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**REPUBLIC OF INDONESIA
MINISTRY OF PUBLIC WORKS
DIRECTORATE GENERAL CIPTA KARYA
DIRECTORATE OF SANITARY ENGINEERING**

**CONTRACT FOR CONSULTANT SERVICES
FOR
SURAKARTA WATER SYSTEM
NO. 01/WS-S/1/AID/78**

MONTHLY PROGRESS

**REPORT NO. 29
FEBRUARY 1981**

**BURNS & McDONNELL ENGINEERING COMPANY.
AND
TRANS-ASIA ENGINEERING ASSOCIATES, INC.
A JOINT VENTURE**



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BURNS & McDONNELL Engineering Co.

Architect - Engineers

A JOINT VENTURE

Consultants - Planners

TRANS-ASIA Engineering Associates, Inc.

Please Reply to: Kotak Pos 105
Surakarta

072/BM/TAE/SKA/81
05 March 1981

Mr. Soesanto Mertodiningrat, Director,
Directorate of Sanitary Engineering,
Directorate General Cipta Karya
Jl. Pattimura No. 20
Jakarta Selatan.

Subject : Contract for the Consultant Services for
Surakarta Water System No. 01/WS-S/I/AID/78
dated 28 October 1978.

Dear Sir,

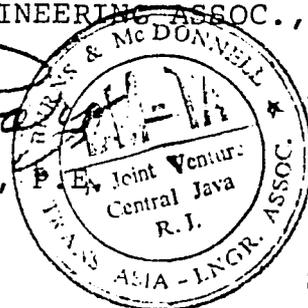
In accordance with Section 4.12 and Appendix I of the
subject Contract, we are pleased to submit fifteen
copies of the Monthly Report No. 29 for the month of
February 1981.

We hope, that this report will meet with your approval.

Very truly yours,

BURNS & MC DONNELL ENGINEERING CO.
TRANS-ASIA ENGINEERING ASSOC., INC.


George M. Pary,
Chief Engineer



cc :	CJWSP	Semarang	(10 copies)
	USAID	Jakarta	(8 copies)
	BM/TAE	Jakarta	(2 copies)
	Burns & McDonnell	Kansas City	(1 copy)
	CJWSP-I	Surakarta	(1 copy)
	SWE	Surakarta	(1 copy)
	Mayor of Surakarta	Surakarta	(1 copy)
	File		

Encl.

GMP/hp.

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SECTION I
G E N E R A L

I-A NARRATIVE SUMMARY

During the month of February 1981 corrective work was completed on the crosstie at the Jebres reservoir as well as some connections to the distribution network. Some finishing work is still being performed e.g. structure painting and cleanup, but this is expected to be completed in March. The transmission line is considered to be 100 % operational.

Test reports of water samples of wells TW-1 and TW-2 was completed. Samples of water were sent to University of Yogyakarta for chemical testing. The wells were capped to await pumps and motor-generator. Although the drilling equipment has been removed from the site, minor items of work remain to be done.

A new Management Specialist arrived in Surakarta the last of January on a special assignment to evaluate the entire operation of the Surakarta Water Enterprise. Interviews were conducted with employees and citizens of Surakarta regarding work habits and reliability.

O & M Specialist is continuing balancing of the supply to the city through valve manipulation. The proper balancing is difficult due to the poor condition of some of the old valves and many leaks throughout the city. Rehabilitation of the existing system has become imperative. The previous problems still have not be remedied. The full list of items needing

immediate action is enclosed in O&M Specialist's Report in Appendix VII of this report.

Site plans for public latrines have been completed, and three site selections have been made on public bathhouses. Tenders for PVC and AC piping were issued and bids received the last of January 1981. The bidding documents have now been evaluated by the Consultant and forwarded to Cipta Karya for review and award.

The construction of the distribution system funded in FY 1980/1981 is 99,5 % completed. Some connections remain to be made to the existing network. The house services contractor has been given a 60 day extension of time but still lags behind schedule. These problems are fully described in Construction Specialist's Report, in Appendix IX of this Report.

I-B PROBLEMS AND PROPOSED SOLUTIONS.

The interpreter position at SWE still vacant and the Consultant must use part time the Material Coordinator as interpreter in order to achieve progress in O&M department.

Considerable repairs and insertion of fittings are required, before the pipe installed from 1976 to 1979 can be put in service. CJWSP has promised to commence the repairs on priority basis, however to date no work has been started.

Increased pressure and water volume supplied by the new transmission main has shown the old distribution system piping in the northern section of Surakarta to be in worse shape than anticipated. Some of it will require replacement. Residents of that area have advised they have had no water for up to 20 years.

SECTION II

ADMINISTRATION

II-A SUBMISSIONS/APPROVALS.

Consultant's Invoice No. 28 January 1981 U.S. Dollar reimbursible expenses was submitted to Cipta Karya on 21 February 1981 and was approved by CK on 24 February 1981. Consultant's Rupiah Invoice No. 13 submitted to Cipta Karya on 19 January 1981 was approved on 23 January 1981 and was paid on 24 February 1981. These submittals are in accordance with the Contract Appendix II, page II-15.

II-B CONTRACT STATUS.

Appendix I shows the continuation of Consultant's effort in man-months from the beginning of the Contract.

Appendix II shows the billings of approved expenditures to date.

II-C PERSONNEL.

The Surakarta Office personnel in January were as follows :

E x p a t r i a t e s

- George M. Pary, P.E., Chief Engineer
arrived 17 August 1979
- James F. Baucom, Pipeline Engineer
arrived 26 September 1979
- Albert G. Ringler, O&M Specialist
arrived 9 May 1980
- Jerry E. Bragdon, Water Distribution Engineer
arrived 8 June 1980
- William L. Lee, Well Drilling Specialist
arrived 8 June 1980 Departed Surakarta 1 Feb.1981
- Emmett F. Lowry, Management Specialist
arrived 27 January 1981

Indonesian Professional and Technical :

- A.F. Dengah, Counterpart Chief Engineer
arrived 8 November 1978
- Sutjipto, Hydrogeologist Counterpart
arrived 1 October 1980
- Mohamad Khalil, Materials Coordinator
,arrived 9 October 1978
- Mohamad Syarif Lembah, Construction Supervisor
arrived 1 May 1979 Promoted 1 Feb. 1981
- Gatot Bramono, Inspector
arrived 19 November 1979

- Soewanto, Inspector
arrived 11 March 1980
- Budiman Sinaga, SR., Cost Estimator
hired 1 February 1981
- Suyono, Inspector
arrived 17 November 1980
- Susena, Draftsman
arrived 20 October 1980
- Sumardi, Translator
hired 24 November 1980
- Sri Sukanti, Accountant
hired 3 January 1981

Administrative :

- Dradjat Atmardjo, Office Manager
arrived 2 October 1978
- Haryani Pudyastuti, Secretary
hired 17 November 1980
- Endang Tri Siwi, Typist
hired 1 December 1980
- Rubiyo, Clerk
, hired 1 November 1979
- Chaiz Hidayati, Administrative Clerk
hired 8 October 1979
- Pamudji Kahardjo, Driver
hired 2 October 1978

- Soedarno, Driver
hired 1 December 1979

- Sutrisno, Driver
hired 2 April 1979

- Puranto, Driver
hired 17 October 1980

- Kentut Aryanto, Driver
hired 7 January 1981

- Mulyatmono, Watchman/Labor
hired 9 October 1978

- Memed Barmawi, Copy Machine Operator/Labor
hired 23 June 1980

- Tukino, Office Boy/Labor
hired 10 November 1980

SECTION III
ENGINEERING AND MANAGEMENT

III-A OFF-SHORE PURCHASED MATERIALS.

III-A-1 American Cast Iron Pipe Company

The Consultant certified fulfillment of the contract on 1 February 1980.

III-A-2 Colcorindo Raya.

The Consultant certified fulfillment of the contract on 7 April 1980.

III-A-3 Rohan Company.

Missing and damaged materials from previous shipments have been shipped from Rohan on 8 August 1980. They arrived in Semarang. The formal documents have been processed by the importer and sent to Cipta Karya. The Consultant has requested Cipta Karya to expedite formalities.

III-A-4 Clow Corporation.

The package with missing and damaged materials has been shipped on the 20th of June. This shipment arrived in Semarang on 1 September. Formal documents have been processed by the importer and sent to Cipta Karya. The Consultant has requested Cipta Karya to expedite formalities.

III-A-5 Ford Meter Box Company.

The Consultant certified Fulfillment of the contract on 12 February 1981.

III-B CONSTRUCTION OF TRANSMISSION PIPELINE.

The contractors have completed the repair and the pipeline is considered to be 100 % operational. The remaining work, mostly cleanup and surface reconstruction work continue including painting the pipe gallery in the Kartasura reservoir. Full report of the Construction Specialist will be found in Appendix V of this report.

III-C GROUNDWATER EXPLORATION AND WELL DEVELOPMENT PROGRAM.

Well drilling final report was included in previous monthly report. Drilling rig was removed from TW-2 site 10 February. The wells have been capped in expectation of pumps and motor-generators. Chemical analysis of water samples taken from TW-1 and TW-2 are included as Appendix VI of this report. The Drilling Specialist has departed Surakarta.

III-D MANAGEMENT ASSISTANCE PROGRAM.

In relation to the preparation of a report in the operation and Management of the Surakarta Water Enterprise, the month of February was spent primarily in conducting interview with SWE personnel. This was done at the place of business with all levels of personnel from the Director to the labour. Field observations of SWE activities were also conducted.

A portion of the month of February was used to examine the portions of the community in detail. This was to attempt to establish the degree of desirability of SWE services to non users and to learn as much as possible about consumption patterns.

III-E O & M ASSISTANCE PROGRAM.

The main work of the O&M Specialist at the present time is to balance the now ample supply of water to the city, so that as large as possible number of customers may be served. However, the problem of unchecked leaks continues, compounded by the unreliability of the old valves, and incomplete condition of the mains built in 1978 and 1979. O.J.T. is continuing utilizing new drilling and tapping equipment. Full report of the O&M Specialist will be found in Appendix VII of this report.

III-F METER REPAIR TRAINING PROGRAM.

Completed.

III-G NEW WATER DISTRIBUTION NET DESIGN.

Construction drawings for the three phases of secondary and tertiary distribution system have been completed. Cipta Karya approval is expected soon.

Survey and construction plans for Public Hydrants,

Yard Hydrants and Water Services have been completed.

Survey of the public latrines is about 65 % done and final construction drawings for same has been started. Sites for three public bath houses have been selected and approved.

On 24 January bids were opened for the supply of pipe and fittings. These bids have been evaluated by the Consultant. The Consultant has inspected physical facilities of bidders to check their ability to provide both quality and quantity of materials offered in their bids.

Full report of the Design Specialist will be found in Appendix VIII of this report.

III-H DISTRIBUTION SYSTEM CONSTRUCTION.

The distribution piping contract is 99,5 % completed, however house connections and hydrant contract is lagging behind more and more. The contract was extended to 28 March 1981 and will be reevaluated.

The assignment of connecting the existing transmission main to the \varnothing 300 mm line on Jl. Slamet Riyadi was given to the distribution main Contractor. Full report of the Construction Specialist will be found in Appendix IX of this report.

III-J HYDROGEOLOGY REPORT.

Test results of the water sample of TW-1 was

received and found to be better than TW-2. Chlorination of water from both wells is recommended, however. Final report is being prepared. Full report of the Hydrogeologist is found in Appendix VI of this report.

III-K CONFERENCES.

Aside from coordination conferences at the site the only other meetings attended during the month concerned evaluation of tender for distribution materials.

III-L ACTIVITIES PLANNED FOR NEXT MONTH.

Conduct the transmission pipeline final inspection. Continue the O&M program and start actual repairs.

Continue finalizing new bath house design and public latrine working drawings.

Complete research on hydrogeology of the area and prepare reports concerning same.

SURAKARTA WATER PROJECT
 REPORT OF MAN-MONTHS EXPENDED BY CONSULTANT
 BURNS & McDONNELL / TRANS-ASIA ENGINEERING ASSOCIATES

CONTRACT NUMBER O/WS-S/AID/78 AID LOAN 497-U-044	MAN - MONTHS			
	F O R February 1981	CUMULATIVE THROUGH February 1981	% OF TOTAL SCHEDULE	TOTAL IN CONTRACT SCHEDULE
EXPATRIATES				
PROCUREMENT ENG.	0	6.5	44.8	14.5
CHIEF ENGINEER	1	25.5	85.0	30
PIPELINE ENG. (TRANS)	1	17.1	77.7	22
LIAISON OFFICER	0.09	3.42	62.1	5.5
PRINCIPAL	0	0.71	35.8	2
HYDROGEOLOGIST	0	8.1	67.5	12
DRILLING SPECIALIST	1	11.5	95.8	12
O & M SPECIALIST	1	25.4	92.3	27.5
METER SPECIALIST	0	8	100	8
MANAGEMENT SPECIALIST	1	20.2	96.1	21
SPECIALIST	0	0	0	3
PIPELINE ENG. (DIST.)	1	8.7	72.5	12
EXPATRIATE TOTAL	6.09	134.44	79.3	169.5
INDONESIAN PROFESSIONAL & TECHNICAL				
COUNTERPART CHIEF ENGINEER	1	27.6	83.6	33
CONSTRUCTION SUPERVISOR	1	7.9	56.4	14
HYDROGEOLOGIST	1	19.7	75.7	21
MATERIALS COORDINATOR	1	29	85.2	34
INSPECTORS	4	86.4	120.0	72
DRAFTSMAN	1	24.6	72.35	34

I-A

ACCOUNTANT		15	83.3	18
TECHNICAL TRANSLATOR				
INDON. PROF. & TECH.	11.0	237.2	90.3	263
INDONESIAN ADMINISTRATIVE				
OFFICE MANAGER	1	29	85.3	34
SECRETARY	1	27.6	81.2	34
TYPIST	1	18.3	46.9	30
CLERKS	2	87.4	118.1	74
DRIVER	5	108.3	67.6	60
LABORERS	3	148.2	60.7	244
ADMINISTRATIVE TOTAL	13.0	418.8	71.5	585

INDONESIAN STAFF FOR DISTR. SYSTEM DESIGN AND SUPERVISION

INDONESIAN PROFESSIONAL & TECHNICAL				
DESIGN ENGINEER	0	6	75	8
SPEC./COST ESTIMATOR	1	3.5	116.6	3
CONSTRUCTION SUPV.	0	0	0	8
SR. SURVEYOR/PLOTTER	0	5.4	108	5
SURVEYOR	0	5	100	5
INSTRUMENTMAN	0	6.3	126	5
INSPECTORS	0	0	0	7
DRAFTSMEN	0	15.4	85.5	8
INDON. PROF. & TECH.	1.0	41.6	49.5	84
INDONESIAN ADMINISTRATIVE				
SECRETARY (BI-LINGUAL)	0	6	100	
TYPIST	0	5.9	49.1	12
DRIVER	0	11.8	45.3	26
RODMEN/CHAINMEN	0	13.8	138	10
ADMINISTRATIVE TOTAL	0.0	37.5	69.4	14

I-B

APPENDIX I

II-A

SURPART
REPORT OF
BURNS & MCDONNELL/TR

CONTRACT NO. OI/WS 3/410/78 SIGNED 26 OCT. 1976 START JAN. 1978 END 31 JAN. 1981 REIMBURSABLE EXPENDITURES	COSTS FOR	CUMULATIVE COSTS THROUGH	
	February 1981	AMOUNT	% OF TOTAL BUDGET ESTIMATE
US			
Salaries and Related Costs	29,002.28	795,385.03	84.8
Transportation	2,724.00	54,872.49	50.7
Equipment	—	2,496.14	0.4
Miscellaneous	—	48,407.17	83.2
Training	—	—	—
Contingencies	—	5,569.10	3.1
TOTAL DOLLARS	31,726.28	906,107.20	46.8
INDONE			
Salaries	5,732,500	125,071,132	71.8
Transportation	3,316,675	55,035,907	78.3
Housing	—	50,025,000	102.1
Vehicle Costs	875,000	35,401,472	82.1
Equipment Costs	—	23,110,860	95.2
Miscellaneous	142,205	64,111,235	89.4
Contingencies	—	19,416,960	44.9
TOTAL RUPIAH	10,066,380	372,172,566	78.2

II - B

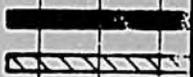
WATER PROJECT
ENGINEERING COSTS
SAS-ASIA ENGINEERING ASSOC.

CUMULATIVE PAYMENTS THROUGH

AMOUNT RECEIVED IN February 1981	TOTAL AMOUNT RECEIVED THROUGH February 1981	% OF TOTAL BUDGET ESTIMATE	TOTAL BUDGET ESTIMATE FOR CONTRACT
DOLLARS			
34,708.72	766,382.75	81.7	937,533
4,062.50	52,148.49	48.2	108,108
—	2,496.14	0.4	641,500
—	48,407.17	83.2	58,131
—	—	—	14,544
—	5,569.10	3.1	175,982
38,148.49	874,380.92	45.1	1,935,798
SIAN RUPIAH			
4,470,999	73,614,965	42.3	174,029,000
—	30,338,826	43.2	70,257,600
6,150,000	50,025,000	102.1	48,975,000
605,000	30,166,472	69.9	43,140,000
—	19,733,935	81.3	24,253,000
14,765	28,765,970	40.1	71,710,000
—	19,416,960	44.9	43,236,460
11,240,764	252,062,128	53.0	475,601,060

**SURAKARTA
SCHEDULE
PERCENT COMPLETED**

	ORIGINAL CONTRACT														
	1978			1979											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
MANAGEMENT SPECIALIST															
REVIEW EXIST. SYSTEM & PREPARE MANAGEMENT & ACCOUNTING MANUAL															
STAFF TRAINING															
OVER SEEING TRAINED STAFF															
FINANCIAL PROJECTIONS FOR FUTURE OPERATIONS SWE															
FINAL REPORT AND CERTIFICATION															
ADDITIONAL TRAINING/OVER SEEING VISITS BY MANAGEMENT SPECIALIST															
METER SPECIALIST															
SET UP MODERN METER SHOP															
GENERAL TRAINING OF ENG'G STAFF															
TRAINING AND OVER SEEING METER REPAIR TECHNICIANS															
FINAL REPORT AND CERTIFICATION															



IV-1

SURAKARTA
EXPATRIATE ST

ORIGINAL CONTRACT

	1978			1979											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	
LIAISON OFFICER *	[Hatched bar]														
PRINCIPAL *	[Hatched bar]														
OFF-SHORE PROCUREMENT ENGR. *	[Hatched bar]														
CHIEF ENGINEER	[Hatched bar]														
PIPELINE CONSTR. SPECIALIST															[Hatched bar]
O & M SPECIALIST				[Hatched bar]											
DISTRIBUTION DESIGN ENGR.															
HYDROGEOLOGIST		[Hatched bar]													
WELL DRILLING SPECIALIST								[Hatched bar]	[Hatched bar]	[Hatched bar]					
METER SPECIALIST															[Hatched bar]
MANAGEMENT SPECIALIST		[Hatched bar]													
SPECIALIST															

PHASE I

* NOT A FULL-TIME ENGAGEMENT-AVAILABILITY AS REQUIRED

SURAKARTA WATER PROJECT
TRANSMISSION MAIN
MONTHLY PROGRESS REPORT NO. 17
02 MARCH 1981

During the month of February 1981 corrective work was completed on the crosstie at the Jebres reservoir as well as some connections to the distribution network. The old main leaking badly north of the Kartasura reservoir has required limited distribution as rehabilitation of that section proceeds. During a meeting 16 February 1981 the Consultant was informed by CJWSP that installation of the \pm 400 LM replacement transmission main was awarded to the contractor working Sections A and C, however, it was not intended to be a Change Order to either of those Contracts. As such, the present Contract Documents prepared by the Consultant do not apply. It was recommended that the personnel of the Surakarta Water Enterprise inspect the work being done by the contractor while observing the criteria previously provided by the Consultant's O & M Specialist. Approximately one half of the total length of the ϕ 450 mm pipe is surplus American Cast Iron Pipe Co. product used with permission of U.S.A.I.D. The remainder is of a French manufacturer and was supplied from C.J.W.S.P. stock in Semarang. Polywrap for the \pm 400 LM of replacement transmission main was procured by S.W.E. while the contractor purchased the offset bends and ϕ 450 X ϕ 400 mm reducers. A last remaining ϕ 450 mm sleeve coupling was also provided from this project's surplus in order that the French and American Pipe could be joined together. There is a slight difference in the outside diameter of the two. Application of paint to the piping in the Kartasura reservoir pipe gallery began the last week of this reporting period. One of the original inspectors on the transmission main was promoted to the position of Construction Supervisor. He has learned and applied that knowledge he gained while working for the Consultant in addition to attending post graduate school to improve his English language communications. The

other inspectors from the transmission main team are being utilized for distribution.

The transmission main is now 100 % operational.

HYDROGEOLOGIST
MONTHLY REPORT
FEBRUARY 1981

In February 1981, activities were focused on finishing compilation of data of pumping test and Well Construction of Test Production Wells TW - 1 & TW - 2.

To complete the report, therefore, the chemical and physical analysis of specimen water taken from Deep Well TW - 1 had been tested for definite purposes commencing 4th to 20th February 1981 at the Sanitary Engineering Yogyakarta.

Appendix VI, the results of the analysis, was referred and put into consultation and discussion with Chief of Sanitary Engineering Yogyakarta, Ir. Sri Yanto and coincidingly with Ir. Basuki, of Ground Water Resources Development Semarang, pertaining the pumping result of Test Production Well TW - 1 & TW - 2.

The construction of Deep Well TW - 2 is finished including the improvement of the gravel fill tube, installing the measuring point tube, blocking temporarily the top casing and casing shoe. However, for TW - 1 the Contractor has only performed an installation of the measuring point tube and blocking temporarily the top casing.

The cementing of the casing and furnishing of the casing shoe will be executed if the landslide remains of caving have been removed. It is expected the construction of Deep Well TW-1 will finish not later than 15th March 1981.

Translation :

Subject : Chemical Tests Result
of Water Samples

To : CJWSP, Project Manager
Jl. Brig. Jen. Sudiarso 534
Surakarta

As requested per your letter No. 151/PAB.I/I/81 dated 29 January 1981 with subject : A transmittal of water samples, herewith we present you chemical tests result of 2 (two) water samples taken from deep wells, which we received on 4 February 1981 with Lab Report No. 135,136.

Observations :

1. Lab No. 136 because Nitrite (NO_2) exceeds standards solution of potable water it is recommended that the water should be chlorinated with chloride (disinfectant) to reach limit of chlor.solution $\pm 0,1$ to $0,2$ mg/litre as CL_2 .
2. Lab No. 135 though chemical quality is good, but because it will be used to supply potable water to the people, it is recommendable that water to be chlorinated also with chloride solution as Lab. No.136 as above.
3. Performing the chlorination you can consult directly with Balai Teknik Kesehatan Lingkungan Yogyakarta.
4. After the chlorination is performed, it is expected that the water is to undergo bacteriologic lab. tests.

Herewith we attached a temporary receipt for the lab. tests costs. The original receipt we will send to you after we received payment from you.

cc : Director of Health Installations
Directorate, Directorate General
Health Services, Health Dept.
of R.I. Jakarta

Chief of B.T.K.L.Yogya.
Ir. JFR. Sriyanto.

Laboratory tests (Physics and Chemicals)Translation.

1. Sample : Pipe/ground water
 2. Origin : CJWSP Surakarta

Code/Lab. No. 135. Deep well water sample, code TW 01, pumping volume 38.35 litres/second.

No. 136. Deep well water sample, code TW 01, pumping volume 63.21 litres/second.

No.	Parameter tests :	Unit	Allowable limit		Result			Remarks
			for potable water		No.Lab.135	No.Lab.136	No.Lab.	
I. Physics								
1.	Temperatur	0°C	-	weather	-	-	-	
2.	Colour	Unit	-	50	5.0	5.0		Scale Pt-Co
3.	Odour	-	-	-	odourless	odourless		
4.	Taste	-	-	-	tasteless	tasteless		
5.	Turbidity	Unit	-	25	2.0	4.2		Scale Silica
II. Chemicals								
6.	P.H. factor	-	6.5	9.2	7.9	7.9		
7.	Solid/contains	mg/l	-	1500	406.0	465.0		
8.	Organic compounds	mg/l	-	10	2.5	1.9		as KMn O4
9.	Aggressive Carbonic acid.	mg/l	-	0.0	0.0	0.0		as CO2
10.	Hardness	°D	5	10	5.06	5.64		as Ca Co3
11.	Calcium	mg/l	-	200	15.48	18.58		as Ca
12.	Magnesium	mg/l	-	150	12.54	13.16		as Mg
13.	Ferro/contains	mg/l	-	1.0	0.04	0.02		as Fe
14.	Manganese	mg/l	-	0.5	0.0	0.0		as Mn
15.	Copper	mg/l	-	1.5	0.0	0.0		as Cu
16.	Zinc	mg/l	-	15	0.098	0.07		as Zn
17.	Chloride	mg/l	-	600	2.5	4.5		as ion of Cl
18.	Sulfate	mg/l	-	400	5.0	5.0		as ion of SO4
19.	Sulfide	mg/l	-	0.0	0.0	0.0		as H ⁺ S
20.	Fluoride	mg/l	1.0	2.0	0.0	0.0		as ion of F

No.	Parameter test :	Unit	Allowable limit for potable water			Result			Remarks
						No.Lab.135	No.Lab.136	No.Lab.	
II. Chemicals									
21.	Ammonium	mg/l	-	0.0	0.0	0.0	0.0	0.0	as ion of NH ₄
22.	Nitrate	mg/l	-	20.0	0.08	0.11	0.11	0.11	as ion of NO ₃
23.	Nitride *	mg/l	-	0.0	0.0	0.05	0.05	0.05	as ion of NO ₂
24.	Phenolic *	mg/l	-	0.002	0.0	0.0	0.0	0.0	as phenol
25.	Arsenic *	mg/l	-	0.05	0.0	0.0	0.0	0.0	as As
26.	Lead *	mg/l	-	0.10	0.0	0.0	0.0	0.0	as Pb.
27.	Selenium *	mg/l	-	0.01	0.0	0.0	0.0	0.0	as Se
28.	Chromium *	mg/l	-	0.05	0.0	0.0	0.0	0.0	as Cr with valence of 6
29.	Cyanide *	mg/l	-	0.05	0.0	0.0	0.0	0.0	as ion of CN
30.	Cadmium *	mg/l	-	0.05	0.0	0.0	0.0	0.0	as Cd
31.	Mercury *	mg/l	-	0.01	0.0	0.0	0.0	0.0	as Hg
32.	Sodium *	mg/l	-	0.001	240.0	245.0	245.0	245.0	as Na

* Poisonous chemicals.

Consideration : No. 135. Fluoride doesn't meet standard of potable water.

No. 136. Fluoride doesn't meet standard of potable water,

as Nitride exceed the allowable standard of potable water.

Approved :
Director Institute of Health
Environment Engineering

Yogyakarta, 17 February 1981
Institute of Health Environ-
ment Engineering Yogyakarta
Chemistry Section Chief

Ir. JFR. Sri Janto.

Ir. JFR. Sri Janto.

Translation.

No. 53/PEM/BTKL/I/81

Attachement : 1 sheet

Subject : Chemical analysis water samples.

To : Chief CJWSP

Jl. Brig. Jen. Sudiarto 534

Surakarta

We submit herewith result of chemical analysis of 2 water samples taken from deep well at Jabung Kartasura, which we received on 22 December 1980 with Lab. No. 862 and 863.

Consideration :

- It is recommended that the water should be chlorinated with chloride reaching limit of chlor substance from ± 0.1 to 0.2 mg/litres in the form of CL_2
- To perform chlorination you can consult with Institute of Health Environment Engineering Yogyakarta.

Also attached 1 (One) copy of receipt of the analysis costs. Original receipt will be sent to you after the analysis payment is received by the Treasurer of the Institute of Health Environment Engineering Yogyakarta.

Please acknowledge and thank you for your attention.

Director of Institute

Ir. JFR. Sriyanto.

Laboratory tests (Physics and Chemicals)Translation.

1. Sample : pipe water
2. Origin : Kartasura

Code/Lab. No. 862 Deep well water sample, code TW II Jabung Kartasura taken at 19:00
No. 863 Deep well water sample, code TW II Jabung Kartasura taken at 19:30

No	Parameter test :	Unit	Allowable limit		Result			Remarks
			for potable water		No.Lab.862	No.Lab.863	No.Lab.	
I.Physics								
1.	Temperatur	°C	-	weather	-	-	-	
2.	Colour	Unit	-	50	5.0	5.0		Scale Pt.-Co
3.	Odour	-	-	-	odourless	odourless		
4.	Taste	-	-	-	tasteless	tasteless		
5.	Turbidity	Unit	-	25	2.0	5.0		Scale Silica
II.Chemicals								
6.	P.H. factor	-	6.5	9.2	x) 7.3	x) 8.0		
7.	Solid/contains	mg/l	-	1500	364.0	380.0		
8.	Organic compounds	mg/l	-	10	4.7	4.7		as Mn O4
9.	Aggressive carbonic acid.	mg/l	-	0.0	x) 0.0	x) 0.0		as CO2
10.	Hardness	°D	5	10	11.42	11.56		
11.	Calcium	mg/l	-	200	47.47	40.25		as Ca Co3
12.	Magnesium	mg/l	-	150	20.69	25.70		as Mg
13.	Ferro/contains	mg/l	-	1.0	0.04	0.04		as Fe
14.	Manganese	mg/l	-	0.5	0.90	0.80		as Mn
15.	Copper	mg/l	-	1.5	0.04	0.0		as Cu
16.	Zinc	mg/l	-	15	0.03	0.04		as Zn
17.	Chloride	mg/l	-	600	19.8	11.4		as ion of Cl
18.	Sulfate	mg/l	-	400	2.57	0.0		as ion of SO4
19.	Sulfide	mg/l	-	0.0	0.0	0.0		as H2 S
20.	Fluoride	mg/l	-	0.0	0.0	0.14		as ion of F

No.	Parameter tests :	Unit	Allowable limit for potable water	Result			Remarks
				No.Lab.862	No.Lab.863	No.Lab.	
II. Chemicals							
21.	Ammonium	mg/l	-	0.0	0.2	0.3	as ion of NH ₄
22.	Nitrate	mg/l	-	20.0	3.10	4.87	as ion of NO ₃
23.	Nitride *	mg/l	-	0.0	0.01	0.01	as ion of NO ₂
24.	Phenolic *	mg/l	-	0.002	0.0	0.0	as phenol
25.	Arsenic *	mg/l	-	0.05	0.0	0.0	as AS
26.	Lead *	mg/l	-	0.10	0.0	0.0	as Pb
27.	Selenium*	mg/l	-	0.01	0.0	0.0	as Se
28.	Chromium *	mg/l	-	0.05	0.0	0.0	as Cr with valence of 6
29.	Cyanide *	mg/l	-	0.05	0.0	0.0	as ion of CN
30.	Cadmium *	mg/l	-	0.01	0.0	0.0	as Cd
31.	Mercury *	mg/l	-	0.001	0.0	0.0	as Hg
32.	Sodium *	mg/l	-		245.0	243.5	as Na

X) In Laboratory

* Poisonous chemicals.

Consideration :

Hardness, Manganese, Ammonium and Nitride exceeds standard of potable water while fluoride doesn't meet standard of potable water.

Approved :
Director Institute of Health
Environment Engineering

Yogyakarta, 5 January 1981
Institute of Health Environment
Engineering Yogyakarta
Chemistry Section Chief

Ir. JFR. Sri janto.

Ir. JFR. Sri janto.

O & M SPECIALIST
MONTHLY REPORT
FEBRUARY 1981

Surakarta Water Enterprise had occasion to use the Mueller-E - 5 Drilling machine to make a connection on a newly installed 50 mm. P.V.C. line. O.J.T. was given to three employees on the proper methods of use. They had no problems with this machine.

The contractor doing the rehabilitation of \pm 400 meters of transmission line north of Kartasura Reservoir has all the pipe laid. All that remains are the connections and testing. This should be finished in the early part of March.

The Water Enterprise has all available people repairing the numerous leaks throughout the city. Many of the service lines should be replaced completely. There are many service lines that have been repaired three and four times previously. We are also finding an increasing amount of distribution lines that will need rehabilitation in the very near future, especially in the northern part of the city. We will continue to monitor these areas for possible rehabilitation recommendations in the coming months.

We propose a rehabilitation program estimated to cost approximately two hundred eighty one million five hundred thousand Rupiah. This involves replacement of services lines and distribution lines in various sections of the city, some of the existing ϕ 450 mm piping in Jebres and also \pm 4000 meters of transmission line in the Delanggu area. Materials were tendered in January for most of this program.

There are two valves on the old transmission line that cannot be operated. We do not know if they are open in full or partly. With the new transmission line in service, S.W.E. should make

the required repairs. Valve locations are Stations No. 17 + 990 and 18 + 700. There are still many valves in the existing distribution system and transmission line that need to be checked for operation. Also there has been many new valves installed by the contractor installing distribution lines that need to be recorded in S.W.E.'s valve records and numbered. The crew that was maintaining and checking valves has been reassigned to leak repair. This crew should be reestablished.

Existing problems. Remain the same.

1. S.W.E. has no fittings to complete lines presently installed and no pipe for new rehabilitation work.
2. S.W.E. has not submitted to the Consultant work schedules for new construction, rehabilitation or connections being made.
3. There has been no progress on O & M facilities.
4. No transfer of materials presently retained by the Consultant.
5. The project has not started the connection between the 450 mm. existing transmission line and the 300 mm. line A at the intersection of Jl. Slamet Riyadi and Jl. Sidomulyo.
6. The 300 mm line A at station No. # 32 + 85 has not been repaired by contractor Tukad Mas.
7. Water Enterprise has not disposed of their scrap pipe and valves, to facilitate storage of material that will arrive soon.

1

FEBRUARY 1981
WATER DISTRIBUTION NETWORK
MONTHLY PROGRESS

I. GENERAL

An evaluation of the bids for the pipe and fittings tender was completed and submitted to Cipta Karya for review. Final review and award is expected in March.

The design of the public latrine rehabilitation has begun.

Final revisions of the construction drawings for water distribution mains in Phase I continued.

II. TOPOGRAPHICAL SURVEY & PREPARATION OF PLANS.

The survey and drawings have been completed in January for the tertiary water mains in Phase I, II & III, Rehabilitation of Public Latrines and the discharge main for the TW-2 Well.

No progress has been made this month on the survey and preparation of plans for the Public Bath Houses.

III. DESIGN OF DISTRIBUTION NETWORK.

The design of the Rehabilitation of Public Latrines was started this month. Approximately 75 latrines were completed. Final revisions to the drawings has begun.

IV. PROCUREMENT OF MATERIAL.

The Consultant's evaluation of the pipe and fitting tender for which bids were received in January was completed and submitted to Cipta Karya for review. The Consultant visited all the manufactures whose

materials were proposed. Final review and award is expected in early March. The tender contains 4 separate packages and required delivery within 90 days from date of award.

The valve delivery for the tertiary distribution mains in Phase I, II and III is expected in May.

V. CONSTRUCTION SPECIFICATIONS

The first draft for construction specifications for the Rehabilitation of Public Latrines was completed this month.

Construction specifications for Public Bath houses has begun. It is expected these will be finished in March.

Estimates of cost for the Public Latrines and Bath Houses are currently being prepared.

VI. ACTIVITIES PLANNED FOR NEXT MONTH.

An important Progress Meeting is planned for early March. A major consideration in the meeting will be establishing priorities for projects. Significant budget revisions have necessitated reassessment of priorities. The results of this meeting could change the planned activities to some extent.

An award and Notice to Proceed for the Pipe and Fittings Tender is expected in early March.

The design, construction drawings and specifications for the Rehabilitation of Public Latrines should be completed.

The tender documents for the construction of Tertiary

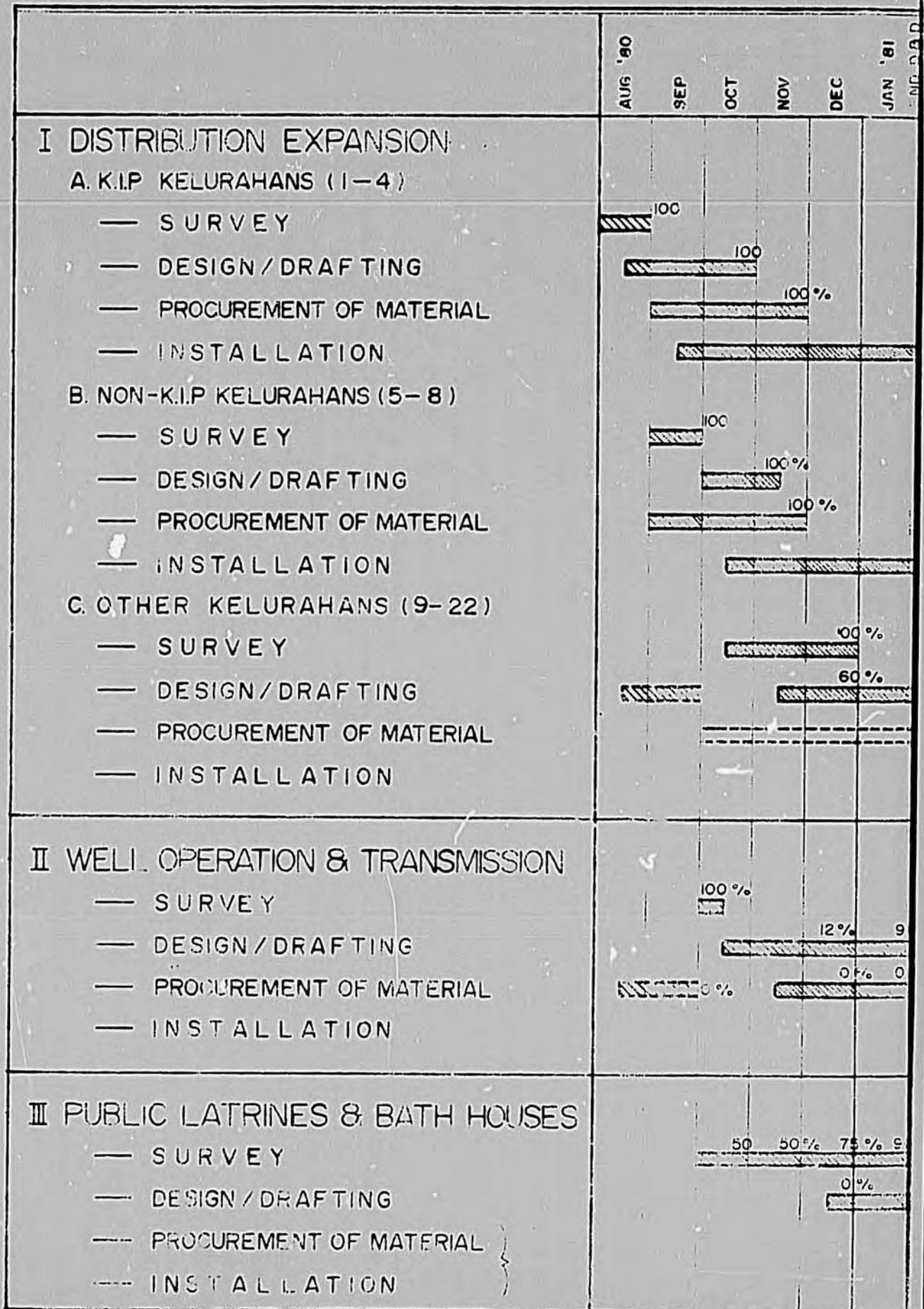
Distribution Mains in Phase I should be submitted to Cipta Karya for approval. It is expected that invitations for bids will be sent out during March.

Recommendations for some of the sites for Bath Houses will be made. Specifications for the Bath Houses should be completed.

VII. COMMENTS OF THE WATER DISTRIBUTION SPECIALIST.

The material order for the distribution pipe and fittings has been a very time consuming project. It has also been a very interesting project. The cast iron foundrys in Central Java were particularly interesting. These companies produce a good quality fitting from molds made by hand and in a relatively short time.

WATER DIST DESIGN, PROCUREMENT



TRIBUTION SYSTEM AND CONSTRUCTION SCHEDULE

AS OF FEBRUARY 1981

FER	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN '82	FEB	MAR	REMARKS
<p>99.5%</p>														<p>BY CONTRACTOR FY 1980-1981 BUDGET</p>
<p>99.5%</p>														<p>BY CONTRACTOR FY 1980-1981 BUDGET</p>
<p>75%</p>														<p>FY 1981-1982 BUDGET</p>
<p>30%, 30%</p> <p>0%</p>														<p>TW - 2 ONLY EXCLUDING PERUMNAS</p> <p>FY 1981-1982 BUDGET</p>
<p>32%</p> <p>45%</p>														<p>FY 1961-1962 BUDGET</p>

VIII-C-1

SURAKARTA WATER
DISTRIBUTION SYSTEM

KELURAHAN	1980							
	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR
SETABELAN	///	///	///	///	///	///		
JOYOSURAN	///	///	///	///	///	///		
PURWODININGRATAN	///	///	///	///	///	///		
KEMPLAYAN	///	///	///	///	///	///		
JEBRES	///	///	///	///	///	///	///	///
PASAR KLIWON	///	///	///	///	///	///		
SEMANGGI	///	///	///	///	///	///	///	///
KEPRABON	///	///	///	///	///	///		
GILINGAN	///	///	///	///	///	///	///	///
MANAHAN	///	///	///	///	///	///	///	///
JAGALAN						///	///	///
KAMPUNG SEWU						///	///	///
DANUKUSUMAN						///	///	///
GAJAHAN						///	///	///
SERENGAN						///	///	///
TIPES						///	///	///
PANULARAN						///	///	///
JAYENGAN						///	///	///
KEPATIHAN WETAN						///	///	///
KRATONAN						///	///	///
KESTALAN						///	///	///
NUSUKAN						///	///	///

ER PROJECT
M COMPLETION

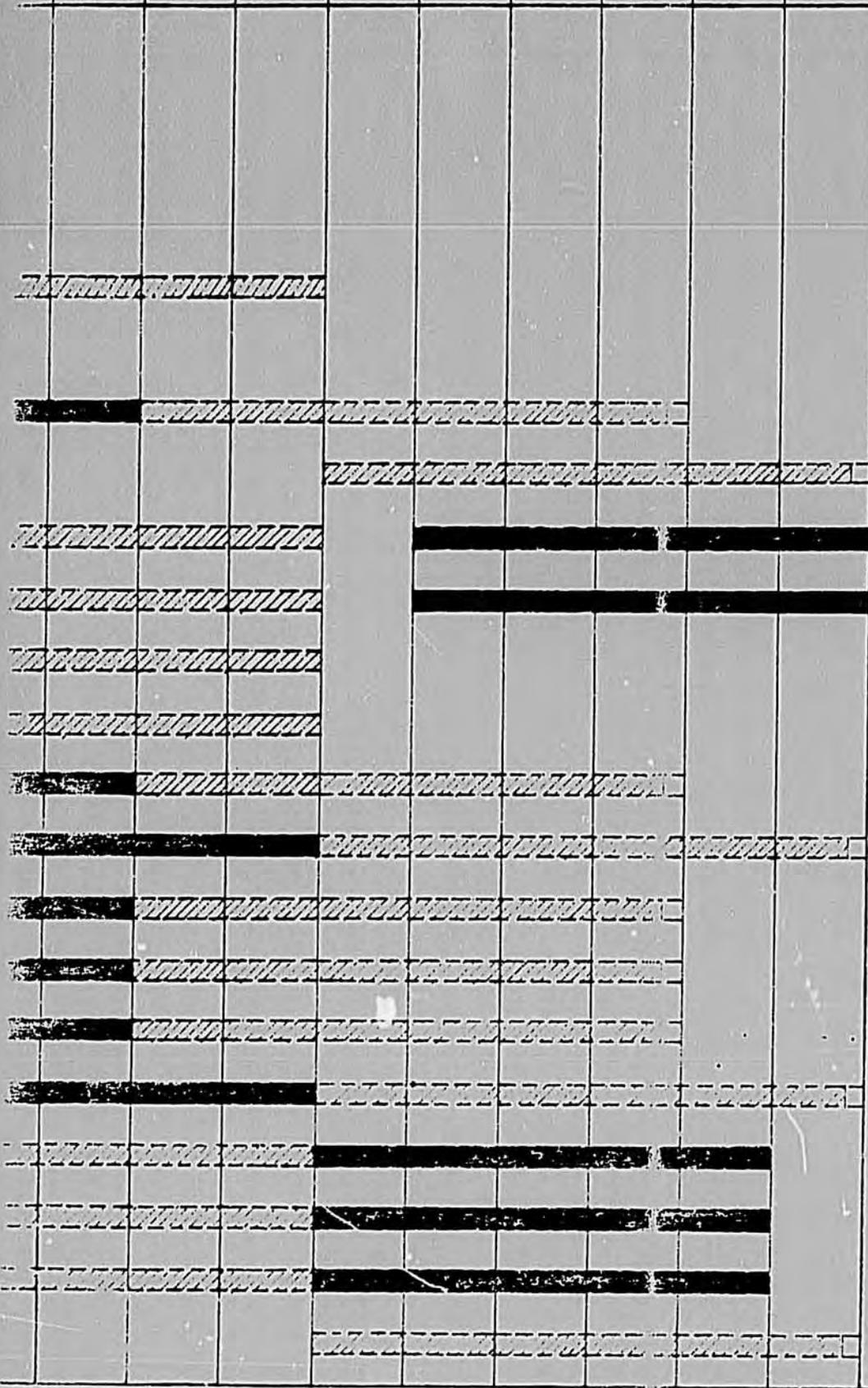
VIII C-2

AS OF END OF FEBRUARY 1981

1981

REMARK

R APR MAY JUN JUL AUG SEP OCT NOV DEC



LEGEND :

-  PROPOSED
-  UNDER CONTRACT
-  DESIGNED
-  CONSTRUCTION
-  DELETED OR RESCHEDULED

SURAKARTA WATER PROJECT
DISTRIBUTION SYSTEM
CONSTRUCTION PROGRESS REPORT No. 6
02 MARCH 1981

I. GENERAL :

Bids were received during February 1981 for the necessary piping materials to commence construction within the remaining Kelurahan, or sections thereof, agreed to be those areas the Consultant would concentrate upon for completion of the design for a distribution network. It is anticipated award will be made by mid March and material will be received in Surakarta during May 1981. With present construction efforts drawing to a close, some of the inspection staff have been redeployed to survey and develop future construction activities.

II. WORK IN PROGRESS :

A. P.T. Sarana Alam continues making connections to the existing distribution network. He is performing the work with his own forces where the piping material is either PVC or AC on the existing mains. Where cast iron pipe is encountered, the contractor is requesting the Surakarta Water Enterprise to make the required connection. During the last week of this reporting period the contractor began flushing operations on his installed work. This cannot be completed until the existing ϕ 300 mm AC main is connected to the existing ϕ 450 mm transmission main on Jalan Slamet Riyadi. This contractor has been given the assignment to make that connection by C.J.W.S.P. so the work is presently planned to be done during the month of March 1981. The following indicates remaining construction items to be done by this contractor :

<u>Kelurahan</u>	<u>Tie-in</u>	<u>Tie-in</u>		<u>Bov</u>	<u>Flushing</u>	<u>Other</u>
		<u>Done</u>	<u>Bov</u>	<u>Done</u>	<u>Required</u>	
1. Setabelan	13	4	5	4	yes	-o-
2. Joyosuran	11	11	2	-o-	yes	-o-
3. Kemlayan	4	4	3	-o-	yes	-o-
4. Jebres	6	5	3	3	yes	-o-
5. Pasar Kliwon	8	6	2	1	yes	Stream Xing
6. Semanggi	5	3	-o-	N/A	yes	Stream Xing
7. Purwodiningratan	8	1	3	3	yes	-o-
8. Keprabon	3	-o-	-o-	N/A	yes	-o-

Total percent complete is considered to be 99.5 %.

B. P.T. Palagan was granted a sixty (60) calendar day extension of time by C.J.W.S.P. which will terminate 28 March 1981. All conditions precedent to completion mentioned in the previous report on this contractor remain. As of the end of this reporting period the contractor has made 181 house connections which are 50 % complete with the same 92 at 75 %. This is 14.5% of the original total house connections in his scope of work. Regarding the installation of public hydrants, the following is a resume of completion status as at C.O.B. 28 February 1981 :

<u>KELURAHAN</u>	<u>PH STARTED</u>	<u>PH COMPLETED</u>	<u>PERCENT DONE</u>
1. Setabelan	19	-o-	56.25
2. Kemlayan	11	-o-	72.73
3. Pasar Kliwon	4	-o-	50.00
4. Semanggi	4	-o-	68.75
5. Jebres	5	-o-	75.00
6. Keprabon	3	-o-	33.25
TOTAL	46	-o-	62.05

III. PROBLEMS :

Lack of water for flushing or subsequent use by the new customers where existing mains to which the new work is connected have never been tested, flushed or turned over to the jurisdiction of S.W.E. by C.J.W.S.P.

IV. PLANNED :

A. Continue to make connections to existing mains plus the connection of the existing ϕ 300 mm AC main to the existing ϕ 450 mm Transmission main then complete flushing and cleaning operations to put new network into operation.

B. Continue with all contractual obligations.

V. CONSTRUCTION SPECIALIST'S COMMENTS :

During the construction of the next phase of the distribution network there should be adequate water available and a sufficient pressure in the existing system so that connections to that system can be made at the beginning of each respective contract. This, in turn, will expedite completion of those contracts as the new piping can be filled, tested and flushed as installation proceeds. In that way, when the final connection is made to the existing system, the new network can immediately be put into operation. This procedure will generate more capital faster for the Surakarta Water Enterprise during its expansion while providing water quicker to the population of Surakarta.