will be water logged areas and the ground water is very salty.

A total of 45 drainage flow and irrigation stream measurements were made. Twenty-four water samples were collected for analysis. The five principal juices that supply water for the Panjwie area that diverts from the Arghandab River has been added to the list of river diversion juices to be measured each month. This data will give a factual record of the use of the released water from the Arghandab Reservoir and assist in determining the quantity of return flow into the Arghandab River.

Field Engineering Surveys. East Tulukhan Drain - Traversed, profiled and cross-sectioned from Sta. 0+000 to Sta. 4+945 and a line of levels 2.7 kms. was run to close vertical control to an existing bench mark (7.64 kms.).

Ghani Kalacha Line - Traversed, profiled and cross-sectioned from Sta. 0+000 to Sta. 6+977 (6.97 kms.). Reobserved horizontal angles of the entire line for a good traverse closure.

West Tulukhan Drain - Traversed, profiled and cross-sectioned from Sta. 0+000 to Sta. 4+777 (4.77 kms.). Traversed a tie line of 5.03 kms.

Shorab Wash - Ran a line of levels from BM to Shorab Wash (3.00 kms.) and ran a line of levels 2.2 kms. at upper South Canal.

East Kandahar Intercepting Ditch - Ran a profile of a tentative line on grade from Sta. 0+000 to Sta. 12+390 (12.39 kms.).

Drainage and Ground Water. A total of 447 ground water observation well readings were made. The flow of the Kandahar drainage system increased from 28.6 cfs to 35.8 cfs. The salt load per acre-foot of water dropped from 2.09 tons to 1.89 tons. About one-third of this flow increase is from surface water. The other two-thirds represents increased drainage flow as a result of irrigating wheat land and the expected seasonal increase.

Maps showing depth to ground water have been completed on two-thirds of the Central Arghandab area. Twenty-two in-place, pump-out, permeability tests were made and the respective soil profiles recorded in the Kanjakak, Regwa and Massangan area. This completes the testing of the soils of the Central Arghandab for permeability. Sixteen additional depth to water observation wells were installed and this completes the planned coverage of the area. As conditions develop the need for additional coverage of observation wells can be expected.

Yardages were computed on the requirements of a dike to protect Kandahar and the surrounding area from the Arghandab Road Wash, which drains the area north of Kandahar. To cut through a natural saddle for spillway would require 9,170 cubic yards of excavation, and to build a dike across the wash would require 542,000 cubic yards. The storage capability of this reservoir site for water storage for Kandahar during canal shut-down periods will be considered.

The drainage outflow for the Kandahar Drain for October was 2,006 acre feet of water, containing 4,017 tons of salines. A total of 22,782 acre feet of water containing 55,214 tons of salines have been discharged from the drainage system since October 20, 1968.

Final mapping for project map to be incorporated in the feasibility report of Central Arghandab Valley Unit was completed and ready for half-size reduction and reproduction. There are five sheets involved on these maps. Sizes of drawings varies from 21 inches by 36 inches to 21 inches by 58 inches.

#### DIVISION OF CONSTRUCTION AND OPERATIONS

General. Mr. John McEwan, Field Engineering Advisor, departed during the month for return to domestic service in the Bureau of Reclamation. Mr. Ronald E. Thompson, Design Engineer Advisor, departed during the month for home leave and return to post.

HAVA Engineering Design Section. Shumalan-Bolan Livestock and Research Farm Development: Turnout designs for the 20 acre Research Farm development were completed at the end of the month except for drafting corrections and issuing to the Contractor.

Bolan Livestock Farm land development designs were completed and issued to the Contractor. The Bolan Lateral relocation and design is in progress and will be ready for issue to Contractor prior to canal shut-down period in January.

Designs are in progress for farm drains for Block 8 and a portion of Block 9 and deepening of a collector drain of the Marja Project. Drain spacings are indicated as being as close as 50 meters centers. ~~Benefits from these designs are expected to be realized in the next few months.~~

Other Engineering Division design work in progress but not related to land development under Water Resources not reported on.

A recommended design for a new pumping plant structure at the foot of Kabul Street for the 24-inch reinforced concrete pipe line with new pumps was provided HAVA Design by Bureau of Reclamation advisors.

HAVA Engineering Field Surveys. Location surveys for the new West Shamalan Lateral were started to provide detailed data for design of the irrigation system and land development of a portion of the Shamalan project under the proposed development loan.

Construction surveys were provided for the Bolan Research and Livestock Farm developments; Lashkar Gah Street paving project; irrigation system pumping line, and city domestic water system rehabilitation.

No report is made on Marja Farm drains, Nad-i-Ali Farm drains, and the Kandahar outfall drain system.

HAVA Engineering Construction. Darveshan Project Block 2E-2: No change. Marja Drains: Dragline excavation of drains completed in Sub-block 1A. Lashkar Gah: Domestic water system rehabilitation, cleaning and repairs to pump houses and tanks 1, 2 and 3 are complete. The work of raising water tank No. 5 to the same elevation as tanks 1, 2, 3 and 4 was started late in the month. The electrical work of installing new controls and wiring replacement was continued. Connections of the old system to the new transite pipe loop was continued.

Lashkar Gah Street Paving Project: The work has continued at a slow pace due to the lack of adequate planning, equipment breakdowns and general lack of urgency. The work is now approximately 70 percent complete in accordance with the reduced schedule.

Lashkar Gah Irrigation System Rehabilitation: The excavation laying the 24-inch reinforced concrete pipe was continued throughout the month at a very slow pace.

HAVA Operations. Two crews of hydrologists are now being used simultaneously to acquire stream flow data. A total of 35 measurements were made during the month as compared to an average of about 15 per month previously. The present schedule could be greatly increased if reliable transportation were available.

Three cableway measuring stations were installed during the month on the Shamalan Canal at Stations 22+610, 40+300 and 49+150. Four additional cableways are presently being constructed in the O & M shop.

Kajakai Reservoir elevation dropped 2.61 meters during the month to elevation 1022.44, for a reduction in reservoir capacity of 116,400 acre-feet. The end-of-month content of 924,900 acre-feet compares to an average content at the end of October of 805,900 acre-feet. Two valves were open 95 percent each for the entire month, releasing an average of 4,660 cfs.

The content of Arghandab Reservoir was reduced by 39,900 acre-feet with the two Howell-Bunger valves each open 35 percent. The reservoir elevation dropped from 1098.18 meters to 1095.42 meters with an average discharge of 880 cfs. The end-of-month content of 114,900 acre-feet compares with the long term average of 199,300 acre-feet for the end of October.

The flows and monthly volumes were obtained from measurements, recorders and daily observations at key stations in the project area.

	Avg. Daily Flow (cfs)	Total Monthly Flow (acre-feet)
Boghra Canal Sta. 10+917	1,290	79,200
Boghra Canal Sta. 31+900	454	27,900
Boghra Canal Sta. 56+500	330	20,300
Shamalan Canal Sta. 0+200	612	39,600
Zahir Shahi Canal nr. Headgate	555	34,200

HAVA Maintenance. The Marden brush cutter was used to clear brush, weeds and aquatic growth from 21 kms. of Drain "F" Shamalan. Two wrecker trucks were used to pull the cutter and a truck crane and clamshell bucket were used to assist the laborers in removing the debris from the drain. A Northwest dragline was used to desilt and remove blockage in some areas of this drain.

Two Euclid trucks were used to pull the heavy chain through 18 kms. of the Marja Branch Canal. The debris chained loose was removed from the canal by hand labor crews.

Two light flat-bed trucks were used to chain 12 kms. of Boghra Canal using a lightweight chain to cut loose the algae and aquatic weed growth from Km. 66 to 78. The floating debris was removed from the canal by hand labor crews. This same crew was used to repair the operating road on Shamalan Canal and do some gravel surfacing. Gravel and some rock were hauled to the Shamalan protective dike at Sta. 16. A D-8 tractor and dozer were used to place the gravel and rock hauled this month, and previously, into position as rip rap to protect the dike from erosion by the Helmand River at flood stage.

Two motor graders were used to blade roads on Shamalan Canal and the main road to Marja, also the highway from Lashkar Gah to the Kandahar paving.

The heavy trailer and truck tractor were used to haul materials shipped to HAVA from Chaman, Pakistan, to Lashkar Gah.

One motor grader along with other equipment were used to place the asphalt paving on Lashkar Gah city streets. Several O & M employees were also used full time during the month on this asphalt paving work.

BUREAU OF RECLAMATION  
IMPROVEMENT OF EXISTING IRRIGATION SYSTEMS PROJECT  
PROJECT NO. 306-11-12-005  
October 1969

LOHISTAN PROJECT

Lanja Canal Extension. Tunnel No. 2 was holed through on October 20. By actual measurement the tunnel portal to portal is 305 meters, and 84 meters were excavated this month. The whole tunnel was excavated in 70 working days.

Due to lack of explosives only 30 meters of masonry bench flume beyond Tunnel No. 2 were completed this month, making the total completed 330 meters.

MAJ. CANAL PROJECT

An Afghan survey party and Bureau of Reclamation Construction Engineer advisor went to the project on October 6 to assist in layout of the work prior to start of construction. A discrepancy was noted in the survey work which required a change in the design. This was accomplished after another visit to the site on October 13 by the Bureau Construction Engineer and Design Engineer. Revised drawings were sent to the project on October 25 with an Afghan engineer from the Irrigation Department.

SURG. KIRKIAN PROJECT

Plotting of plan, profile and cross sections continued during the month.

MAJ. CANAL PROJECT

One Bureau of Reclamation Design Engineer and an Afghan engineer attempted to visit the site on October 20. The purpose of the visit was to make a reconnaissance survey of the canal, however, it was not possible to reach the project because a bridge on the road north of Laghman had collapsed.

It was learned that there is some friction between the tribal villages in the area and that the people of Mangu are opposed to the project, claiming that seepage from the proposed canal will ruin their lands. The Bureau engineer will not return to the project area until these differences are settled.

GAZI SULTAN PROJECT

A survey party left for this project on October 29 to start obtaining field data for design purposes.

ABCHAKIAN PROJECT

Surveys on this project are completed and design work will start within a few days.

OTHER PROJECTS

On October 20 a Bureau of Reclamation engineer, two surveyors and an Afghan engineer inspected the Altinar Canal. This canal which has a spring as its source and loses about 50 - 60 percent of its water in its 6 or 7 kilometer reach, is located in a gravel creek bottom in two places and in two other locations crosses gravel bottomed creeks by running in one side and out the other some distance downstream. The purpose of the visit was to determine what might be done to lessen the losses and to instruct the surveyors on what field data to obtain. During the visit it was learned that the local people expected the Afghan Government to pay all the project costs. As the Government is not willing to do this, no further work on this project is contemplated.

There was no activity on the Kaskot, Khanabad, Khamard, Maidon or Faizabad projects.

General. Mr. G. E. Nichols, Design Engineer, and Mrs. Nichols left Kabul for home leave on October 23.