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1. 調査団員・氏名

(1) 現地調査（現地調査期間：2022年10月9日～12月8日）

氏名	担当業務	所属	現地調査期間
井上 陽一	総括	独立行政法人 国際協力機構 地球環境部水資源グループ 水資源第一チーム 課長	10月9日～10月15日
久保田 広志	調査計画	独立行政法人 国際協力機構 国際協力専門員	10月9日～10月15日
堀 恒平	調査計画	独立行政法人 国際協力機構 フィリピン事務所 企画調査員	10月9日～10月15日
今野 秀紀	業務主任者／上水道計画	(株)建設技研インターナショナル	10月9日～12月8日
高橋 亨	水源計画／取水施設計画	八千代エンジニアリング株式会社	10月9日～12月8日
三好 聡憲	組織／財務	八千代エンジニアリング株式会社	10月25日～12月3日
若林 賢一	施設計画／施工計画／事業計画	(株)建設技研インターナショナル	10月9日～11月27日
望月 晶理	維持管理計画	(株)建設技研インターナショナル	10月9日～11月25日

(2) ドラフト・ファイナルレポート説明調査（現地調査期間：2023年3月12日～3月19日）

氏名	担当業務	所属	現地調査期間
青木 信彦	総括	独立行政法人 国際協力機構 東南アジア大洋州部 主任調査役	3月12日～3月15日
新口 慎太郎	調査計画	独立行政法人 国際協力機構 東南アジア大洋州部	3月12日～3月15日
堀 恒平	調査計画	独立行政法人 国際協力機構 フィリピン事務所 企画調査員	3月12日～3月15日
今野 秀紀	業務主任者／上水道計画	(株)建設技研インターナショナル	3月12日～3月19日
高橋 亨	水源計画／取水施設計画	八千代エンジニアリング株式会社	3月12日～3月19日

2. 調査行程

調査行程を以下に示す。

(1) 現地調査（現地調査期間：2022年10月9日～12月8日）

日付		JICA			調査団員					会議
					CTII	YEC	YEC	CTII	CTII	
		井上 陽一 Yoich Inoue	久保田 広志 Hiroshi Kubota	堀 恒平 Kohei Hori	業務主任者/上水道 計画 今野 秀紀 Hideki Konno	水源計画/取水施設 計画 高橋 亨 Toru Takahashi	組織/財務 三好 聡憲 Akinori Miyoshi	施設計画/施工計画 /事業計画 若林 賢一 Kenichi Wakabayashi	維持管理計画 望月 晶理 Akimasa Mochizuki	
10月9日	日	JL741 9:30(NRT)- 13:10(MNL)	JL741 9:30(NRT)- 13:10(MNL)		JL741 9:30(NRT)- 13:10(MNL)	JL741 9:30(NRT)- 13:10(MNL)		JL741 9:30(NRT)- 13:10(MNL)	JL741 9:30(NRT)- 13:10(MNL)	JICAフィリピン事務所
10月10日	月	MNL	MNL	MNL	MNL	MNL		MNL	MNL	ADB, Maynilad
10月11日	火	12:30(MNL)- 14:10(CBO)	12:30(MNL)- 14:10(CBO)	12:30(MNL)- 14:10(CBO)	12:30(MNL)- 14:10(CBO)	12:30(MNL)- 14:10(CBO)		12:30(MNL)- 14:10(CBO)	12:30(MNL)- 14:10(CBO)	MCWD/インセプション協議
10月12日	水	CBO	CBO	CBO	CBO	CBO		CBO	CBO	コタバト市, BPDA
10月13日	木	CBO	CBO	CBO	CBO	CBO		CBO	CBO	MCWD, MENRE
10月14日	金	12:30(CBO)- 14:15(MNL)	12:30(CBO)- 14:15(MNL)	12:30(CBO)- 14:15(MNL)	12:30(CBO)- 14:15(MNL)	12:30(CBO)- 14:15(MNL)		12:30(CBO)- 14:15(MNL)	12:30(CBO)- 14:15(MNL)	MCWD
10月15日	土	JL746 10:05(MNL)- 15:35(NRT)	JL746 10:05(MNL)- 15:35(NRT)		MNL	MNL		MNL	MNL	
10月16日	日				MNL	MNL		MNL	MNL	
10月17日	月				MNL	MNL		MNL	MNL	
10月18日	火				12:30(MNL)- 14:10(CBO)	12:30(MNL)- 14:10(CBO)		12:30(MNL)- 14:10(CBO)	12:30(MNL)- 14:10(CBO)	
10月19日	水				CBO	CBO		CBO	CBO	MCWD
10月20日	木				CBO	CBO		CBO	CBO	
10月21日	金				CBO	CBO		CBO	CBO	MPW
10月22日	土				12:30(CBO)- 14:15(MNL)	12:30(CBO)- 14:15(MNL)		12:30(CBO)- 14:15(MNL)	12:30(CBO)- 14:15(MNL)	
10月23日	日				MNL	MNL		MNL	MNL	
10月24日	月				MNL	MNL		MNL	MNL	LWUA
10月25日	火				9:50(MNL)- 11:40(CBO)	9:50(MNL)- 11:40(CBO)	JL741 9:30(NRT)- 13:10(MNL)	9:50(MNL)- 11:40(CBO)	9:50(MNL)- 11:40(CBO)	
10月26日	水				CBO	CBO	9:50(MNL)- 11:40(CBO)	CBO	CBO	
10月27日	木				CBO	CBO	CBO	CBO	CBO	
10月28日	金				CBO	CBO	CBO	CBO	CBO	
10月29日	土				CBO>ILO	CBO>ILO	CBO>ILO	CBO>ILO	CBO>ILO	
10月30日	日				ILO>MNL	ILO>MNL	ILO>MNL	ILO>MNL	ILO>MNL	
10月31日	月				MNL	MNL	MNL	MNL	MNL	
11月1日	火				MNL	MNL	MNL	MNL	MNL	
11月2日	水				MNL	MNL	MNL	MNL	MNL	
11月3日	木				MNL	MNL	MNL	MNL	MNL	DPWH
11月4日	金				MNL	MNL	MNL	MNL	MNL	PAGASA
11月5日	土				MNL	MNL	MNL	MNL	MNL	
11月6日	日				MNL	MNL	MNL	MNL	MNL	
11月7日	月				MNL	MNL	MNL	MNL	MNL	
11月8日	火				MNL	MNL	MNL	MNL	MNL	
11月9日	水				MNL	MNL	MNL	MNL	MNL	NEDA
11月10日	木				MNL	MNL	MNL	MNL	MNL	
11月11日	金				MNL	MNL	MNL	MNL	MNL	
11月12日	土				MNL	MNL	MNL	MNL	MNL	
11月13日	日				9:20(MNL)- 11:10(CBO)	9:20(MNL)- 11:10(CBO)	9:20(MNL)- 11:10(CBO)	9:20(MNL)- 11:10(CBO)	9:20(MNL)- 11:10(CBO)	
11月14日	月				CBO	CBO	CBO	CBO	CBO	
11月15日	火				CBO	CBO	CBO	CBO	CBO	
11月16日	水				CBO	CBO	CBO	CBO	CBO	
11月17日	木				CBO	CBO	CBO	CBO	CBO	MCWD
11月18日	金				CBO	CBO	CBO	CBO	CBO	CENRO (City Environment and Natural Resources Office)
11月19日	土				11:55(CBO)- 13:45(MNL)	11:55(CBO)- 13:45(MNL)	11:55(CBO)- 13:45(MNL)	11:55(CBO)- 13:45(MNL)	11:55(CBO)- 13:45(MNL)	
11月20日	日				MNL	MNL	MNL	MNL	MNL	

日付	JICA			調査団員					会議
				CTII	YEC	YEC	CTII	CTII	
				業務主任者/上水道計画	水源計画/取水施設計画	組織/財務	施設計画/施工計画/事業計画	維持管理計画	
井上 陽一 Yoich Inoue	久保田 広志 Hiroshi Kubota	堀 恒平 Kohei Hori	今野 秀紀 Hideki Konno	高橋 亨 Toru Takahashi	三好 聡憲 Akinori Miyoshi	若林 賢一 Kenichi Wakabayashi	望月 晶理 Akimasa Mochizuki		
11月21日	月			MNL	MNL	MNL	MNL	MNL	
11月22日	火			9:50(MNL)-11:40(CBO)	9:50(MNL)-11:40(CBO)	9:50(MNL)-11:40(CBO)	9:50(MNL)-11:40(CBO)	MNL	
11月23日	水			CBO	CBO	CBO	CBO	MNL PCR test	
11月24日	木			CBO	CBO	CBO	CBO	MNL	
11月25日	金			CBO	CBO	CBO	CBO	JL742 14:50(MNL)-20:05(NRT)	
11月26日	土			11:55(CBO)-13:45(MNL)	11:55(CBO)-13:45(MNL)	11:55(CBO)-13:45(MNL)	11:55(CBO)-13:45(MNL)		
11月27日	日			MNL	MNL	MNL	JL746 09:50(MNL)-14:55(NRT)		
11月28日	月			MNL	MNL	MNL			
11月29日	火			9:20(MNL)-11:10(CBO)	9:20(MNL)-11:10(CBO)	9:20(MNL)-11:10(CBO)			
11月30日	水			CBO	CBO	CBO			
12月1日	木			CBO	CBO	CBO			MCWD, Maynilad
12月2日	金			CBO	CBO	11:55(CBO)-13:45(MNL)			
12月3日	土			11:55(CBO)-13:45(MNL)	11:55(CBO)-13:45(MNL)	JL746 09:50(MNL)-14:55(NRT)			
12月4日	日			MNL	MNL				
12月5日	月			MNL	MNL				
12月6日	火			MNL	MNL				
12月7日	水			JL078 23:45 MNL	JL078 23:45 MNL				
12月8日	木			04:50 HND	04:50 HND				

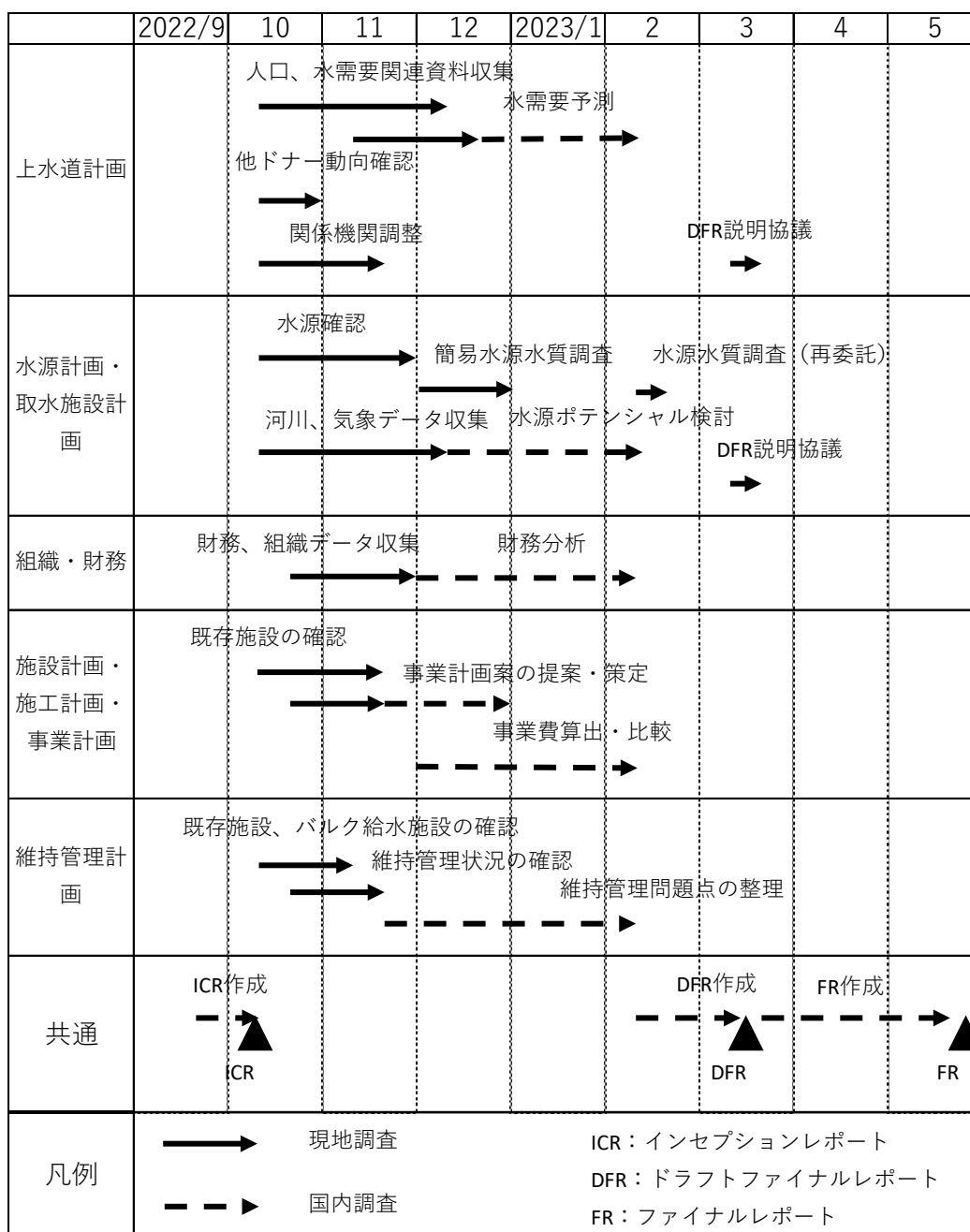
凡例：MNLマニラ、CBOコタバト、ILOイロイロ

(2) ドラフト・ファイナルレポート説明調査（現地調査期間：2023年3月12日～3月19日）

日付	JICA			調査団員		会議	
				CTII	YEC		
				業務主任者/上水道計画	水源計画/取水施設計画		
青木 信彦 Nobuhiko Aoki	新口 慎太郎 Shintaro Shinguchi	堀 恒平 Kohei Hori	今野 秀紀 Hideki Konno	高橋 亨 Toru Takahashi			
3月12日	日	PR431 9:40(NRT)-13:40(MNL)	PR431 9:40(NRT)-13:40(MNL)		PR431 9:40(NRT)-13:40(MNL)	PR431 9:40(NRT)-13:40(MNL)	
3月13日	月	9:20(MNL)-11:10(CBO)	9:20(MNL)-11:10(CBO)	9:20(MNL)-11:10(CBO)	9:20(MNL)-11:10(CBO)	9:20(MNL)-11:10(CBO)	
3月14日	火	CBO	CBO	CBO	CBO	CBO	
3月15日	水	CBO	CBO	CBO	CBO	CBO	MCWD DFR 説明協議
3月16日	木	11:55(CBO)-13:45(MNL)	11:55(CBO)-13:45(MNL)	11:55(CBO)-13:45(MNL)	CBO	CBO	コタバト市
3月17日	金	PR432 14:50(MNL)-20:10(NRT)	PR432 14:50(MNL)-20:10(NRT)		CBO	CBO	
3月18日	土				11:55(CBO)-13:45(MNL)	11:55(CBO)-13:45(MNL)	
3月19日	日				PR432 14:50(MNL)-20:10(NRT)	PR432 14:50(MNL)-20:10(NRT)	

凡例：MNLマニラ、CBOコタバト

(3) 調査フローチャート



3. 関係者（面会者）リスト

氏名（敬称略）	役職
<u>MCWD</u>	
Bimbo A. SINSUAT, Jr.	Chairperson of the Board - Civic Sector
Cecilia C. BARROGA	Board Member - Vice-Chairperson - Education Sector
Atty. Eugenio U. SOYAO	Board Member - Secretary - Business Sector
Lourdes V. MASTURA	Board Member - Treasurer - Women's Sector
Ramon C. CHUA, Jr	Board Member - Auditor - Professional Sector
Ma. Melinda Elaine V. BARCIMO	OIC - General Manager - Office of the General Manager
Engr. Venancio E. VILLARMA, Jr.	Assistant General Manager - Operations and Technical Services
Jocelyn A. PLAZOS	Department Manager - Commercial Department
Joselito D. NUNEZ, Jr.	OIC - Department Manager - Administrative Department
Helen L. SAMPIANO	OIC - Department Manager - Finance Department
Engr. Winston L. SAPAL	OIC - Department Manager - Production and Environmental Management Department
Engr. Grace M. MARTINEZ	Department Manager - Engineering and Maintenance Department
Dennis DIMALIBOT	Corporate Planning Analyst A
Chris Angelo GUERRA	Sr. Data Encoder
Randy Moses LIMBA	Principal Engineer C
Cesar Ryan MAGDAEL	Supervising Engineer A
<u>アジア開発銀行(ADB)</u>	
Srinivas SAMPATH	Director of Urban Development and Water, Division Southeast Asia Department
Siti HASANAH	Urban Development Specialist Urban Development and Water, Division Southeast Asia Department
<u>バンサモロ計画開発庁 (BPDA)</u>	
Mohajirin ALI	Director General
Norhan Hadji ABDULLAH	SDF Project Coordinator
Akmad GUINTA	Director I, SDF
<u>バンサモロ暫定自治政府 (BTA)</u>	
Naoyuki OCHIAI	Senior Advisor to the Chief Minister
<u>コタバト市</u>	

Mohamad dela Cruz MATABALAO
Crisanto B. SAAVEDRA

City Mayor
City Environment and Natural Resources Officer

Maynilad Water Service Inc.

Masahiro ISHIDA
Shigehiro KURATA

Financial Assistant Office of Chief Finance Officer
Financial Assistant Office of Chief Finance Officer

地方水道公社(LWUA)

Jocelyn P. Guce

Acting Deputy Administrator & Engineering Service
Manager

環境・天然資源・エネルギー省

(MENRE)

Akmad BRAHIM
Badr SALENDAB
Jesse ONDOY
Jalani PAMLIAN
Raphael REMO
Mohamad Ali DIMAREN

Minister
Director General
Head, Planning Division
Director II, Environmental Management Services
Director II, Mines and Geosciences Division
Director II

公共事業省(MPW)

Danilo ONG
Salonga SUMAMPAO
Tarhata KALIM

Director General
Director for Technical Services
Division Chief, Planning

JICA フィリピン事務所

Souichiro IDE
Makoto SAKURAI
Kouhei HORI

Senior Representative
Project Formulation Advisor
Project Formulation Advisor

4. スクリーニング書式

スクリーニング書式の写しを次頁以降に示す。

Appendix 4. Screening Format

Name of Proposed Project:

Data Collection Survey on Water Supply Systems in Cotabato City in the Republic of the Philippines

Project Executing Organization, Project Proponent or Investment Company:

Metro Cotabato Water District (MCWD)

Name, Address, Organization, and Contact Point of a Responsible Officer:

Name: Ms. Melinda Elaine V. BARCIMO

Address: Governor Gutierrez Avenue, Rosary Heights 7, Cotabato City, Philippines 9600

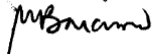
Organization: Metro Cotabato Water District (MCWD), Office of the General Manager

Tel:+63-64-421-1070

Fax:

E-Mail: metrocotabatowaterdistrict@gmail.com

Date: March 14, 2023

Signature: 

Check Items

Please write "to be advised (TBA)" when the details of a project are yet to be determined.

Question 1: Address of project site

Cotabato City / Kalanganan2, Tamontaka Mother, Tamontaka 1

Question 2: Scale and contents of the project (approximate area, facilities area, production, electricity generated, etc.)

2-1. Project profile (scale and contents)

Facilities	Items	Specification
Design intake flow		7,370~12,100 m ³ /day
Maximum daily supply		6,700 m ³ /day(62%)~11,000 m ³ /day
1. Intake facility	Intake pump : Pump room :	2~3 pcs (1 standby) 1
2. Water treatment facilities	Receiving well :	1 pond
	Mixing tank :	2 ponds
	Flocculation basin :	2~4 ponds, vertical baffled channel
	Sedimentation tank :	2~4 lines, Plate settler
	Rapid sand filter :	5~12 tanks, Multimedia filter
	Reservoir :	1~2 tank, 2,400~4000 m ³
	Administration Build. :	1, RC
	Drying bed :	2 beds
	Drainage basin :	2 ponds
	Flow meter/pressure meter :	---
3. Distribution facilities	Pump station :	1 building
	Booster pump :	3~5 (1standby)
	Distribution main :	L= 9.96~18.74km
	SP φ500mm :	L= 3.25~6.12km
	SP φ400mm :	L= 6.71km
	HDPE φ300mm :	L= 2.50km
	HDPE φ250mm :	L= 3.41km
	Pipe bridge/bridge-attached pipe :	2~4
	Distribution branch	L= 9.0~21.0 km
	HDPEφ100:	L= 9.0~21.0 km
Emergency valve φ400:	1 location (non-suspension water method)	
Emergency valve φ300:	1 location (non-suspension water method)	

2-2. How was the necessity of the project confirmed?

Is the project consistent with the higher program/policy?

Yes: Please describe the higher program/policy.

(“Expanding and Renewing Infrastructure” in the “**Medium-term Development Plan, Philippine Development Plan (PDP) 2023-2028**” is the relevant part of the plan.)

No

2-3. Did the proponent consider alternatives before this request?

Yes: Please describe outline of the alternatives

(Rio Grande WTP Expansion Plan, Hanabana WTP Expansion Plan, Tamontaka WTP Expansion Plan)

No.	Alternative Case	Content (up to 2029)
1	Rio Grande WTP Expansion Plan	Daily Maximum Water Supply Amount 25,000 m ³ /day (SDF Phase 1)
2	Hanabana WTP Expansion Plan	Daily Maximum Water Supply Amount 5,000 m ³ /day
3	Tamontaka WTP Expansion Plan	Daily Maximum Water Supply Amount 6,700~11,000 m ³ /day

, No

2-4. Did the proponent implement meetings with the related stakeholders before this request?

Implemented Not implemented

If implemented, please mark the following stakeholders.

Administrative body

Local residents

NGO

Others

(1) The local residents above include socially vulnerable individuals/groups

(Please specify:)

(2) The proponent gave appropriate consideration to ensure participation of the socially vulnerable individuals/groups

Question 3:

Is the project a new one or an ongoing one? In the case of an ongoing project, have you received strong complaints or other comments from local residents?

New Ongoing (with complaints) Ongoing (without complaints)

Other

Question 4:

Is an Environmental Impact Assessment (EIA), including an Initial Environmental Examination (IEE) required for the project according to a law or guidelines of a host country? If yes, is an EIA implemented or planned? If necessary, please fill in the reason why an EIA is required.

Necessary (Implemented Ongoing/planning)

(Reason why EIA is required: Based on the Environmental Impact Statement (EIS), any project activity related to Environmental-Critical Projects (ECP) or Environmentally Critical Areas

(ECA) is required to obtain an Environmental Compliance Certificate (ECC) prior to project implementation.)

Not necessary

Other (please explain:)

Question 5:

In the case that steps were taken for an EIA, was the EIA approved by the relevant laws of the host country? If yes, please note the date of approval and the competent authority.

Approved without a supplementary condition (Date of approval: Competent authority:)

Approved with a supplementary condition (Date of approval: Competent authority:)

Under appraisal

Under implementation

Appraisal process not yet started

Other ()

Question 6:

If the project requires a certificate regarding the environment and society other than an EIA, please indicate the title of said certificate. Was it approved?

Already certified

Requires a certificate but not yet approved

Not required

Other ()

Title of the certificate: (Water Right, Construction and Occupancy Permits for Intake Facility, WTP, and Transmission and Distribution Pipe Routes)

Question 7:

Are any of the following areas present either inside or surrounding the project site?

- | | |
|---|--|
| <input checked="" type="checkbox"/> Water pollution | <input type="checkbox"/> Local economies, such as employment, livelihood, etc. |
| <input type="checkbox"/> Soil pollution | <input type="checkbox"/> Land use and utilization of local resources |
| <input checked="" type="checkbox"/> Waste | <input type="checkbox"/> Social institutions such as social infrastructure and local decision-making institutions |
| <input checked="" type="checkbox"/> Noise and vibration | <input checked="" type="checkbox"/> Existing social infrastructures and services |
| <input checked="" type="checkbox"/> Ground subsidence | <input type="checkbox"/> Socially vulnerable people (Indigenous people, ethnic minorities) |
| <input type="checkbox"/> Offensive odor | <input type="checkbox"/> Socially vulnerable people (People in poverty, persons with disabilities, refugees, internally displaced persons, and minorities) |
| <input checked="" type="checkbox"/> Geographical features | <input type="checkbox"/> Misdistribution of benefits and damages |
| <input checked="" type="checkbox"/> Bottom sediment | <input type="checkbox"/> Local conflicts of interest |
| <input checked="" type="checkbox"/> Biodiversity and ecosystems | <input type="checkbox"/> Limitation of accessibility to information, meetings, etc. on a specific person or group |
| <input type="checkbox"/> Water usage | <input type="checkbox"/> Gender |
| <input checked="" type="checkbox"/> Accidents | <input type="checkbox"/> Children's rights |
| <input type="checkbox"/> Climate change | <input type="checkbox"/> Cultural heritage |
| | <input checked="" type="checkbox"/> Infectious diseases such as HIV/AIDS |
| | <input type="checkbox"/> Others () |
| | Outline of related impact: () |

Question 10:

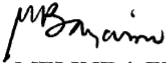
In the case of a project such as a two-step loan or a sector loan, can sub-projects be specified at the present time?

- Yes No

Question 11:

Regarding information disclosure and meetings with stakeholders, if JICA's environmental and social considerations are required, does the proponent agree to information disclosure and meetings with stakeholders through these guidelines?

Yes No



MA. MELINDA ELAINE V. BARCIMO

General Manager

Metro Cotabato Water District

5. 参考資料（収集資料リスト）

番号	資料	形態	オリジナル・コピー	発行機関または入手元	発行年
		図書・ビデオ 地図・写真			
Standard and Manual					
1	OPERATION AND MAINTENANCE MANUAL	Pdf	コピー	LWUA	1977
2	MANUAL of OPERATIONS Philippine National Standards for Drinking Water of 2017 (PNSDW)	Pdf	コピー	Department of Health / MCWD	2017
3-1	WATER SUPPLY MANUAL Part1	Pdf	コピー	DPWH	1991
3-2	WATER SUPPLY MANUAL Part2	Pdf	コピー	DPWH	1991
4-1	Rural Water Supply Volume I -Design Manual	pdf	コピー	The World Bank Office Manila	2012
4-2	Rural Water Supply Volume II -Construction Supervision Manual	pdf	コピー	The World Bank Office Manila	2012
5	TECHNICAL STANDARDS MANUAL SECOND EDITION	pdf	コピー	LWUA	1979
6	Revised Guidelines in the Preparation of Approved Budget for the Contract (ABC)	pdf	N/A	DPWH	2016
7	ICC Project Evaluation Procedures and Guidelines	pdf	コピー	NEDA	2004
8	Pipeline Preventive Maintenance Plan Procedure	Word	コピー	MCWD	2020
9	Planning and Design Control Procedure	Word	コピー	MCWD	2019
10	Project Works Implementation Procedure	Word	コピー	MCWD	2020
11	Pumping Station Daily Operation	Word	コピー	MCWD	2017
12	Repair and Maintenance of Water Pipeline Procedure	Word	コピー	MCWD	2022
13	Watershed Environmental Sustainability Procedure	Word	コピー	MCWD	2017
Annual Reports					
1	2017 Annual Report	PDF	コピー	MCWD	2017
2	2018 Annual Report	PDF	コピー	MCWD	2018
3	2019 Annual Report	PDF	コピー	MCWD	2019
4	2020 Annual Report	PDF	コピー	MCWD	2020
5	2021 Annual Report	PDF	コピー	MCWD	2021
6	2017 Annual Financial Report	PDF	コピー	MCWD	2017
7	2018 Annual Financial Report	PDF	コピー	MCWD	2018
8	2019 Annual Financial Report	PDF	コピー	MCWD	2019
9	2020 Annual Financial Report	PDF	コピー	MCWD	2020
10	2021 Annual Financial Report	PDF	コピー	MCWD	2021
Cost Estimation					
1	Example of Bill of Materials	pdf / Excel	コピー	MCWD	2022
2	Example of Program of Works	Excel	コピー	MCWD	2022
3	Example of Drawings for cost estimation	pdf	オリジナル	MCWD	2022
4	Price lists of Procurement Dept.	pdf	コピー	MCWD	2022
Drawings and Data Of Facilities					

番号	資料	形態	オリジナル・ コピー	発行機関または 入手元	発行年
		図書・ビデオ 地図・写真			
1	Contract Drawings for Cotabato City Water Supply Improvement Projects	jpeg	オリジナル	LWUA / MCWD	不明
2	Geotechnical Investigation Report	pdf	コピー	MEGATESTING Center INC. / MCWD	2021
3	Drawings of Existing Dimapatoy	Pdf	コピー	MCWD	複数あり
4	Drawings of Expansion Dimapatoy WTP	Pdf	コピー	MCWD	2022
5	Spec. for PS	Pdf	コピー	MCWD	2022
6	Data for Pipe & Valves	pdf	コピー	MCWD	2022
7	MCWD NRW 2015-2021	pdf	コピー	MCWD	2022
8	Service Connection Growth	pdf	コピー	MCWD	2022
9	Residual Chlorine June 2022	pdf	コピー	MCWD	2022
Catalogues					
1	Profile of HANABANA	pdf	コピー	HANABANA Bulk	2022
2	JHAYCOR INDUSTRIES, INC. Manufacturer of HDPE & uPVC	pdf	コピー	MCWD	不明
3	Product Brochure of Water Industries Network Corp.	pdf	コピー	MCWD	2022
4	Product CATALOG of SNwide	pdf	コピー	MCWD	2022
Reports on Flood Management Master Plans					
1	Updating of Mindanao River Basin Flood Management Master Plan Main Report	pdf	コピー	DPWH	2017
2	Part 1: Flood Control Master Plan in Rio Grande de Mindanao and Tamontaka River Part 2: Flood Control Master Plan in Ambal-Simuay River Part 3: Flood Control Master Plan in Pulangi River Part 4: Flood Control Master Plan in Ala River Part 5: Flood Control Master Plan in Buluan-Alip River	pdf	コピー	DPWH	2017
3	Detailed Engineering Design of Various Flood Management Projects in Mindanao River Basin (Rio Grande de Mindanao)	pdf	コピー	DPWH	2017
4	Detailed Engineering Design of Various Flood Management Projects in Mindanao River Basin (Tamontaka River)	pdf	コピー	DPWH	2017
5	Detailed Engineering Design (Rio Grande de Mindanao & Tamontaka River) Volume I: Detailed Engineering Design Report Volume II: Tender Drawings Volume III: Survey Report	pdf	コピー	DPWH	2017

番号	資料	形態	オリジナル・コピー	発行機関または入手元	発行年
		図書・ビデオ 地図・写真			
	Volume IV: Geological and Geotechnical Report Volume V: Quantity Calculations Volume VI: Bid Documents				
6	Monthly Production at Water Sources	pdf	コピー	MCWD	2017-2022
7	Monthly Rainfall 1. Cotabato City 2. El Salvador 3. General Santos 4. Lumbia 5. Davao City 6. Malabalay	Excel	コピー	PAGASA HQ	2012-2021
8	Situational Report No 27 for Effects of TS “PAENG” in BARMM	pdf	コピー	Department of National Defense, Office of Civil Defense, BARMM, PAGASA Cotabato Airport	2022.11
Other Documents					
1	Location Map of the High Voltage Transmission Lines	jpeg	コピー	Cotabato light and Power Co,	2022
2	Candidate Land for Tamontaka WTP	jpeg	コピー	MCWD	2022
3	Citizen’s Charter 2021 Edition	PDF	コピー	MCWD	2021
4	Amended P.D. 198	PDF	コピー	LWUA	2021
5	2018 Family Income and Expenditure Survey	PDF	コピー	Philippines Statistics Authority	2018

6. その他資料・情報

6-1. 人口予測及び水需要予測関連データ

人口予測及び水需要予測関連データを次頁以降に示す。

- (1) 人口予測総括（2015年～2040年）
- (2) 人口予測内訳（2010年～2040年）
- (3) MCWDによる給水人口実績（2017年～2022年）
- (4) MCWDの給水区域内人口（2015年～2040年）
- (5) MCWDの給水人口（2017年～2040年）（既存分）
- (6) MCWDの給水人口（2026年～2040年）（拡張分）
- (7) MCWDの給水人口（2026年～2040年）（既存分+拡張分）

(1) 人口予測総括 (2015年～2040年)

表 A6-1 人口予測総括 (2015年～2040年)

City / Municipality	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Cotabato City (JICA MP Study)	299,438	304,309	309,305	314,429	319,685	325,079	331,539	338,127	344,847	351,700	358,689	365,816	373,086
Cotabato City	299,438	304,309	309,305	314,429	319,685	325,079	330,615	336,297	342,132	348,125	354,281	360,606	367,107
Sultan Kudarat	95,201	97,056	98,973	100,954	103,002	105,121	107,314	109,585	111,939	114,378	116,908	119,534	122,260
Datu Odin Sinsuat	99,210	102,438	105,800	109,305	112,958	116,768	120,743	124,893	129,226	133,753	138,486	143,436	148,616
Total	493,849	503,803	514,078	524,687	535,645	546,968	559,597	572,606	586,011	599,831	614,082	628,786	643,961

City / Municipality	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Cotabato City (JICA MP Study)	380,500	387,579	394,789	402,134	409,615	417,236	424,998	432,905	440,958	449,162	457,518	466,030	474,700
Cotabato City	373,791	380,665	387,735	395,011	402,501	410,213	418,156	426,341	434,778	443,478	452,453	461,714	471,275
Sultan Kudarat	125,092	128,036	131,098	134,284	137,601	141,057	144,660	148,418	152,340	156,435	160,715	165,189	169,869
Datu Odin Sinsuat	154,040	159,723	165,682	171,934	178,500	185,400	192,657	200,298	208,350	216,844	225,814	235,297	245,334
Total	659,631	675,337	691,569	708,352	725,716	743,693	762,316	781,621	801,649	822,442	844,047	866,515	889,903

出典: JICA 調査団

(2) 人口予測内訳 (2010年～2040年)

表 A6-2 人口予測内訳 (コタバト市) (2010年～2026年)

	ID	Year	2010	2015	2016	2017	2018	2019	2020	APGR(%) 2015-2020	Urban	2021	2022	2023	2024	2025	2026
		Total(3 city & municipality)		493,849	503,803	514,078	524,687	535,645	546,968	2.06		559,596	572,605	586,012	599,831	614,083	628,785
		Total(5 city & municipality)		531,402	542,081	553,103	564,484	576,240	588,388	2.06		601,869	615,760	630,079	644,843	660,073	675,788
City/Municipality		Barangay															
Cotabato City			271,786	299,438	304,309	309,305	314,429	319,685	325,079	1.66		331,539	338,127	344,847	351,700	358,689	365,816
	C01	Bagua	18,050	18,137	18,493	18,856	19,225	19,602	19,987	1.96	1	20,436	20,892	21,354	21,824	22,300	22,782
	C02	Bagua I	7,036	9,206	9,369	9,535	9,703	9,875	10,050	1.77	1	10,256	10,466	10,677	10,891	11,108	11,327
	C03	Bagua II	19,301	19,720	19,775	19,831	19,886	19,942	19,998	0.28	1	20,110	20,220	20,327	20,431	20,532	20,631
	C04	Bagua III	6,802	6,847	6,879	6,910	6,942	6,974	7,006	0.46	1	7,058	7,109	7,160	7,209	7,258	7,306
	C05	Kalanganan	14,810	15,019	15,279	15,544	15,813	16,087	16,366	1.73	1	16,696	17,030	17,368	17,710	18,056	18,405
	C06	Kalanganan I	5,718	5,808	5,949	6,093	6,240	6,391	6,546	2.42	1	6,723	6,904	7,089	7,277	7,470	7,666
	C07	Kalanganan II	5,115	5,999	6,111	6,224	6,340	6,458	6,578	1.86	1	6,719	6,862	7,007	7,154	7,303	7,453
	C08	Poblacion	18,857	20,734	20,900	21,068	21,237	21,407	21,579	0.80	1	21,813	22,046	22,278	22,509	22,738	22,966
	C09	Poblacion I	4,463	5,677	5,754	5,833	5,912	5,992	6,074	1.36	0	6,174	6,274	6,376	6,477	6,580	6,682
	C10	Poblacion II	6,241	6,302	6,396	6,492	6,589	6,688	6,788	1.50	1	6,909	7,031	7,154	7,278	7,402	7,528
	C11	Poblacion III	2,807	2,985	3,072	3,161	3,253	3,348	3,445	2.91	0	3,555	3,668	3,784	3,903	4,025	4,151
	C12	Poblacion IV	6,406	6,456	6,551	6,648	6,746	6,846	6,947	1.48	1	7,069	7,193	7,317	7,442	7,568	7,695
	C13	Poblacion V	2,929	3,070	3,129	3,189	3,250	3,312	3,375	1.91	1	3,449	3,524	3,601	3,678	3,756	3,836
	C14	Poblacion VI	5,096	5,151	5,178	5,205	5,233	5,260	5,288	0.53	1	5,331	5,373	5,415	5,456	5,496	5,536
	C15	Poblacion VII	15,485	15,712	15,827	15,942	16,058	16,175	16,293	0.73	1	16,458	16,621	16,784	16,945	17,106	17,265
	C16	Poblacion VIII	6,580	8,786	8,843	8,901	8,959	9,018	9,077	0.65	1	9,162	9,246	9,330	9,412	9,494	9,575
	C17	Poblacion IX	5,893	5,998	6,197	6,403	6,615	6,835	7,062	3.32	1	7,317	7,580	7,851	8,130	8,418	8,715
	C18	Rosary Heights	13,031	13,943	14,168	14,397	14,630	14,867	15,107	1.62	1	15,394	15,684	15,977	16,273	16,572	16,873
	C19	Rosary Heights I	4,708	3,931	4,012	4,095	4,179	4,265	4,353	2.06	0	4,455	4,559	4,664	4,771	4,880	4,991
	C20	Rosary Heights II	4,742	5,006	4,878	4,754	4,633	4,515	4,400	-2.55	1	4,300	4,201	4,105	4,009	3,915	3,823
	C21	Rosary Heights III	9,123	10,786	11,042	11,304	11,572	11,846	12,127	2.37	1	12,449	12,778	13,114	13,456	13,804	14,160
	C22	Rosary Heights IV	4,304	4,377	4,426	4,475	4,525	4,576	4,627	1.12	0	4,692	4,757	4,822	4,887	4,952	5,017
	C23	Rosary Heights V	3,994	5,870	5,910	5,950	5,991	6,032	6,073	0.68	1	6,132	6,190	6,247	6,305	6,361	6,417
	C24	Rosary Heights VI	5,107	6,846	6,979	7,115	7,254	7,395	7,539	1.95	1	7,707	7,878	8,051	8,227	8,405	8,586
	C25	Rosary Heights VII	7,566	9,257	9,428	9,603	9,781	9,962	10,146	1.85	1	10,363	10,582	10,805	11,030	11,259	11,490
	C26	Rosary Heights VIII	6,523	8,524	8,791	9,067	9,351	9,645	9,947	3.14	1	10,288	10,638	10,999	11,370	11,752	12,145
	C27	Rosary Heights IX	6,008	7,802	7,930	8,060	8,192	8,326	8,462	1.64	1	8,625	8,789	8,955	9,123	9,292	9,463
	C28	Rosary Heights X	13,025	15,732	15,901	16,072	16,245	16,420	16,597	1.08	1	16,823	17,048	17,275	17,501	17,727	17,954
	C29	Rosary Heights XI	6,027	7,864	8,008	8,155	8,305	8,458	8,613	1.84	1	8,796	8,981	9,168	9,358	9,551	9,745
	C30	Rosary Heights XII	4,554	4,664	4,747	4,831	4,916	5,003	5,092	1.77	0	5,197	5,303	5,410	5,519	5,628	5,740
	C31	Rosary Heights XIII	4,500	4,947	5,074	5,204	5,337	5,474	5,614	2.56	1	5,774	5,937	6,105	6,276	6,450	6,629
	C32	Tamontaka	11,669	12,027	12,415	12,817	13,230	13,658	14,099	3.23	1	14,595	15,106	15,633	16,175	16,734	17,308
	C33	Tamontaka I	3,743	4,423	4,505	4,588	4,673	4,760	4,848	1.85	0	4,952	5,057	5,163	5,271	5,380	5,490
	C34	Tamontaka II	4,034	4,184	4,494	4,827	5,184	5,568	5,980	7.40	0	6,441	6,936	7,468	8,039	8,653	9,312
	C35	Tamontaka III	2,679	2,730	2,817	2,906	2,998	3,093	3,191	3.17	0	3,301	3,415	3,532	3,652	3,776	3,904
	C36	Tamontaka IV	2,446	3,741	3,830	3,922	4,016	4,112	4,210	2.39	0	4,323	4,438	4,555	4,675	4,797	4,921
	C37	Tamontaka V	2,414	1,177	1,251	1,329	1,412	1,501	1,595	6.27	0	1,700	1,811	1,929	2,055	2,188	2,330

出典: JICA 調査団

表 A6-3 人口予測内訳（コタバト市）（2027年～2040年）

	ID	Year	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
		Total(3 city & municipality)	643,961	659,631	675,337	691,568	708,352	725,716	743,693	762,316	781,621	801,648	822,441	844,046	866,515	889,903
		Total(5 city & municipality)	692,014	708,773	725,608	743,010	761,010	779,637	798,926	818,912	839,635	861,136	883,464	906,667	930,800	955,922
City/Municipality		Barangay														
Cotabato City			373,086	380,500	387,579	394,789	402,134	409,615	417,236	424,998	432,905	440,958	449,162	457,518	466,030	474,700
	C01	Bagua	23,271	23,766	24,238	24,714	25,195	25,680	26,169	26,663	27,160	27,660	28,164	28,671	29,180	29,691
	C02	Bagua I	11,548	11,772	11,983	12,195	12,409	12,624	12,841	13,058	13,277	13,496	13,716	13,936	14,157	14,378
	C03	Bagua II	20,726	20,818	20,881	20,940	20,995	21,047	21,094	21,138	21,177	21,211	21,242	21,267	21,288	21,303
	C04	Bagua III	7,353	7,399	7,434	7,469	7,502	7,534	7,564	7,593	7,621	7,647	7,672	7,695	7,716	7,736
	C05	Kalanganan	18,758	19,114	19,449	19,787	20,126	20,468	20,811	21,156	21,502	21,849	22,197	22,546	22,894	23,243
	C06	Kalanganan I	7,865	8,069	8,266	8,467	8,670	8,877	9,087	9,300	9,516	9,735	9,957	10,182	10,409	10,639
	C07	Kalanganan II	7,606	7,760	7,906	8,053	8,201	8,351	8,502	8,653	8,806	8,959	9,113	9,268	9,423	9,579
	C08	Poblacion	23,192	23,416	23,609	23,799	23,986	24,170	24,351	24,528	24,701	24,870	25,035	25,195	25,351	25,502
	C09	Poblacion I	6,786	6,889	6,984	7,080	7,175	7,270	7,365	7,460	7,554	7,648	7,741	7,834	7,926	8,018
	C10	Poblacion II	7,655	7,782	7,900	8,019	8,137	8,256	8,375	8,494	8,613	8,732	8,851	8,969	9,086	9,203
	C11	Poblacion III	4,279	4,411	4,540	4,672	4,807	4,945	5,086	5,230	5,377	5,527	5,680	5,836	5,995	6,156
	C12	Poblacion IV	7,823	7,952	8,071	8,190	8,310	8,430	8,549	8,669	8,789	8,908	9,027	9,146	9,264	9,382
	C13	Poblacion V	3,916	3,998	4,075	4,153	4,232	4,311	4,391	4,472	4,553	4,635	4,717	4,800	4,882	4,965
	C14	Poblacion VI	5,575	5,614	5,645	5,674	5,703	5,731	5,758	5,784	5,809	5,833	5,856	5,877	5,897	5,916
	C15	Poblacion VII	17,422	17,578	17,709	17,839	17,966	18,091	18,213	18,332	18,448	18,561	18,670	18,776	18,878	18,977
	C16	Poblacion VIII	9,655	9,734	9,800	9,864	9,927	9,989	10,049	10,107	10,163	10,218	10,270	10,321	10,369	10,416
	C17	Poblacion IX	9,021	9,335	9,647	9,968	10,297	10,635	10,982	11,338	11,704	12,078	12,462	12,855	13,258	13,670
	C18	Rosary Heights	17,177	17,483	17,770	18,057	18,346	18,636	18,927	19,219	19,511	19,803	20,096	20,388	20,680	20,971
	C19	Rosary Heights I	5,103	5,216	5,325	5,435	5,546	5,658	5,772	5,886	6,002	6,118	6,236	6,354	6,473	6,593
	C20	Rosary Heights II	3,733	3,643	3,551	3,461	3,372	3,285	3,200	3,116	3,034	2,953	2,874	2,796	2,720	2,645
	C21	Rosary Heights III	14,522	14,890	15,247	15,609	15,976	16,350	16,728	17,112	17,501	17,895	18,294	18,698	19,107	19,520
	C22	Rosary Heights IV	5,083	5,148	5,206	5,265	5,323	5,380	5,437	5,494	5,550	5,606	5,660	5,714	5,768	5,820
	C23	Rosary Heights V	6,473	6,528	6,574	6,619	6,663	6,706	6,748	6,789	6,829	6,867	6,905	6,941	6,975	7,008
	C24	Rosary Heights VI	8,769	8,955	9,131	9,309	9,489	9,670	9,853	10,037	10,223	10,410	10,598	10,787	10,977	11,168
	C25	Rosary Heights VII	11,724	11,960	12,184	12,410	12,638	12,867	13,098	13,331	13,565	13,799	14,036	14,272	14,510	14,748
	C26	Rosary Heights VIII	12,548	12,963	13,372	13,792	14,222	14,663	15,114	15,577	16,050	16,534	17,029	17,535	18,052	18,579
	C27	Rosary Heights IX	9,635	9,809	9,972	10,135	10,300	10,465	10,630	10,796	10,962	11,129	11,296	11,462	11,629	11,795
	C28	Rosary Heights X	18,180	18,406	18,608	18,808	19,008	19,206	19,402	19,596	19,788	19,978	20,165	20,349	20,531	20,709
	C29	Rosary Heights XI	9,942	10,141	10,330	10,520	10,711	10,904	11,098	11,294	11,490	11,687	11,886	12,085	12,284	12,484
	C30	Rosary Heights XII	5,852	5,965	6,072	6,180	6,288	6,397	6,507	6,618	6,728	6,840	6,951	7,063	7,175	7,287
	C31	Rosary Heights XIII	6,811	6,997	7,177	7,361	7,549	7,740	7,933	8,131	8,331	8,535	8,741	8,951	9,163	9,379
	C32	Tamontaka	17,900	18,508	19,110	19,728	20,362	21,012	21,679	22,363	23,063	23,780	24,515	25,266	26,034	26,820
	C33	Tamontaka I	5,602	5,715	5,822	5,930	6,039	6,149	6,259	6,371	6,482	6,595	6,708	6,821	6,935	7,048
	C34	Tamontaka II	10,020	10,780	11,580	12,438	13,357	14,341	15,394	16,522	17,728	19,019	20,399	21,874	23,451	25,135
	C35	Tamontaka III	4,035	4,169	4,302	4,439	4,579	4,722	4,870	5,020	5,174	5,332	5,494	5,659	5,827	6,000
	C36	Tamontaka IV	5,048	5,177	5,302	5,429	5,558	5,688	5,821	5,956	6,093	6,231	6,371	6,513	6,656	6,801
	C37	Tamontaka V	2,481	2,640	2,806	2,982	3,169	3,366	3,575	3,796	4,030	4,278	4,540	4,817	5,109	5,418

出典: JICA 調査団

表 A6-4 人口予測内訳 (SK 町) (2010 年～2026 年)

	ID	Year	2010	2015	2016	2017	2018	2019	2020	APGR(%) 2015-2020	Urban	2021	2022	2023	2024	2025	2026
City/Municipality		Barangay															
Sultan Kudarat			95,201	97,056	98,973	100,954	103,002	105,121	2.00			107,314	109,585	111,939	114,378	116,908	119,534
	S01	Alamada	1,584	1,597	1,611	1,624	1,638	1,652	0.84	0	1,666	1,680	1,694	1,708	1,723	1,737	
	S02	Banatin	1,886	1,892	1,898	1,904	1,910	1,916	0.32	0	1,922	1,928	1,934	1,940	1,946	1,953	
	S03	Banubo	1,614	1,725	1,843	1,969	2,105	2,249	6.86	0	2,403	2,568	2,744	2,933	3,134	3,349	
	S04	Bulalo	7,503	7,573	7,644	7,716	7,788	7,861	0.94	1	7,935	8,009	8,084	8,160	8,236	8,313	
	S05	Bulibod	1,577	1,599	1,621	1,643	1,666	1,689	1.38	0	1,712	1,736	1,760	1,784	1,809	1,834	
	S06	Calsada	5,732	5,751	5,769	5,788	5,807	5,826	0.33	0	5,845	5,864	5,883	5,902	5,922	5,941	
	S07	Crossing Simuay	5,510	5,622	5,736	5,853	5,972	6,093	2.03	1	6,217	6,343	6,472	6,604	6,738	6,875	
	S08	Dalumangcob	6,800	6,864	6,928	6,993	7,059	7,125	0.94	1	7,192	7,259	7,327	7,396	7,466	7,536	
	S09	Damaniog	1,003	1,086	1,175	1,272	1,377	1,490	8.24	0	1,613	1,746	1,889	2,045	2,213	2,396	
	S10	Darapanan	1,787	1,902	2,024	2,155	2,293	2,441	6.44	0	2,598	2,765	2,943	3,133	3,334	3,549	
	S11	Gang	3,547	3,624	3,702	3,782	3,864	3,947	2.16	0	4,032	4,119	4,208	4,299	4,392	4,487	
	S12	Inawan	593	609	626	643	660	678	2.72	0	696	715	735	755	775	796	
	S13	Kabuntalan	678	722	769	819	872	928	6.48	0	988	1,052	1,120	1,193	1,270	1,352	
	S14	Kakar	1,534	1,600	1,669	1,741	1,816	1,894	4.31	0	1,976	2,061	2,149	2,242	2,338	2,439	
	S15	Kapimpilan	1,880	1,899	1,919	1,938	1,958	1,978	1.02	0	1,998	2,019	2,039	2,060	2,081	2,102	
	S16	Katamlangan	1,386	1,389	1,392	1,394	1,397	1,400	0.20	0	1,403	1,406	1,408	1,411	1,414	1,417	
	S17	Katidtuan	3,291	3,294	3,297	3,301	3,304	3,307	0.10	0	3,310	3,313	3,317	3,320	3,323	3,326	
	S18	Katuli	4,752	4,807	4,863	4,919	4,976	5,034	1.16	0	5,092	5,151	5,211	5,272	5,333	5,395	
	S19	Ladia	1,200	1,249	1,299	1,352	1,406	1,463	4.04	0	1,522	1,584	1,648	1,714	1,784	1,856	
	S20	Limbo	5,292	5,412	5,534	5,660	5,788	5,919	2.26	1	6,053	6,190	6,330	6,474	6,620	6,770	
	S21	Maidapa	1,554	1,575	1,596	1,617	1,639	1,661	1.34	0	1,683	1,706	1,729	1,752	1,775	1,799	
	S22	Makaguiling	2,596	2,638	2,681	2,725	2,770	2,815	1.63	0	2,861	2,908	2,955	3,003	3,052	3,102	
	S23	Matengen	2,465	2,500	2,535	2,571	2,608	2,645	1.42	0	2,683	2,721	2,759	2,798	2,838	2,878	
	S24	Mulaug	833	878	926	976	1,028	1,084	5.41	0	1,143	1,204	1,270	1,338	1,411	1,487	
	S25	Nalanan	949	973	998	1,024	1,050	1,077	2.56	0	1,105	1,133	1,162	1,192	1,222	1,254	
	S26	Nara	1,593	1,631	1,669	1,708	1,749	1,790	2.36	1	1,832	1,875	1,920	1,965	2,011	2,059	
	S27	Nekitan	700	724	750	776	803	831	3.49	0	860	890	921	953	987	1,021	
	S28	Olas	943	956	969	983	996	1,010	1.38	0	1,024	1,038	1,052	1,067	1,082	1,097	
	S29	Panatan	2,446	2,471	2,496	2,521	2,547	2,573	1.02	0	2,599	2,626	2,652	2,679	2,707	2,734	
	S30	Pigcalagan	2,816	2,852	2,889	2,927	2,965	3,003	1.29	1	3,042	3,081	3,121	3,162	3,202	3,244	
	S31	Pigkelegan	2,713	2,756	2,800	2,845	2,891	2,937	1.60	0	2,984	3,032	3,080	3,129	3,179	3,230	
	S32	Pinaring	2,429	2,516	2,605	2,698	2,794	2,894	3.57	0	2,997	3,104	3,215	3,329	3,448	3,571	
	S33	Pingping	1,027	1,056	1,085	1,116	1,147	1,179	2.80	0	1,212	1,246	1,281	1,317	1,353	1,391	
	S34	Raguisi	2,031	2,081	2,132	2,184	2,237	2,292	2.45	0	2,348	2,406	2,464	2,525	2,587	2,650	
	S35	Rebukan	2,365	2,423	2,482	2,543	2,605	2,669	2.45	0	2,734	2,801	2,870	2,940	3,012	3,086	
	S36	Salimbao	4,694	4,773	4,852	4,934	5,016	5,100	1.67	1	5,185	5,272	5,360	5,450	5,541	5,634	
	S37	Sambolawan	1,081	1,121	1,163	1,206	1,251	1,297	3.71	0	1,345	1,395	1,447	1,500	1,556	1,614	
	S38	Senditan	532	575	622	672	726	785	8.09	1	849	917	991	1,072	1,158	1,252	
	S39	Ungap	2,285	2,343	2,402	2,463	2,525	2,589	2.53	0	2,654	2,722	2,790	2,861	2,933	3,008	

出典: JICA 調査団

表 A6-5 人口予測内訳 (SK 町) (2027 年～2040 年)

	ID	Year	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
City/Municipality		Barangay														
Sultan Kudarat			122,260	125,092	128,036	131,098	134,284	137,601	141,057	144,660	148,418	152,340	156,435	160,715	165,189	169,869
	S01	Alamada	1,752	1,767	1,782	1,797	1,812	1,827	1,843	1,858	1,874	1,890	1,906	1,922	1,938	1,954
	S02	Banatin	1,959	1,965	1,971	1,977	1,984	1,990	1,996	2,003	2,009	2,015	2,022	2,028	2,034	2,041
	S03	Banubo	3,579	3,824	4,086	4,367	4,666	4,986	5,329	5,694	6,085	6,502	6,948	7,425	7,934	8,479
	S04	Bulalo	8,391	8,470	8,549	8,629	8,710	8,791	8,874	8,957	9,041	9,125	9,211	9,297	9,384	9,472
	S05	Bulibod	1,859	1,885	1,911	1,937	1,964	1,991	2,019	2,047	2,075	2,104	2,133	2,162	2,192	2,222
	S06	Calsada	5,960	5,980	5,999	6,019	6,038	6,058	6,078	6,097	6,117	6,137	6,157	6,177	6,197	6,218
	S07	Crossing Simuay	7,014	7,157	7,302	7,451	7,602	7,756	7,914	8,075	8,239	8,406	8,577	8,751	8,929	9,111
	S08	Dalumangcob	7,606	7,678	7,750	7,822	7,896	7,970	8,045	8,120	8,196	8,273	8,351	8,429	8,508	8,588
	S09	Damaniog	2,593	2,807	3,038	3,288	3,559	3,852	4,170	4,513	4,885	5,287	5,723	6,194	6,704	7,257
	S10	Darapanan	3,777	4,020	4,279	4,555	4,848	5,160	5,492	5,845	6,222	6,622	7,048	7,502	7,985	8,498
	S11	Gang	4,584	4,683	4,784	4,887	4,993	5,101	5,211	5,324	5,439	5,556	5,676	5,799	5,924	6,052
	S12	Inawan	818	840	863	886	910	935	960	987	1,013	1,041	1,069	1,098	1,128	1,159
	S13	Kabuntalan	1,440	1,533	1,633	1,739	1,851	1,971	2,099	2,235	2,380	2,534	2,698	2,873	3,059	3,257
	S14	Kakar	2,544	2,654	2,768	2,887	3,012	3,141	3,277	3,418	3,565	3,718	3,879	4,046	4,220	4,401
	S15	Kapimpilan	2,124	2,146	2,167	2,190	2,212	2,235	2,257	2,280	2,304	2,327	2,351	2,375	2,399	2,424
	S16	Katamlangan	1,420	1,423	1,426	1,428	1,431	1,434	1,437	1,440	1,443	1,446	1,449	1,452	1,455	1,457
	S17	Katiduan	3,330	3,333	3,336	3,339	3,342	3,346	3,349	3,352	3,355	3,359	3,362	3,365	3,369	3,372
	S18	Katuli	5,457	5,520	5,584	5,649	5,715	5,781	5,848	5,916	5,984	6,054	6,124	6,195	6,267	6,340
	S19	Ladia	1,931	2,009	2,090	2,175	2,262	2,354	2,449	2,548	2,651	2,758	2,870	2,986	3,107	3,232
	S20	Limbo	6,924	7,080	7,241	7,405	7,572	7,744	7,919	8,099	8,282	8,470	8,661	8,857	9,058	9,263
	S21	Maidapa	1,823	1,848	1,873	1,898	1,923	1,949	1,975	2,001	2,028	2,055	2,083	2,111	2,139	2,168
	S22	Makaguiling	3,153	3,204	3,257	3,310	3,364	3,419	3,475	3,532	3,589	3,648	3,707	3,768	3,829	3,892
	S23	Matengen	2,919	2,961	3,003	3,045	3,089	3,132	3,177	3,222	3,268	3,314	3,361	3,409	3,457	3,506
	S24	Mulaug	1,567	1,652	1,741	1,836	1,935	2,040	2,150	2,266	2,389	2,518	2,654	2,798	2,949	3,109
	S25	Nalinan	1,286	1,319	1,352	1,387	1,423	1,459	1,497	1,535	1,574	1,615	1,656	1,698	1,742	1,787
	S26	Nara	2,107	2,157	2,208	2,260	2,313	2,368	2,424	2,481	2,540	2,600	2,661	2,724	2,788	2,854
	S27	Nekitan	1,057	1,093	1,132	1,171	1,212	1,254	1,298	1,343	1,390	1,439	1,489	1,541	1,595	1,650
	S28	Olas	1,112	1,127	1,143	1,159	1,175	1,191	1,207	1,224	1,241	1,258	1,275	1,293	1,311	1,329
	S29	Panatan	2,762	2,790	2,818	2,847	2,876	2,905	2,935	2,965	2,995	3,025	3,056	3,087	3,119	3,150
	S30	Pigcalagan	3,286	3,328	3,371	3,415	3,459	3,504	3,549	3,595	3,642	3,689	3,737	3,785	3,834	3,884
	S31	Pigkelegan	3,282	3,334	3,388	3,442	3,497	3,553	3,610	3,668	3,726	3,786	3,846	3,908	3,970	4,034
	S32	Pinaring	3,698	3,830	3,967	4,108	4,255	4,406	4,563	4,726	4,895	5,069	5,250	5,437	5,631	5,832
	S33	Pingping	1,430	1,470	1,512	1,554	1,597	1,642	1,688	1,735	1,784	1,834	1,885	1,938	1,992	2,048
	S34	Raguisi	2,715	2,781	2,849	2,919	2,990	3,064	3,139	3,215	3,294	3,375	3,457	3,542	3,629	3,717
	S35	Rebuen	3,161	3,239	3,318	3,399	3,482	3,568	3,655	3,745	3,836	3,930	4,026	4,125	4,226	4,329
	S36	Salimbao	5,728	5,824	5,921	6,020	6,121	6,224	6,328	6,433	6,541	6,651	6,762	6,875	6,990	7,107
	S37	Sambolawan	1,674	1,736	1,800	1,867	1,936	2,008	2,083	2,160	2,240	2,323	2,410	2,499	2,592	2,688
	S38	Senditan	1,353	1,463	1,581	1,709	1,847	1,997	2,159	2,333	2,522	2,726	2,947	3,185	3,443	3,721
	S39	Ungap	3,084	3,162	3,242	3,324	3,408	3,494	3,582	3,673	3,766	3,861	3,959	4,059	4,162	4,267

出典: JICA 調査団

表 A6-6 人口予測内訳 (DOS 町) (2010 年~2026 年)

	ID	Year	2010	2015	2016	2017	2018	2019	2020	APGR(%) 2015-2020	Urban	2021	2022	2023	2024	2025	2026
City/Municipality		Barangay															
Datu Odin Sinsuat				99,210	102,438	105,800	109,305	112,958	116,768	3.31		120,743	124,893	129,226	133,753	138,486	143,436
	D01	Ambolodto		1392	1,404	1,417	1,429	1,442	1455	0.89	0	1,468	1,481	1,494	1,507	1,521	1,534
	D02	Awang		11897	12,219	12,549	12,889	13,237	13595	2.70	0	13,963	14,340	14,728	15,126	15,535	15,955
	D03	Badak		1722	1,790	1,861	1,935	2,011	2091	3.96	0	2,174	2,260	2,349	2,442	2,539	2,640
	D04	Bagoenged		2056	2,065	2,073	2,082	2,090	2099	0.41	0	2,108	2,116	2,125	2,134	2,143	2,152
	D05	Baka		2775	2,832	2,891	2,950	3,011	3073	2.06	0	3,136	3,201	3,267	3,334	3,403	3,473
	D06	Benolen		1720	1,787	1,857	1,930	2,006	2084	3.91	0	2,166	2,250	2,338	2,430	2,525	2,624
	D07	Bitu		1285	1,321	1,358	1,396	1,435	1475	2.80	0	1,516	1,559	1,602	1,647	1,693	1,740
	D08	Bongued		1838	1,841	1,844	1,847	1,850	1853	0.16	0	1,856	1,859	1,862	1,865	1,868	1,871
	D09	Bugawas		1942	2,072	2,210	2,358	2,515	2683	6.68	0	2,862	3,053	3,257	3,475	3,707	3,954
	D10	Capiton		2897	3,034	3,178	3,328	3,485	3650	4.73	0	3,823	4,003	4,193	4,391	4,599	4,816
	D11	Dados		2087	2,162	2,239	2,320	2,403	2489	3.59	0	2,578	2,671	2,766	2,866	2,968	3,075
	D12	Dalican Poblacion		14094	14,640	15,206	15,795	16,406	17041	3.87	1	17,701	18,386	19,097	19,836	20,604	21,402
	D13	Dinaig Proper		3947	4,020	4,094	4,170	4,247	4326	1.85	0	4,406	4,488	4,571	4,655	4,741	4,829
	D14	Dulangan		950	970	991	1,012	1,034	1056	2.14	0	1,079	1,102	1,125	1,149	1,174	1,199
	D15	Kakar		491	561	640	731	835	953	14.18	0	1,088	1,243	1,419	1,620	1,850	2,112
	D16	Kenebeka		1262	1,312	1,365	1,419	1,476	1535	3.99	0	1,596	1,660	1,726	1,795	1,867	1,942
	D17	Kurintem		3229	3,271	3,314	3,358	3,401	3446	1.31	0	3,491	3,537	3,583	3,630	3,678	3,726
	D18	Kusiong		1499	1,552	1,606	1,663	1,721	1782	3.52	0	1,845	1,910	1,977	2,046	2,118	2,193
	D19	Labungan		2712	2,800	2,890	2,984	3,080	3180	3.24	0	3,283	3,389	3,499	3,612	3,729	3,849
	D20	Linek		1929	1,954	1,979	2,004	2,030	2056	1.28	0	2,082	2,109	2,136	2,164	2,191	2,219
	D21	Makir		3974	4,190	4,419	4,659	4,913	5181	5.45	0	5,463	5,761	6,075	6,406	6,755	7,123
	D22	Margues		1678	1,687	1,696	1,705	1,715	1724	0.54	0	1,733	1,743	1,752	1,762	1,771	1,781
	D23	Mompong		1494	1,514	1,534	1,554	1,574	1595	1.32	0	1,616	1,637	1,659	1,681	1,703	1,725
	D24	Nekitan		1885	1,929	1,973	2,019	2,066	2114	2.32	0	2,163	2,213	2,265	2,317	2,371	2,426
	D25	Sapalan		1321	1,408	1,502	1,601	1,707	1820	6.62	0	1,940	2,069	2,206	2,352	2,507	2,673
	D26	Semba		5988	6,267	6,560	6,866	7,186	7521	4.66	0	7,872	8,239	8,623	9,025	9,446	9,887
	D27	Sibuto		1310	1,329	1,348	1,367	1,386	1406	1.42	0	1,426	1,446	1,467	1,488	1,509	1,531
	D28	Sifaren		1239	1,269	1,300	1,331	1,363	1396	2.41	0	1,430	1,464	1,500	1,536	1,573	1,611
	D29	Tambak		893	931	971	1,012	1,055	1100	4.26	0	1,147	1,196	1,247	1,300	1,355	1,413
	D30	Tamontaka		10058	10,506	10,974	11,464	11,974	12508	4.46	0	13,065	13,648	14,256	14,891	15,555	16,248
	D31	Tanuel		1637	1,673	1,709	1,746	1,784	1823	2.18	0	1,863	1,903	1,945	1,987	2,030	2,074
	D32	Tapian		2167	2,270	2,378	2,491	2,609	2733	4.75	0	2,863	2,999	3,141	3,291	3,447	3,611
	D33	Taviran		2650	2,665	2,680	2,695	2,710	2725	0.56	0	2,740	2,756	2,771	2,787	2,802	2,818
	D34	Tenonggos		1192	1,194	1,195	1,197	1,198	1200	0.13	0	1,202	1,203	1,205	1,206	1,208	1,210

出典: JICA 調査団

表 A6-7 人口予測内訳 (DOS 町) (2027 年～2040 年)

	ID	Year	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
City/Municipality		Barangay														
Datu Odin Sinsuat			148,616	154,040	159,723	165,682	171,934	178,500	185,400	192,657	200,298	208,350	216,844	225,814	235,297	245,334
	D01	Ambolodto	1,548	1,562	1,576	1,590	1,604	1,618	1,632	1,647	1,662	1,676	1,691	1,706	1,722	1,737
	D02	Awang	16,387	16,830	17,285	17,753	18,233	18,726	19,232	19,752	20,286	20,835	21,398	21,977	22,571	23,182
	D03	Badak	2,744	2,853	2,966	3,083	3,205	3,332	3,464	3,601	3,744	3,892	4,046	4,206	4,373	4,546
	D04	Bagoenged	2,161	2,170	2,179	2,188	2,197	2,206	2,215	2,224	2,233	2,243	2,252	2,261	2,271	2,280
	D05	Baka	3,545	3,618	3,692	3,768	3,846	3,925	4,006	4,089	4,173	4,259	4,347	4,437	4,528	4,621
	D06	Benolen	2,727	2,833	2,944	3,059	3,179	3,304	3,433	3,567	3,707	3,852	4,003	4,159	4,322	4,491
	D07	Bitu	1,789	1,839	1,891	1,943	1,998	2,054	2,111	2,170	2,231	2,293	2,357	2,423	2,491	2,561
	D08	Bongued	1,874	1,877	1,880	1,883	1,886	1,890	1,893	1,896	1,899	1,902	1,905	1,908	1,911	1,914
	D09	Bugawas	4,218	4,500	4,801	5,121	5,463	5,828	6,217	6,632	7,075	7,548	8,052	8,589	9,163	9,775
	D10	Capiton	5,044	5,283	5,532	5,794	6,068	6,355	6,656	6,970	7,300	7,645	8,007	8,386	8,782	9,198
	D11	Dados	3,185	3,299	3,418	3,540	3,667	3,799	3,935	4,076	4,222	4,374	4,530	4,693	4,861	5,035
	D12	Dalican Poblacion	22,230	23,090	23,984	24,912	25,877	26,878	27,919	28,999	30,122	31,287	32,498	33,756	35,063	36,420
	D13	Dinaig Proper	4,919	5,010	5,102	5,197	5,293	5,391	5,491	5,592	5,696	5,801	5,908	6,018	6,129	6,243
	D14	Dulangan	1,225	1,251	1,277	1,305	1,333	1,361	1,390	1,420	1,450	1,481	1,513	1,545	1,578	1,612
	D15	Kakar	2,412	2,754	3,144	3,590	4,099	4,681	5,345	6,103	6,968	7,957	9,085	10,374	11,845	13,525
	D16	Kenebeka	2,019	2,100	2,184	2,271	2,362	2,456	2,554	2,656	2,762	2,873	2,987	3,107	3,231	3,360
	D17	Kurintem	3,775	3,824	3,874	3,925	3,976	4,028	4,081	4,134	4,188	4,243	4,299	4,355	4,412	4,470
	D18	Kusiong	2,270	2,350	2,433	2,518	2,607	2,699	2,794	2,892	2,994	3,099	3,208	3,321	3,438	3,559
	D19	Labungan	3,974	4,102	4,235	4,372	4,514	4,660	4,810	4,966	5,127	5,293	5,464	5,641	5,823	6,011
	D20	Linek	2,248	2,277	2,306	2,336	2,366	2,396	2,427	2,458	2,489	2,521	2,554	2,586	2,620	2,653
	D21	Makir	7,511	7,920	8,351	8,806	9,286	9,792	10,325	10,888	11,481	12,106	12,766	13,461	14,194	14,968
	D22	Margues	1,791	1,800	1,810	1,820	1,830	1,840	1,850	1,860	1,870	1,880	1,890	1,900	1,911	1,921
	D23	Mompong	1,748	1,771	1,794	1,818	1,842	1,866	1,891	1,916	1,941	1,966	1,992	2,019	2,045	2,072
	D24	Nekitan	2,482	2,540	2,599	2,659	2,721	2,784	2,848	2,914	2,982	3,051	3,122	3,194	3,268	3,344
	D25	Sapalan	2,850	3,039	3,240	3,455	3,683	3,927	4,187	4,464	4,760	5,075	5,411	5,769	6,151	6,558
	D26	Semba	10,348	10,831	11,336	11,865	12,418	12,998	13,604	14,238	14,902	15,598	16,325	17,087	17,883	18,718
	D27	Sibuto	1,552	1,574	1,597	1,620	1,643	1,666	1,690	1,714	1,738	1,763	1,788	1,814	1,839	1,866
	D28	Sifaren	1,650	1,690	1,730	1,772	1,815	1,859	1,904	1,950	1,997	2,045	2,094	2,145	2,197	2,250
	D29	Tambak	1,473	1,536	1,601	1,669	1,740	1,814	1,891	1,972	2,056	2,144	2,235	2,330	2,429	2,533
	D30	Tamontaka	16,972	17,728	18,518	19,344	20,206	21,106	22,047	23,029	24,056	25,128	26,247	27,417	28,639	29,915
	D31	Taniel	2,119	2,166	2,213	2,261	2,310	2,360	2,412	2,464	2,518	2,572	2,628	2,686	2,744	2,804
	D32	Tapian	3,782	3,962	4,150	4,347	4,554	4,770	4,997	5,234	5,483	5,743	6,016	6,302	6,601	6,915
	D33	Taviran	2,834	2,849	2,865	2,881	2,898	2,914	2,930	2,946	2,963	2,980	2,996	3,013	3,030	3,047
	D34	Tenoggos	1,211	1,213	1,215	1,216	1,218	1,219	1,221	1,223	1,224	1,226	1,228	1,229	1,231	1,233

出典: JICA 調査団

表 A6-8 人口予測内訳（スルタン・マスツーラ町／パラン町）（2010年～2026年）

	ID	Year	2010	2015	2016	2017	2018	2019	2020	APGR(%) 2015-2020	Urban	2021	2022	2023	2024	2025	2026
City/Municipality	Barangay																
Sultan Mastura				13,584	13,934	14,298	14,676	15,069	15,478	2.64		15,903	16,346	16,807	17,288	17,789	18,312
	SM01	Balut		2134	2,165	2,197	2,229	2,262	2295	1.47	0	2,329	2,363	2,397	2,433	2,468	2,504
	SM02	Macabico		3379	3,504	3,633	3,767	3,907	4051	3.69	0	4,201	4,356	4,517	4,684	4,857	5,036
	SM03	Solon		2089	2,115	2,140	2,167	2,193	2220	1.22	0	2,247	2,275	2,303	2,331	2,359	2,388
	SM04	Tambo		893	962	1,036	1,116	1,202	1295	7.72	0	1,395	1,503	1,619	1,743	1,878	2,023
	SM05	Tapayan		4259	4,318	4,378	4,439	4,501	4563	1.39	0	4,626	4,691	4,756	4,822	4,889	4,957
	SM06	Tuka		830	871	913	958	1,005	1054	4.89	0	1,106	1,160	1,216	1,276	1,338	1,404
Parang				23,969	24,343	24,727	25,121	25,526	25,942	1.59		26,369	26,808	27,260	27,724	28,201	28,691
	P01	Landasan		16971	17,094	17,218	17,343	17,469	17596	0.73	1	17,724	17,852	17,982	18,113	18,244	18,376
	P02	Compo Islam		1837	1,914	1,993	2,076	2,163	2,253	4.17	0	2,347	2,445	2,547	2,653	2,763	2,878
	P03	Polloc		5161	5,335	5,515	5,702	5,894	6093	3.38	1	6,299	6,511	6,731	6,958	7,193	7,436

出典: JICA 調査団

表 A6-9 人口予測内訳（スルタン・マスツーラ町／パラン町）（2027年～2040年）

	ID	Year	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
City/Municipality	Barangay															
Sultan Mastura			18,858	19,427	20,022	20,645	21,295	21,976	22,689	23,436	24,219	25,039	25,900	26,804	27,753	28,750
	SM01	Balut	2,541	2,578	2,616	2,654	2,693	2,733	2,773	2,813	2,855	2,896	2,939	2,982	3,026	3,070
	SM02	Macabico	5,222	5,415	5,615	5,823	6,038	6,261	6,492	6,732	6,980	7,238	7,506	7,783	8,071	8,369
	SM03	Solon	2,417	2,447	2,477	2,507	2,538	2,569	2,600	2,632	2,664	2,697	2,730	2,763	2,797	2,831
	SM04	Tambo	2,179	2,347	2,528	2,723	2,934	3,160	3,404	3,666	3,949	4,254	4,582	4,936	5,317	5,727
	SM05	Tapayan	5,025	5,095	5,166	5,238	5,310	5,384	5,459	5,535	5,611	5,689	5,768	5,849	5,930	6,012
	SM06	Tuka	1,473	1,545	1,620	1,700	1,783	1,870	1,962	2,058	2,158	2,264	2,375	2,491	2,613	2,741
Parang			29,195	29,714	30,248	30,797	31,362	31,944	32,543	33,160	33,795	34,449	35,123	35,817	36,532	37,269
	P01	Landasan	18,510	18,644	18,780	18,916	19,053	19,192	19,331	19,471	19,613	19,755	19,898	20,043	20,188	20,335
	P02	Compo Islam	2,998	3,123	3,253	3,389	3,530	3,677	3,831	3,990	4,156	4,330	4,510	4,698	4,894	5,098
	P03	Polloc	7,687	7,947	8,215	8,492	8,779	9,075	9,382	9,698	10,026	10,364	10,714	11,076	11,450	11,836

出典: JICA 調査団

(3) MCWD による給水人口実績 (2017 年～2022 年)

表 A6-10 MCWD による給水人口実績
(コタバト市、SK 町、DOS 町) (2017 年～2022 年)

No.	BARANGAY	City/Municipality	Household Number						Population					
			2017	2018	2019	2020	2021	2022	2017	2018	2019	2020	2021	2022
1	AWANG	DOS	1,901	1,975	2,041	2,090	2,151	2,197	11,314	11,759	11,076	11,323	11,680	11,955
2	CAPITON	DOS	491	575	646	696	744	780	2,922	3,423	3,506	3,771	4,040	4,245
3	DULANGAN	DOS	25	26	32	35	41	44	149	155	174	190	223	241
4	SEMBA	DOS	1,179	1,193	1,209	1,264	1,301	1,326	7,017	7,103	6,561	6,848	7,064	7,217
5	TAMBAK	DOS	64	67	78	80	84	90	381	399	423	433	456	488
6	TANUEL	DOS	135	148	165	182	200	211	803	881	895	986	1,086	1,146
7	TAMONTAKA, DOS	DOS	560	639	722	803	856	910	3,333	3,805	3,918	4,350	4,648	4,952
1	POB MB	Cotabato	776	831	856	897	930	968	4,618	4,948	4,645	4,859	5,050	5,270
2	POB 1	Cotabato	383	399	429	442	442	451	2,279	2,376	2,328	2,395	2,400	2,457
3	POB 2	Cotabato	459	478	493	500	505	518	2,732	2,846	2,675	2,709	2,742	2,819
4	POB 3	Cotabato	185	195	199	212	218	220	1,101	1,161	1,080	1,149	1,184	1,196
5	POB 4	Cotabato	713	709	719	707	709	708	4,243	4,221	3,902	3,830	3,850	3,855
6	POB 5	Cotabato	223	218	212	218	223	218	1,327	1,298	1,150	1,181	1,211	1,185
7	POB 6	Cotabato	171	186	201	207	205	203	1,018	1,107	1,091	1,121	1,113	1,102
8	POB 7	Cotabato	837	885	903	930	951	960	4,981	5,269	4,900	5,038	5,164	5,226
9	POB 8	Cotabato	154	180	216	245	273	292	917	1,072	1,172	1,327	1,482	1,590
10	POB 9	Cotabato	233	265	295	317	336	351	1,387	1,578	1,601	1,717	1,824	1,908
11	TAMONTAKA, MB	Cotabato	789	862	911	960	1,008	1,051	4,696	5,132	4,944	5,201	5,473	5,720
12	TAMONTAKA, 1	Cotabato	268	299	329	360	383	426	1,595	1,780	1,785	1,950	2,080	2,320
13	TAMONTAKA, 2	Cotabato	54	123	159	188	215	230	321	732	863	1,018	1,167	1,250
14	TAMONTAKA, 3	Cotabato	37	78	92	95	90	91	220	464	499	515	489	494
15	TAMONTAKA, 4	Cotabato	48	54	67	60	69	75	286	322	364	325	375	406
16	TAMONTAKA, 5	Cotabato	6	6	8	11	10	16	36	36	43	60	54	88
17	RH MB	Cotabato	1,608	1,640	1,677	1,710	1,725	1,767	9,570	9,764	9,101	9,264	9,367	9,619
18	RH 1	Cotabato	789	811	807	830	844	848	4,696	4,829	4,379	4,497	4,583	4,618
19	RH 2	Cotabato	632	443	456	456	468	474	3,761	2,638	2,475	2,470	2,541	2,578
20	RH 3	Cotabato	1,117	1,149	1,189	1,241	1,264	1,289	6,648	6,841	6,452	6,723	6,864	7,014
21	RH 4	Cotabato	622	636	641	652	662	674	3,702	3,787	3,479	3,532	3,595	3,669
22	RH 5	Cotabato	636	660	693	733	773	804	3,785	3,930	3,761	3,971	4,197	4,376
23	RH 6	Cotabato	887	926	935	950	972	996	5,279	5,513	5,074	5,147	5,278	5,418
24	RH 7	Cotabato	674	715	735	752	773	813	4,011	4,257	3,989	4,074	4,197	4,426
25	RH 8	Cotabato	1,257	1,296	1,335	1,370	1,380	1,420	7,481	7,716	7,245	7,422	7,493	7,727
26	RH 9	Cotabato	1,026	1,073	1,101	1,133	1,173	1,199	6,106	6,389	5,975	6,138	6,369	6,526
27	RH 10	Cotabato	1,750	1,837	1,907	1,975	2,044	2,112	10,415	10,937	10,349	10,700	11,099	11,495
28	RH 11	Cotabato	1,352	1,409	1,435	1,468	1,500	1,541	8,046	8,389	7,787	7,953	8,145	8,385
29	RH 12	Cotabato	461	459	481	488	486	498	2,744	2,733	2,610	2,644	2,639	2,709
30	RH 13	Cotabato	516	511	526	529	536	543	3,071	3,042	2,854	2,866	2,911	2,956
31	BAGUA MB	Cotabato	1,062	1,110	1,146	1,177	1,189	1,218	6,320	6,609	6,219	6,376	6,456	6,630
32	BAGUA 1	Cotabato	603	650	692	724	740	776	3,589	3,870	3,755	3,922	4,018	4,223
33	BAGUA 2	Cotabato	1,327	1,422	1,483	1,524	1,586	1,616	7,897	8,466	8,048	8,256	8,612	8,797
34	BAGUA 3	Cotabato	548	563	579	586	585	605	3,261	3,352	3,142	3,175	3,177	3,290
35	KALANGANAN MB	Cotabato	695	766	886	919	866	934	4,136	4,561	4,808	4,979	4,702	5,084
36	KALANGANAN 2	Cotabato	286	346	388	469	542	603	1,702	2,060	2,106	2,541	2,943	3,280
1	BANUBO	Kudarat	101	126	133	142	163	169	601	750	722	769	885	921
2	BULALO	Kudarat	571	625	658	701	739	772	3,398	3,721	3,571	3,798	4,013	4,201
3	CALZADA	Kudarat	305	333	391	434	462	497	1,815	1,983	2,122	2,351	2,509	2,704
4	DALUMANGCOB	Kudarat	250	281	306	316	330	339	1,488	1,673	1,661	1,712	1,792	1,843
5	GANG	Kudarat	127	138	160	173	182	184	756	822	868	937	988	1,004
6	KATULI	Kudarat	329	359	389	408	427	441	1,958	2,137	2,111	2,210	2,319	2,402
7	LIMBO	Kudarat	457	508	552	584	605	632	2,720	3,025	2,996	3,164	3,285	3,439
8	MACAGUILING	Kudarat	44	63	73	78	90	95	262	375	396	423	489	516
9	REBUKEN	Kudarat	82	90	90	96	107	117	488	536	488	520	581	636
10	SALIMBAO	Kudarat	756	789	786	793	793	801	4,499	4,698	4,265	4,296	4,306	4,360
	Sub total	Cotabato	23,184	24,190	25,181	26,035	26,675	27,506	137,977	144,024	136,652	141,045	144,846	149,706
	Sub total	Kudarat	3,022	3,312	3,538	3,725	3,898	4,047	17,985	19,719	19,200	20,180	21,166	22,024
	Sub total	DOS	4,355	4,623	4,893	5,150	5,377	5,557	25,918	27,525	26,553	27,900	29,197	30,245
	TOTAL		30,561	32,125	33,612	34,910	35,950	37,110	181,880	191,268	182,405	189,125	195,210	201,975

出典: JICA 調査団

(4) MCWD の給水区域内人口 (2015 年～2040 年)

表 A6-11 MCWD の給水区域内人口 (コタバト市) (2015 年～2027 年)

City/Minucipality	ID.No	Barangay	Syatem	Urban	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Cotabato City	C01	Bagua	Existing	1	18,137	18,493	18,856	19,225	19,602	19,987	20,436	20,892	21,354	21,824	22,300	22,782	23,271
Cotabato City	C02	Bagua I	Existing	1	9,206	9,369	9,535	9,703	9,875	10,050	10,256	10,466	10,677	10,891	11,108	11,327	11,548
Cotabato City	C03	Bagua II	Existing	1	19,720	19,775	19,831	19,886	19,942	19,998	20,110	20,220	20,327	20,431	20,532	20,631	20,726
Cotabato City	C04	Bagua III	Existing	1	6,847	6,879	6,910	6,942	6,974	7,006	7,058	7,109	7,160	7,209	7,258	7,306	7,353
Cotabato City	C05	Kalanganan	Existing	1	15,019	15,279	15,544	15,813	16,087	16,366	16,696	17,030	17,368	17,710	18,056	18,405	18,758
Cotabato City	C06	Kalanganan I	Expansion	1													
Cotabato City	C07	Kalanganan II	Existing	1	5,999	6,111	6,224	6,340	6,458	6,578	6,719	6,862	7,007	7,154	7,303	7,453	7,606
Cotabato City	C08	Poblacion	Existing	1	20,734	20,900	21,068	21,237	21,407	21,579	21,813	22,046	22,278	22,509	22,738	22,966	23,192
Cotabato City	C09	Poblacion I	Existing	0	5,677	5,754	5,833	5,912	5,992	6,074	6,174	6,274	6,376	6,477	6,580	6,682	6,786
Cotabato City	C10	Poblacion II	Existing	1	6,302	6,396	6,492	6,589	6,688	6,788	6,909	7,031	7,154	7,278	7,402	7,528	7,655
Cotabato City	C11	Poblacion III	Existing	0	2,985	3,072	3,161	3,253	3,348	3,445	3,555	3,668	3,784	3,903	4,025	4,151	4,279
Cotabato City	C12	Poblacion IV	Existing	1	6,456	6,551	6,648	6,746	6,846	6,947	7,069	7,193	7,317	7,442	7,568	7,695	7,823
Cotabato City	C13	Poblacion V	Existing	1	3,070	3,129	3,189	3,250	3,312	3,375	3,449	3,524	3,601	3,678	3,756	3,836	3,916
Cotabato City	C14	Poblacion VI	Existing	1	5,151	5,178	5,205	5,233	5,260	5,288	5,331	5,373	5,415	5,456	5,496	5,536	5,575
Cotabato City	C15	Poblacion VII	Existing	1	15,712	15,827	15,942	16,058	16,175	16,293	16,458	16,621	16,784	16,945	17,106	17,265	17,422
Cotabato City	C16	Poblacion VIII	Existing	1	8,786	8,843	8,901	8,959	9,018	9,077	9,162	9,246	9,330	9,412	9,494	9,575	9,655
Cotabato City	C17	Poblacion IX	Existing	1	5,998	6,197	6,403	6,615	6,835	7,062	7,317	7,580	7,851	8,130	8,418	8,715	9,021
Cotabato City	C18	Rosary Heights	Existing	1	13,943	14,168	14,397	14,630	14,867	15,107	15,394	15,684	15,977	16,273	16,572	16,873	17,177
Cotabato City	C19	Rosary Heights I	Existing	0	3,931	4,012	4,095	4,179	4,265	4,353	4,455	4,559	4,664	4,771	4,880	4,991	5,103
Cotabato City	C20	Rosary Heights II	Existing	1	5,006	4,878	4,754	4,633	4,515	4,400	4,300	4,201	4,105	4,009	3,915	3,823	3,733
Cotabato City	C21	Rosary Heights III	Existing	1	10,786	11,042	11,304	11,572	11,846	12,127	12,449	12,778	13,114	13,456	13,804	14,160	14,522
Cotabato City	C22	Rosary Heights IV	Existing	0	4,377	4,426	4,475	4,525	4,576	4,627	4,692	4,757	4,822	4,887	4,952	5,017	5,083
Cotabato City	C23	Rosary Heights V	Existing	1	5,870	5,910	5,950	5,991	6,032	6,073	6,132	6,190	6,247	6,305	6,361	6,417	6,473
Cotabato City	C24	Rosary Heights VI	Existing	1	6,846	6,979	7,115	7,254	7,395	7,539	7,707	7,878	8,051	8,227	8,405	8,586	8,769
Cotabato City	C25	Rosary Heights VII	Existing	1	9,257	9,428	9,603	9,781	9,962	10,146	10,363	10,582	10,805	11,030	11,259	11,490	11,724
Cotabato City	C26	Rosary Heights VIII	Existing	1	8,524	8,791	9,067	9,351	9,645	9,947	10,288	10,638	10,999	11,370	11,752	12,145	12,548
Cotabato City	C27	Rosary Heights IX	Existing	1	7,802	7,930	8,060	8,192	8,326	8,462	8,625	8,789	8,955	9,123	9,292	9,463	9,635
Cotabato City	C28	Rosary Heights X	Existing	1	15,732	15,901	16,072	16,245	16,420	16,597	16,823	17,048	17,275	17,501	17,727	17,954	18,180
Cotabato City	C29	Rosary Heights XI	Existing	1	7,864	8,008	8,155	8,305	8,458	8,613	8,796	8,981	9,168	9,358	9,551	9,745	9,942
Cotabato City	C30	Rosary Heights XII	Existing	0	4,664	4,747	4,831	4,916	5,003	5,092	5,197	5,303	5,410	5,519	5,628	5,740	5,852
Cotabato City	C31	Rosary Heights XIII	Existing	1	4,947	5,074	5,204	5,337	5,474	5,614	5,774	5,937	6,105	6,276	6,450	6,629	6,811
Cotabato City	C32	Tamontaka	Existing	1	12,027	12,415	12,817	13,230	13,658	14,099	14,595	15,106	15,633	16,175	16,734	17,308	17,900
Cotabato City	C33	Tamontaka I	Existing	0	4,423	4,505	4,588	4,673	4,760	4,848	4,952	5,057	5,163	5,271	5,380	5,490	5,602
Cotabato City	C34	Tamontaka II	Existing	0	4,184	4,494	4,827	5,184	5,568	5,980	6,441	6,936	7,468	8,039	8,653	9,312	10,020
Cotabato City	C35	Tamontaka III	Existing	0	2,730	2,817	2,906	2,998	3,093	3,191	3,301	3,415	3,532	3,652	3,776	3,904	4,035
Cotabato City	C36	Tamontaka IV	Existing	0	3,741	3,830	3,922	4,016	4,112	4,210	4,323	4,438	4,555	4,675	4,797	4,921	5,048
Cotabato City	C37	Tamontaka V	Existing	0	1,177	1,251	1,329	1,412	1,501	1,595	1,700	1,811	1,929	2,055	2,188	2,330	2,481

出典: JICA 調査団

表 A6-12 MCWD の給水区域内人口（コタバト市）（2028年～2040年）

City/Minucipality	ID.No	Barangay	Syatem	Urban	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Cotabato City	C01	Bagua	Existing	1	23,766	24,238	24,714	25,195	25,680	26,169	26,663	27,160	27,660	28,164	28,671	29,180	29,691
Cotabato City	C02	Bagua I	Existing	1	11,772	11,983	12,195	12,409	12,624	12,841	13,058	13,277	13,496	13,716	13,936	14,157	14,378
Cotabato City	C03	Bagua II	Existing	1	20,818	20,881	20,940	20,995	21,047	21,094	21,138	21,177	21,211	21,242	21,267	21,288	21,303
Cotabato City	C04	Bagua III	Existing	1	7,399	7,434	7,469	7,502	7,534	7,564	7,593	7,621	7,647	7,672	7,695	7,716	7,736
Cotabato City	C05	Kalanganan	Existing	1	19,114	19,449	19,787	20,126	20,468	20,811	21,156	21,502	21,849	22,197	22,546	22,894	23,243
Cotabato City	C06	Kalanganan I	Expansion	1	8,069	8,266	8,467	8,670	8,877	9,087	9,300	9,516	9,735	9,957	10,182	10,409	10,639
Cotabato City	C07	Kalanganan II	Existing	1	7,760	7,906	8,053	8,201	8,351	8,502	8,653	8,806	8,959	9,113	9,268	9,423	9,579
Cotabato City	C08	Poblacion	Existing	1	23,416	23,609	23,799	23,986	24,170	24,351	24,528	24,701	24,870	25,035	25,195	25,351	25,502
Cotabato City	C09	Poblacion I	Existing	0	6,889	6,984	7,080	7,175	7,270	7,365	7,460	7,554	7,648	7,741	7,834	7,926	8,018
Cotabato City	C10	Poblacion II	Existing	1	7,782	7,900	8,019	8,137	8,256	8,375	8,494	8,613	8,732	8,851	8,969	9,086	9,203
Cotabato City	C11	Poblacion III	Existing	0	4,411	4,540	4,672	4,807	4,945	5,086	5,230	5,377	5,527	5,680	5,836	5,995	6,156
Cotabato City	C12	Poblacion IV	Existing	1	7,952	8,071	8,190	8,310	8,430	8,549	8,669	8,789	8,908	9,027	9,146	9,264	9,382
Cotabato City	C13	Poblacion V	Existing	1	3,998	4,075	4,153	4,232	4,311	4,391	4,472	4,553	4,635	4,717	4,800	4,882	4,965
Cotabato City	C14	Poblacion VI	Existing	1	5,614	5,645	5,674	5,703	5,731	5,758	5,784	5,809	5,833	5,856	5,877	5,897	5,916
Cotabato City	C15	Poblacion VII	Existing	1	17,578	17,709	17,839	17,966	18,091	18,213	18,332	18,448	18,561	18,670	18,776	18,878	18,977
Cotabato City	C16	Poblacion VIII	Existing	1	9,734	9,800	9,864	9,927	9,989	10,049	10,107	10,163	10,218	10,270	10,321	10,369	10,416
Cotabato City	C17	Poblacion IX	Existing	1	9,335	9,647	9,968	10,297	10,635	10,982	11,338	11,704	12,078	12,462	12,855	13,258	13,670
Cotabato City	C18	Rosary Heights	Existing	1	17,483	17,770	18,057	18,346	18,636	18,927	19,219	19,511	19,803	20,096	20,388	20,680	20,971
Cotabato City	C19	Rosary Heights I	Existing	0	5,216	5,325	5,435	5,546	5,658	5,772	5,886	6,002	6,118	6,236	6,354	6,473	6,593
Cotabato City	C20	Rosary Heights II	Existing	1	3,643	3,551	3,461	3,372	3,285	3,200	3,116	3,034	2,953	2,874	2,796	2,720	2,645
Cotabato City	C21	Rosary Heights III	Existing	1	14,890	15,247	15,609	15,976	16,350	16,728	17,112	17,501	17,895	18,294	18,698	19,107	19,520
Cotabato City	C22	Rosary Heights IV	Existing	0	5,148	5,206	5,265	5,323	5,380	5,437	5,494	5,550	5,606	5,660	5,714	5,768	5,820
Cotabato City	C23	Rosary Heights V	Existing	1	6,528	6,574	6,619	6,663	6,706	6,748	6,789	6,829	6,867	6,905	6,941	6,975	7,008
Cotabato City	C24	Rosary Heights VI	Existing	1	8,955	9,131	9,309	9,489	9,670	9,853	10,037	10,223	10,410	10,598	10,787	10,977	11,168
Cotabato City	C25	Rosary Heights VII	Existing	1	11,960	12,184	12,410	12,638	12,867	13,098	13,331	13,565	13,799	14,036	14,272	14,510	14,748
Cotabato City	C26	Rosary Heights VIII	Existing	1	12,963	13,372	13,792	14,222	14,663	15,114	15,577	16,050	16,534	17,029	17,535	18,052	18,579
Cotabato City	C27	Rosary Heights IX	Existing	1	9,809	9,972	10,135	10,300	10,465	10,630	10,796	10,962	11,129	11,296	11,462	11,629	11,795
Cotabato City	C28	Rosary Heights X	Existing	1	18,406	18,608	18,808	19,008	19,206	19,402	19,596	19,788	19,978	20,165	20,349	20,531	20,709
Cotabato City	C29	Rosary Heights XI	Existing	1	10,141	10,330	10,520	10,711	10,904	11,098	11,294	11,490	11,687	11,886	12,085	12,284	12,484
Cotabato City	C30	Rosary Heights XII	Existing	0	5,965	6,072	6,180	6,288	6,397	6,507	6,618	6,728	6,840	6,951	7,063	7,175	7,287
Cotabato City	C31	Rosary Heights XIII	Existing	1	6,997	7,177	7,361	7,549	7,740	7,933	8,131	8,331	8,535	8,741	8,951	9,163	9,379
Cotabato City	C32	Tamontaka	Existing	1	18,508	19,110	19,728	20,362	21,012	21,679	22,363	23,063	23,780	24,515	25,266	26,034	26,820
Cotabato City	C33	Tamontaka I	Existing	0	5,715	5,822	5,930	6,039	6,149	6,259	6,371	6,482	6,595	6,708	6,821	6,935	7,048
Cotabato City	C34	Tamontaka II	Existing	0	10,780	11,580	12,438	13,357	14,341	15,394	16,522	17,728	19,019	20,399	21,874	23,451	25,135
Cotabato City	C35	Tamontaka III	Existing	0	4,169	4,302	4,439	4,579	4,722	4,870	5,020	5,174	5,332	5,494	5,659	5,827	6,000
Cotabato City	C36	Tamontaka IV	Existing	0	5,177	5,302	5,429	5,558	5,688	5,821	5,956	6,093	6,231	6,371	6,513	6,656	6,801
Cotabato City	C37	Tamontaka V	Existing	0	2,640	2,806	2,982	3,169	3,366	3,575	3,796	4,030	4,278	4,540	4,817	5,109	5,418

出典: JICA 調査団

表 A6-13 MCWD の給水区域内人口（SK 町）（2015 年～2027 年）

City/Minucipality	ID.No	Barangay	Syatem	Urban	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Sultan Kudarat	S01	Alamada	Expansion	0													
Sultan Kudarat	S02	Banatin	Expansion	0													
Sultan Kudarat	S03	Banubo	Existing	0	1,614	1,725	1,843	1,969	2,105	2,249	2,403	2,568	2,744	2,933	3,134	3,349	3,579
Sultan Kudarat	S04	Bulalo	Existing	1	7,503	7,573	7,644	7,716	7,788	7,861	7,935	8,009	8,084	8,160	8,236	8,313	8,391
Sultan Kudarat	S05	Bulibod	Expansion	0													
Sultan Kudarat	S06	Calsada	Existing	0	5,732	5,751	5,769	5,788	5,807	5,826	5,845	5,864	5,883	5,902	5,922	5,941	5,960
Sultan Kudarat	S07	Crossing Simuay	Expansion	1													
Sultan Kudarat	S08	Dalumangcob	Existing	1	6,800	6,864	6,928	6,993	7,059	7,125	7,192	7,259	7,327	7,396	7,466	7,536	7,606
Sultan Kudarat	S09	Damaniog	Expansion	0													
Sultan Kudarat	S10	Darapanan	Expansion	0													
Sultan Kudarat	S11	Gang	Existing	0	3,547	3,624	3,702	3,782	3,864	3,947	4,032	4,119	4,208	4,299	4,392	4,487	4,584
Sultan Kudarat	S12	Inawan	Expansion	0													
Sultan Kudarat	S13	Kabuntalan	Expansion	0													
Sultan Kudarat	S14	Kakar	Expansion	0													
Sultan Kudarat	S15	Kapimpilan	Expansion	0													
Sultan Kudarat	S16	Katamlangan	Expansion	0													
Sultan Kudarat	S17	Katiduan	Expansion	0													
Sultan Kudarat	S18	Katuli	Existing	0	4,752	4,807	4,863	4,919	4,976	5,034	5,092	5,151	5,211	5,272	5,333	5,395	5,457
Sultan Kudarat	S19	Ladia	Expansion	0													
Sultan Kudarat	S20	Limbo	Existing	1	5,292	5,412	5,534	5,660	5,788	5,919	6,053	6,190	6,330	6,474	6,620	6,770	6,924
Sultan Kudarat	S21	Maidapa	Expansion	0													
Sultan Kudarat	S22	Makaguiling	Existing	0	2,596	2,638	2,681	2,725	2,770	2,815	2,861	2,908	2,955	3,003	3,052	3,102	3,153
Sultan Kudarat	S23	Matengen	Expansion	0													
Sultan Kudarat	S24	Mulaug	Expansion	0													
Sultan Kudarat	S25	Nalinan	Expansion	0													
Sultan Kudarat	S26	Nara	Expansion	1													
Sultan Kudarat	S27	Nekitan	Expansion	0													
Sultan Kudarat	S28	Olas	Expansion	0													
Sultan Kudarat	S29	Panatan	Expansion	0													
Sultan Kudarat	S30	Pigcalagan	Expansion	1													
Sultan Kudarat	S31	Pigkelegan	Expansion	0													
Sultan Kudarat	S32	Pinaring	Expansion	0													
Sultan Kudarat	S33	Pingping	Expansion	0													
Sultan Kudarat	S34	Raguisi	Expansion	0													
Sultan Kudarat	S35	Rebuken	Existing	0	2,365	2,423	2,482	2,543	2,605	2,669	2,734	2,801	2,870	2,940	3,012	3,086	3,161
Sultan Kudarat	S36	Salimbao	Existing	1	4,694	4,773	4,852	4,934	5,016	5,100	5,185	5,272	5,360	5,450	5,541	5,634	5,728
Sultan Kudarat	S37	Sambolawan	Expansion	0													
Sultan Kudarat	S38	Senditan	Expansion	1													
Sultan Kudarat	S39	Ungap	Expansion	0													

出典: JICA 調査団

表 A6-14 MCWD の給水区域内人口（SK 町）（2028 年～2040 年）

City/Minucipality	ID.No	Barangay	Syatem	Urban	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Sultan Kudarat	S01	Alamada	Expansion	0													
Sultan Kudarat	S02	Banatin	Expansion	0													
Sultan Kudarat	S03	Banubo	Existing	0	3,824	4,086	4,367	4,666	4,986	5,329	5,694	6,085	6,502	6,948	7,425	7,934	8,479
Sultan Kudarat	S04	Bulalo	Existing	1	8,470	8,549	8,629	8,710	8,791	8,874	8,957	9,041	9,125	9,211	9,297	9,384	9,472
Sultan Kudarat	S05	Bulibod	Expansion	0													
Sultan Kudarat	S06	Calsada	Existing	0	5,980	5,999	6,019	6,038	6,058	6,078	6,097	6,117	6,137	6,157	6,177	6,197	6,218
Sultan Kudarat	S07	Crossing Simuay	Expansion	1	7,157	7,302	7,451	7,602	7,756	7,914	8,075	8,239	8,406	8,577	8,751	8,929	9,111
Sultan Kudarat	S08	Dalumangcob	Existing	1	7,678	7,750	7,822	7,896	7,970	8,045	8,120	8,196	8,273	8,351	8,429	8,508	8,588
Sultan Kudarat	S09	Damaniog	Expansion	0													
Sultan Kudarat	S10	Darapanan	Expansion	0	4,020	4,279	4,555	4,848	5,160	5,492	5,845	6,222	6,622	7,048	7,502	7,985	8,498
Sultan Kudarat	S11	Gang	Existing	0	4,683	4,784	4,887	4,993	5,101	5,211	5,324	5,439	5,556	5,676	5,799	5,924	6,052
Sultan Kudarat	S12	Inawan	Expansion	0													
Sultan Kudarat	S13	Kabuntalan	Expansion	0													
Sultan Kudarat	S14	Kakar	Expansion	0													
Sultan Kudarat	S15	Kapimpilan	Expansion	0													
Sultan Kudarat	S16	Katamlangan	Expansion	0													
Sultan Kudarat	S17	Katidtuan	Expansion	0													
Sultan Kudarat	S18	Katuli	Existing	0	5,520	5,584	5,649	5,715	5,781	5,848	5,916	5,984	6,054	6,124	6,195	6,267	6,340
Sultan Kudarat	S19	Ladia	Expansion	0													
Sultan Kudarat	S20	Limbo	Existing	1	7,080	7,241	7,405	7,572	7,744	7,919	8,099	8,282	8,470	8,661	8,857	9,058	9,263
Sultan Kudarat	S21	Maidapa	Expansion	0													
Sultan Kudarat	S22	Makaguiling	Existing	0	3,204	3,257	3,310	3,364	3,419	3,475	3,532	3,589	3,648	3,707	3,768	3,829	3,892
Sultan Kudarat	S23	Matengen	Expansion	0													
Sultan Kudarat	S24	Mulaug	Expansion	0													
Sultan Kudarat	S25	Nalnan	Expansion	0													
Sultan Kudarat	S26	Nara	Expansion	1	2,157	2,208	2,260	2,313	2,368	2,424	2,481	2,540	2,600	2,661	2,724	2,788	2,854
Sultan Kudarat	S27	Nekitan	Expansion	0													
Sultan Kudarat	S28	Olas	Expansion	0													
Sultan Kudarat	S29	Panatan	Expansion	0	2,790	2,818	2,847	2,876	2,905	2,935	2,965	2,995	3,025	3,056	3,087	3,119	3,150
Sultan Kudarat	S30	Pigcalagan	Expansion	1													
Sultan Kudarat	S31	Pigkelegan	Expansion	0													
Sultan Kudarat	S32	Pinaring	Expansion	0	3,830	3,967	4,108	4,255	4,406	4,563	4,726	4,895	5,069	5,250	5,437	5,631	5,832
Sultan Kudarat	S33	Pingping	Expansion	0													
Sultan Kudarat	S34	Raguisi	Expansion	0	2,781	2,849	2,919	2,990	3,064	3,139	3,215	3,294	3,375	3,457	3,542	3,629	3,717
Sultan Kudarat	S35	Rebuken	Existing	0	3,239	3,318	3,399	3,482	3,568	3,655	3,745	3,836	3,930	4,026	4,125	4,226	4,329
Sultan Kudarat	S36	Salimbao	Existing	1	5,824	5,921	6,020	6,121	6,224	6,328	6,433	6,541	6,651	6,762	6,875	6,990	7,107
Sultan Kudarat	S37	Sambolawan	Expansion	0													
Sultan Kudarat	S38	Senditan	Expansion	1													
Sultan Kudarat	S39	Ungap	Expansion	0	3,162	3,242	3,324	3,408	3,494	3,582	3,673	3,766	3,861	3,959	4,059	4,162	4,267

出典: JICA 調査団

表 A6-15 MCWD の給水区域内人口（DOS 町）（2015 年～2027 年）

City/Minucipality	ID.No	Barangay	Syatem	Urban	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Datu Odin Sinsuat	D01	Ambolodto	Expansion	0													
Datu Odin Sinsuat	D02	Awang	Existing	0	11,897	12,219	12,549	12,889	13,237	13,595	13,963	14,340	14,728	15,126	15,535	15,955	16,387
Datu Odin Sinsuat	D03	Badak	Expansion	0													
Datu Odin Sinsuat	D04	Bagoenged	Expansion	0													
Datu Odin Sinsuat	D05	Baka	Expansion	0													
Datu Odin Sinsuat	D06	Benolen	Expansion	0													
Datu Odin Sinsuat	D07	Bitu	Expansion	0													
Datu Odin Sinsuat	D08	Bongued	Expansion	0													
Datu Odin Sinsuat	D09	Bugawas	Expansion	0													
Datu Odin Sinsuat	D10	Capiton	Existing	0	2,897	3,034	3,178	3,328	3,485	3,650	3,823	4,003	4,193	4,391	4,599	4,816	5,044
Datu Odin Sinsuat	D11	Dados	Expansion	0													
Datu Odin Sinsuat	D12	Dalican Poblacion	Expansion	1													
Datu Odin Sinsuat	D13	Dinaig Proper	Expansion	0													
Datu Odin Sinsuat	D14	Dulangan	Existing	0	950	970	991	1,012	1,034	1,056	1,079	1,102	1,125	1,149	1,174	1,199	1,225
Datu Odin Sinsuat	D15	Kakar	Expansion	0													
Datu Odin Sinsuat	D16	Kenebeka	Expansion	0													
Datu Odin Sinsuat	D17	Kurintem	Expansion	0													
Datu Odin Sinsuat	D18	Kusiong	Expansion	0													
Datu Odin Sinsuat	D19	Labungan	Expansion	0													
Datu Odin Sinsuat	D20	Linek	Expansion	0													
Datu Odin Sinsuat	D21	Makir	Expansion	0													
Datu Odin Sinsuat	D22	Margues	Expansion	0													
Datu Odin Sinsuat	D23	Mompong	Expansion	0													
Datu Odin Sinsuat	D24	Nekitan	Expansion	0													
Datu Odin Sinsuat	D25	Sapalan	Expansion	0													
Datu Odin Sinsuat	D26	Semba	Existing	0	5,988	6,267	6,560	6,866	7,186	7,521	7,872	8,239	8,623	9,025	9,446	9,887	10,348
Datu Odin Sinsuat	D27	Sibuto	Expansion	0													
Datu Odin Sinsuat	D28	Sifaren	Expansion	0													
Datu Odin Sinsuat	D29	Tambak	Existing	0	893	931	971	1,012	1,055	1,100	1,147	1,196	1,247	1,300	1,355	1,413	1,473
Datu Odin Sinsuat	D30	Tamontaka	Existing	0	10,058	10,506	10,974	11,464	11,974	12,508	13,065	13,648	14,256	14,891	15,555	16,248	16,972
Datu Odin Sinsuat	D31	Taniel	Existing	0	1,637	1,673	1,709	1,746	1,784	1,823	1,863	1,903	1,945	1,987	2,030	2,074	2,119
Datu Odin Sinsuat	D32	Tapian	Expansion	0													
Datu Odin Sinsuat	D33	Taviran	Expansion	0													
Datu Odin Sinsuat	D34	Tenonggos	Expansion	0													

出典: JICA 調査団

表 A6-16 MCWD の給水区域内人口（DOS 町）（2028 年～2040 年）

City/Municipality	ID.No	Barangay	Syatem	Urban	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Datu Odin Sinsuat	D01	Ambolodto	Expansion	0													
Datu Odin Sinsuat	D02	Awang	Existing	0	16,830	17,285	17,753	18,233	18,726	19,232	19,752	20,286	20,835	21,398	21,977	22,571	23,182
Datu Odin Sinsuat	D03	Badak	Expansion	0													
Datu Odin Sinsuat	D04	Bagoenged	Expansion	0													
Datu Odin Sinsuat	D05	Baka	Expansion	0													
Datu Odin Sinsuat	D06	Benolen	Expansion	0													
Datu Odin Sinsuat	D07	Bitu	Expansion	0													
Datu Odin Sinsuat	D08	Bongued	Expansion	0													
Datu Odin Sinsuat	D09	Bugawas	Expansion	0													
Datu Odin Sinsuat	D10	Capiton	Existing	0	5,283	5,532	5,794	6,068	6,355	6,656	6,970	7,300	7,645	8,007	8,386	8,782	9,198
Datu Odin Sinsuat	D11	Dados	Expansion	0													
Datu Odin Sinsuat	D12	Dalican Poblacion	Expansion	1													
Datu Odin Sinsuat	D13	Dinaig Proper	Expansion	0				5,293	5,391	5,491	5,592	5,696	5,801	5,908	6,018	6,129	6,243
Datu Odin Sinsuat	D14	Dulangan	Existing	0	1,251	1,277	1,305	1,333	1,361	1,390	1,420	1,450	1,481	1,513	1,545	1,578	1,612
Datu Odin Sinsuat	D15	Kakar	Expansion	0													
Datu Odin Sinsuat	D16	Kenebeka	Expansion	0													
Datu Odin Sinsuat	D17	Kurintem	Expansion	0													
Datu Odin Sinsuat	D18	Kusiong	Expansion	0													
Datu Odin Sinsuat	D19	Labungan	Expansion	0													
Datu Odin Sinsuat	D20	Linek	Expansion	0				2,366	2,396	2,427	2,458	2,489	2,521	2,554	2,586	2,620	2,653
Datu Odin Sinsuat	D21	Makir	Expansion	0													
Datu Odin Sinsuat	D22	Margues	Expansion	0													
Datu Odin Sinsuat	D23	Mompong	Expansion	0				1,842	1,866	1,891	1,916	1,941	1,966	1,992	2,019	2,045	2,072
Datu Odin Sinsuat	D24	Nekitan	Expansion	0													
Datu Odin Sinsuat	D25	Sapalan	Expansion	0													
Datu Odin Sinsuat	D26	Semba	Existing	0	10,831	11,336	11,865	12,418	12,998	13,604	14,238	14,902	15,598	16,325	17,087	17,883	18,718
Datu Odin Sinsuat	D27	Sibuto	Expansion	0													
Datu Odin Sinsuat	D28	Sifaren	Expansion	0													
Datu Odin Sinsuat	D29	Tambak	Existing	0	1,536	1,601	1,669	1,740	1,814	1,891	1,972	2,056	2,144	2,235	2,330	2,429	2,533
Datu Odin Sinsuat	D30	Tamontaka	Existing	0	17,728	18,518	19,344	20,206	21,106	22,047	23,029	24,056	25,128	26,247	27,417	28,639	29,915
Datu Odin Sinsuat	D31	Tanuel	Existing	0	2,166	2,213	2,261	2,310	2,360	2,412	2,464	2,518	2,572	2,628	2,686	2,744	2,804
Datu Odin Sinsuat	D32	Tapian	Expansion	0													
Datu Odin Sinsuat	D33	Taviran	Expansion	0													
Datu Odin Sinsuat	D34	Tenonggos	Expansion	0													

出典: JICA 調査団

表 A6-17 MCWD の給水区域内人口（スルタン・マスツラ町／パラシ町）
（2015 年～2027 年）

City/Municipality	ID.No	Barangay	Syatem	Urban	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Sultan Mastura	SM01	Balut	Expansion	0													
Sultan Mastura	SM02	Macabico	Expansion	0													
Sultan Mastura	SM03	Solon	Expansion	0													
Sultan Mastura	SM04	Tambo	Expansion	0													
Sultan Mastura	SM05	Tapayan	Expansion	0													
Sultan Mastura	SM06	Tuka	Expansion	0													
Parang	P01	Landasan	Expansion	1													
Parang	P02	Compo Islam	Expansion	0													
Parang	P03	Polloc	Expansion	1													

出典: JICA 調査団

表 A6-18 MCWD の給水区域内人口（スルタン・マスツラ町／パラシ町）
（2028 年～2040 年）

City/Municipality	ID.No	Barangay	Syatem	Urban	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Sultan Mastura	SM01	Balut	Expansion	0				2,693	2,733	2,773	2,813	2,855	2,896	2,939	2,982	3,026	3,070
Sultan Mastura	SM02	Macabico	Expansion	0				6,038	6,261	6,492	6,732	6,980	7,238	7,506	7,783	8,071	8,369
Sultan Mastura	SM03	Solon	Expansion	0				2,538	2,569	2,600	2,632	2,664	2,697	2,730	2,763	2,797	2,831
Sultan Mastura	SM04	Tambo	Expansion	0				2,934	3,160	3,404	3,666	3,949	4,254	4,582	4,936	5,317	5,727
Sultan Mastura	SM05	Tapayan	Expansion	0				5,310	5,384	5,459	5,535	5,611	5,689	5,768	5,849	5,930	6,012
Sultan Mastura	SM06	Tuka	Expansion	0				1,783	1,870	1,962	2,058	2,158	2,264	2,375	2,491	2,613	2,741
Parang	P01	Landasan	Expansion	1				19,053	19,192	19,331	19,471	19,613	19,755	19,898	20,043	20,188	20,335
Parang	P02	Compo Islam	Expansion	0				3,530	3,677	3,831	3,990	4,156	4,330	4,510	4,698	4,894	5,098
Parang	P03	Polloc	Expansion	1				8,779	9,075	9,382	9,698	10,026	10,364	10,714	11,076	11,450	11,836

出典: JICA 調査団

(5) MCWD の給水人口 (2017 年～2040 年) (既存分)

表 A6-19 MCWD の給水人口 (コタバト市) (2017 年～2028 年) (既存分)

City/Municipality	ID.No	Barangay	Syatem	Urban	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Cotabato City	C01	Bagua	Existing	1	6,320	6,609	6,219	6,376	6,456	6,630	6,630	6,630	6,630	6,630	6,630	6,630
Cotabato City	C02	Bagua I	Existing	1	3,589	3,870	3,755	3,922	4,018	4,223	4,223	4,223	4,223	4,223	4,223	4,223
Cotabato City	C03	Bagua II	Existing	1	7,897	8,466	8,048	8,256	8,612	8,797	8,797	8,797	8,797	8,797	8,797	8,797
Cotabato City	C04	Bagua III	Existing	1	3,261	3,352	3,142	3,175	3,177	3,290	3,290	3,290	3,290	3,290	3,290	3,290
Cotabato City	C05	Kalanganan	Existing	1	4,136	4,561	4,808	4,979	4,702	5,084	5,084	5,084	5,084	5,084	5,084	5,084
Cotabato City	C06	Kalanganan I	Expansion	1	0	0	0	0	0	0	0	0	0	0	0	0
Cotabato City	C07	Kalanganan II	Existing	1	1,702	2,060	2,106	2,541	2,943	3,280	3,280	3,280	3,280	3,280	3,280	3,280
Cotabato City	C08	Poblacion	Existing	1	4,618	4,948	4,645	4,859	5,050	5,270	5,270	5,270	5,270	5,270	5,270	5,270
Cotabato City	C09	Poblacion I	Existing	0	2,279	2,376	2,328	2,395	2,400	2,457	2,457	2,457	2,457	2,457	2,457	2,457
Cotabato City	C10	Poblacion II	Existing	1	2,732	2,846	2,675	2,709	2,742	2,819	2,819	2,819	2,819	2,819	2,819	2,819
Cotabato City	C11	Poblacion III	Existing	0	1,101	1,161	1,080	1,149	1,184	1,196	1,196	1,196	1,196	1,196	1,196	1,196
Cotabato City	C12	Poblacion IV	Existing	1	4,243	4,221	3,902	3,830	3,850	3,855	3,855	3,855	3,855	3,855	3,855	3,855
Cotabato City	C13	Poblacion V	Existing	1	1,327	1,298	1,150	1,181	1,211	1,185	1,185	1,185	1,185	1,185	1,185	1,185
Cotabato City	C14	Poblacion VI	Existing	1	1,018	1,107	1,091	1,121	1,113	1,102	1,102	1,102	1,102	1,102	1,102	1,102
Cotabato City	C15	Poblacion VII	Existing	1	4,981	5,269	4,900	5,038	5,164	5,226	5,226	5,226	5,226	5,226	5,226	5,226
Cotabato City	C16	Poblacion VIII	Existing	1	917	1,072	1,172	1,327	1,482	1,590	1,590	1,590	1,590	1,590	1,590	1,590
Cotabato City	C17	Poblacion IX	Existing	1	1,387	1,578	1,601	1,717	1,824	1,908	1,908	1,908	1,908	1,908	1,908	1,908
Cotabato City	C18	Rosary Heights	Existing	1	9,570	9,764	9,101	9,264	9,367	9,619	9,619	9,619	9,619	9,619	9,619	9,619
Cotabato City	C19	Rosary Heights I	Existing	0	4,696	4,829	4,379	4,497	4,583	4,618	4,618	4,618	4,618	4,618	4,618	4,618
Cotabato City	C20	Rosary Heights II	Existing	1	3,761	2,638	2,475	2,470	2,541	2,578	2,578	2,578	2,578	2,578	2,578	2,578
Cotabato City	C21	Rosary Heights III	Existing	1	6,648	6,841	6,452	6,723	6,864	7,014	7,014	7,014	7,014	7,014	7,014	7,014
Cotabato City	C22	Rosary Heights IV	Existing	0	3,702	3,787	3,479	3,532	3,595	3,669	3,669	3,669	3,669	3,669	3,669	3,669
Cotabato City	C23	Rosary Heights V	Existing	1	3,785	3,930	3,761	3,971	4,197	4,376	4,376	4,376	4,376	4,376	4,376	4,376
Cotabato City	C24	Rosary Heights VI	Existing	1	5,279	5,513	5,074	5,147	5,278	5,418	5,418	5,418	5,418	5,418	5,418	5,418
Cotabato City	C25	Rosary Heights VII	Existing	1	4,011	4,257	3,989	4,074	4,197	4,426	4,426	4,426	4,426	4,426	4,426	4,426
Cotabato City	C26	Rosary Heights VIII	Existing	1	7,481	7,716	7,245	7,422	7,493	7,727	7,727	7,727	7,727	7,727	7,727	7,727
Cotabato City	C27	Rosary Heights IX	Existing	1	6,106	6,389	5,975	6,138	6,369	6,526	6,526	6,526	6,526	6,526	6,526	6,526
Cotabato City	C28	Rosary Heights X	Existing	1	10,415	10,937	10,349	10,700	11,099	11,495	11,495	11,495	11,495	11,495	11,495	11,495
Cotabato City	C29	Rosary Heights XI	Existing	1	8,046	8,389	7,787	7,953	8,145	8,385	8,385	8,385	8,385	8,385	8,385	8,385
Cotabato City	C30	Rosary Heights XII	Existing	0	2,744	2,733	2,610	2,644	2,639	2,709	2,709	2,709	2,709	2,709	2,709	2,709
Cotabato City	C31	Rosary Heights XIII	Existing	1	3,071	3,042	2,854	2,866	2,911	2,956	2,956	2,956	2,956	2,956	2,956	2,956
Cotabato City	C32	Tamontaka	Existing	1	4,696	5,132	4,944	5,201	5,473	5,720	5,720	5,720	5,720	5,720	5,720	5,720
Cotabato City	C33	Tamontaka I	Existing	0	1,595	1,780	1,785	1,950	2,080	2,320	2,320	2,320	2,320	2,320	2,320	2,320
Cotabato City	C34	Tamontaka II	Existing	0	321	732	863	1,018	1,167	1,250	1,250	1,250	1,250	1,250	1,250	1,250
Cotabato City	C35	Tamontaka III	Existing	0	220	464	499	515	489	494	494	494	494	494	494	494
Cotabato City	C36	Tamontaka IV	Existing	0	286	322	364	325	375	406	406	406	406	406	406	406
Cotabato City	C37	Tamontaka V	Existing	0	36	36	43	60	54	88	88	88	88	88	88	88

出典: JICA 調査団

表 A6-20 MCWD の給水人口（コタバト市）（2029 年～2040 年）（既存分）

City/Municipality	ID.No	Barangay	Syatem	Urban	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Cotabato City	C01	Bagua	Existing	1	6,630	6,630	6,630	6,630	6,630	6,630	6,630	6,630	6,630	6,630	6,630	6,630
Cotabato City	C02	Bagua I	Existing	1	4,223	4,223	4,223	4,223	4,223	4,223	4,223	4,223	4,223	4,223	4,223	4,223
Cotabato City	C03	Bagua II	Existing	1	8,797	8,797	8,797	8,797	8,797	8,797	8,797	8,797	8,797	8,797	8,797	8,797
Cotabato City	C04	Bagua III	Existing	1	3,290	3,290	3,290	3,290	3,290	3,290	3,290	3,290	3,290	3,290	3,290	3,290
Cotabato City	C05	Kalanganan	Existing	1	5,084	5,084	5,084	5,084	5,084	5,084	5,084	5,084	5,084	5,084	5,084	5,084
Cotabato City	C06	Kalanganan I	Expansion	1	0	0	0	0	0	0	0	0	0	0	0	0
Cotabato City	C07	Kalanganan II	Existing	1	3,280	3,280	3,280	3,280	3,280	3,280	3,280	3,280	3,280	3,280	3,280	3,280
Cotabato City	C08	Poblacion	Existing	1	5,270	5,270	5,270	5,270	5,270	5,270	5,270	5,270	5,270	5,270	5,270	5,270
Cotabato City	C09	Poblacion I	Existing	0	2,457	2,457	2,457	2,457	2,457	2,457	2,457	2,457	2,457	2,457	2,457	2,457
Cotabato City	C10	Poblacion II	Existing	1	2,819	2,819	2,819	2,819	2,819	2,819	2,819	2,819	2,819	2,819	2,819	2,819
Cotabato City	C11	Poblacion III	Existing	0	1,196	1,196	1,196	1,196	1,196	1,196	1,196	1,196	1,196	1,196	1,196	1,196
Cotabato City	C12	Poblacion IV	Existing	1	3,855	3,855	3,855	3,855	3,855	3,855	3,855	3,855	3,855	3,855	3,855	3,855
Cotabato City	C13	Poblacion V	Existing	1	1,185	1,185	1,185	1,185	1,185	1,185	1,185	1,185	1,185	1,185	1,185	1,185
Cotabato City	C14	Poblacion VI	Existing	1	1,102	1,102	1,102	1,102	1,102	1,102	1,102	1,102	1,102	1,102	1,102	1,102
Cotabato City	C15	Poblacion VII	Existing	1	5,226	5,226	5,226	5,226	5,226	5,226	5,226	5,226	5,226	5,226	5,226	5,226
Cotabato City	C16	Poblacion VIII	Existing	1	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590
Cotabato City	C17	Poblacion IX	Existing	1	1,908	1,908	1,908	1,908	1,908	1,908	1,908	1,908	1,908	1,908	1,908	1,908
Cotabato City	C18	Rosary Heights	Existing	1	9,619	9,619	9,619	9,619	9,619	9,619	9,619	9,619	9,619	9,619	9,619	9,619
Cotabato City	C19	Rosary Heights I	Existing	0	4,618	4,618	4,618	4,618	4,618	4,618	4,618	4,618	4,618	4,618	4,618	4,618
Cotabato City	C20	Rosary Heights II	Existing	1	2,578	2,578	2,578	2,578	2,578	2,578	2,578	2,578	2,578	2,578	2,578	2,578
Cotabato City	C21	Rosary Heights III	Existing	1	7,014	7,014	7,014	7,014	7,014	7,014	7,014	7,014	7,014	7,014	7,014	7,014
Cotabato City	C22	Rosary Heights IV	Existing	0	3,669	3,669	3,669	3,669	3,669	3,669	3,669	3,669	3,669	3,669	3,669	3,669
Cotabato City	C23	Rosary Heights V	Existing	1	4,376	4,376	4,376	4,376	4,376	4,376	4,376	4,376	4,376	4,376	4,376	4,376
Cotabato City	C24	Rosary Heights VI	Existing	1	5,418	5,418	5,418	5,418	5,418	5,418	5,418	5,418	5,418	5,418	5,418	5,418
Cotabato City	C25	Rosary Heights VII	Existing	1	4,426	4,426	4,426	4,426	4,426	4,426	4,426	4,426	4,426	4,426	4,426	4,426
Cotabato City	C26	Rosary Heights VIII	Existing	1	7,727	7,727	7,727	7,727	7,727	7,727	7,727	7,727	7,727	7,727	7,727	7,727
Cotabato City	C27	Rosary Heights IX	Existing	1	6,526	6,526	6,526	6,526	6,526	6,526	6,526	6,526	6,526	6,526	6,526	6,526
Cotabato City	C28	Rosary Heights X	Existing	1	11,495	11,495	11,495	11,495	11,495	11,495	11,495	11,495	11,495	11,495	11,495	11,495
Cotabato City	C29	Rosary Heights XI	Existing	1	8,385	8,385	8,385	8,385	8,385	8,385	8,385	8,385	8,385	8,385	8,385	8,385
Cotabato City	C30	Rosary Heights XII	Existing	0	2,709	2,709	2,709	2,709	2,709	2,709	2,709	2,709	2,709	2,709	2,709	2,709
Cotabato City	C31	Rosary Heights XIII	Existing	1	2,956	2,956	2,956	2,956	2,956	2,956	2,956	2,956	2,956	2,956	2,956	2,956
Cotabato City	C32	Tamontaka	Existing	1	5,720	5,720	5,720	5,720	5,720	5,720	5,720	5,720	5,720	5,720	5,720	5,720
Cotabato City	C33	Tamontaka I	Existing	0	2,320	2,320	2,320	2,320	2,320	2,320	2,320	2,320	2,320	2,320	2,320	2,320
Cotabato City	C34	Tamontaka II	Existing	0	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250
Cotabato City	C35	Tamontaka III	Existing	0	494	494	494	494	494	494	494	494	494	494	494	494
Cotabato City	C36	Tamontaka IV	Existing	0	406	406	406	406	406	406	406	406	406	406	406	406
Cotabato City	C37	Tamontaka V	Existing	0	88	88	88	88	88	88	88	88	88	88	88	88

出典: JICA 調査団

表 A6-21 MCWD の給水人口 (SK 町) (2017 年～2028 年) (既存分)

City/Minucipality	ID.No	Barangay	Syatem	Urban	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Sultan Kudarat	S01	Alamada	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S02	Banatin	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S03	Banubo	Existing	0	601	750	722	769	885	921	921	921	921	921	921	921
Sultan Kudarat	S04	Bulalo	Existing	1	3,398	3,721	3,571	3,798	4,013	4,201	4,201	4,201	4,201	4,201	4,201	4,201
Sultan Kudarat	S05	Bulibod	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S06	Calsada	Existing	0	1,815	1,983	2,122	2,351	2,509	2,704	2,704	2,704	2,704	2,704	2,704	2,704
Sultan Kudarat	S07	Crossing Simuay	Expansion	1	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S08	Dalumangcob	Existing	1	1,488	1,673	1,661	1,712	1,792	1,843	1,843	1,843	1,843	1,843	1,843	1,843
Sultan Kudarat	S09	Damaniog	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S10	Darapanan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S11	Gang	Existing	0	756	822	868	937	988	1,004	1,004	1,004	1,004	1,004	1,004	1,004
Sultan Kudarat	S12	Inawan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S13	Kabuntalan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S14	Kakar	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S15	Kapimpilan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S16	Katamlangan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S17	Katiduan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S18	Katuli	Existing	0	1,958	2,137	2,111	2,210	2,319	2,402	2,402	2,402	2,402	2,402	2,402	2,402
Sultan Kudarat	S19	Ladia	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S20	Limbo	Existing	1	2,720	3,025	2,996	3,164	3,285	3,439	3,439	3,439	3,439	3,439	3,439	3,439
Sultan Kudarat	S21	Maidapa	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S22	Makaguiling	Existing	0	262	375	396	423	489	516	516	516	516	516	516	516
Sultan Kudarat	S23	Matengen	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S24	Mulaug	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S25	Nalanan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S26	Nara	Expansion	1	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S27	Nekitan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S28	Olas	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S29	Panatan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S30	Pigcalagan	Expansion	1	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S31	Pigkelegan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S32	Pinarang	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S33	Pingping	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S34	Raguisi	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S35	Rebuken	Existing	0	488	536	488	520	581	636	636	636	636	636	636	636
Sultan Kudarat	S36	Salimbao	Existing	1	4,499	4,698	4,265	4,296	4,306	4,360	4,360	4,360	4,360	4,360	4,360	4,360
Sultan Kudarat	S37	Sambolawan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S38	Senditan	Expansion	1	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S39	Ungap	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0

出典: JICA 調査団

表 6-22 MCWD の給水人口 (SK 町) (2029 年～2040 年) (既存分)

City/Minucipality	ID.No	Barangay	Syatem	Urban	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Sultan Kudarat	S01	Alamada	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S02	Banatin	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S03	Banubo	Existing	0	921	921	921	921	921	921	921	921	921	921	921	921
Sultan Kudarat	S04	Bulalo	Existing	1	4,201	4,201	4,201	4,201	4,201	4,201	4,201	4,201	4,201	4,201	4,201	4,201
Sultan Kudarat	S05	Bulibod	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S06	Calsada	Existing	0	2,704	2,704	2,704	2,704	2,704	2,704	2,704	2,704	2,704	2,704	2,704	2,704
Sultan Kudarat	S07	Crossing Simuay	Expansion	1	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S08	Dalumangcob	Existing	1	1,843	1,843	1,843	1,843	1,843	1,843	1,843	1,843	1,843	1,843	1,843	1,843
Sultan Kudarat	S09	Damaniog	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S10	Darapanan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S11	Gang	Existing	0	1,004	1,004	1,004	1,004	1,004	1,004	1,004	1,004	1,004	1,004	1,004	1,004
Sultan Kudarat	S12	Inawan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S13	Kabuntalan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S14	Kakar	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S15	Kapimpilan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S16	Katamlangan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S17	Katidtuan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S18	Katuli	Existing	0	2,402	2,402	2,402	2,402	2,402	2,402	2,402	2,402	2,402	2,402	2,402	2,402
Sultan Kudarat	S19	Ladia	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S20	Limbo	Existing	1	3,439	3,439	3,439	3,439	3,439	3,439	3,439	3,439	3,439	3,439	3,439	3,439
Sultan Kudarat	S21	Maidapa	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S22	Makaguiling	Existing	0	516	516	516	516	516	516	516	516	516	516	516	516
Sultan Kudarat	S23	Matengen	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S24	Mulaug	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S25	Nalanan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S26	Nara	Expansion	1	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S27	Nekitan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S28	Olas	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S29	Panatan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S30	Pigcalagan	Expansion	1	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S31	Pigkelegan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S32	Pinarang	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S33	Pingping	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S34	Raguisi	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S35	Rebuken	Existing	0	636	636	636	636	636	636	636	636	636	636	636	636
Sultan Kudarat	S36	Salimbao	Existing	1	4,360	4,360	4,360	4,360	4,360	4,360	4,360	4,360	4,360	4,360	4,360	4,360
Sultan Kudarat	S37	Sambolawan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S38	Senditan	Expansion	1	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S39	Ungap	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0

出典: JICA 調査団

表 6-23 MCWD の給水人口 (DOS 町) (2017 年~2028 年) (既存分)

City/Municipality	ID.No	Barangay	Syatem	Urban	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Datu Odin Sinsuat	D01	Ambolodto	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D02	Awang	Existing	0	11,314	11,759	11,076	11,323	11,680	11,955	11,955	11,955	11,955	11,955	11,955	11,955
Datu Odin Sinsuat	D03	Badak	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D04	Bagoenged	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D05	Baka	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D06	Benolen	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D07	Bitu	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D08	Bongued	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D09	Bugawas	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D10	Capiton	Existing	0	2,922	3,423	3,506	3,771	4,040	4,245	4,245	4,245	4,245	4,245	4,245	4,245
Datu Odin Sinsuat	D11	Dados	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D12	Dalican Poblacion	Expansion	1	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D13	Dinaig Proper	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D14	Dulangan	Existing	0	149	155	174	190	223	241	241	241	241	241	241	241
Datu Odin Sinsuat	D15	Kakar	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D16	Kenebeka	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D17	Kurintem	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D18	Kusiong	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D19	Labungan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D20	Linek	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D21	Makir	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D22	Margues	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D23	Mompong	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D24	Nekitan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D25	Sapalan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D26	Semba	Existing	0	7,017	7,103	6,561	6,848	7,064	7,217	7,217	7,217	7,217	7,217	7,217	7,217
Datu Odin Sinsuat	D27	Sibuto	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D28	Sifaren	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D29	Tambak	Existing	0	381	399	423	433	456	488	488	488	488	488	488	488
Datu Odin Sinsuat	D30	Tamontaka	Existing	0	3,333	3,805	3,918	4,350	4,648	4,952	4,952	4,952	4,952	4,952	4,952	4,952
Datu Odin Sinsuat	D31	Tanuel	Existing	0	803	881	895	986	1,086	1,146	1,146	1,146	1,146	1,146	1,146	1,146
Datu Odin Sinsuat	D32	Tapian	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D33	Taviran	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D34	Tenonggos	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0

出典: JICA 調査団

表 6-24 MCWD の給水人口 (DOS 町) (2029 年～2040 年) (既存分)

City/Minucipality	ID.No	Barangay	Syatem	Urban	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Datu Odin Sinsuat	D01	Ambolodto	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D02	Awang	Existing	0	11,955	11,955	11,955	11,955	11,955	11,955	11,955	11,955	11,955	11,955	11,955	11,955
Datu Odin Sinsuat	D03	Badak	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D04	Bagoenged	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D05	Baka	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D06	Benolen	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D07	Bitu	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D08	Bongued	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D09	Bugawas	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D10	Capiton	Existing	0	4,245	4,245	4,245	4,245	4,245	4,245	4,245	4,245	4,245	4,245	4,245	4,245
Datu Odin Sinsuat	D11	Dados	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D12	Dalican Poblacion	Expansion	1	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D13	Dinaig Proper	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D14	Dulangan	Existing	0	241	241	241	241	241	241	241	241	241	241	241	241
Datu Odin Sinsuat	D15	Kakar	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D16	Kenebeka	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D17	Kurintem	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D18	Kusiong	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D19	Labungan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D20	Link	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D21	Makir	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D22	Margues	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D23	Mompong	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D24	Nekitan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D25	Sapalan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D26	Semba	Existing	0	7,217	7,217	7,217	7,217	7,217	7,217	7,217	7,217	7,217	7,217	7,217	7,217
Datu Odin Sinsuat	D27	Sibuto	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D28	Sifaren	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D29	Tambak	Existing	0	488	488	488	488	488	488	488	488	488	488	488	488
Datu Odin Sinsuat	D30	Tamontaka	Existing	0	4,952	4,952	4,952	4,952	4,952	4,952	4,952	4,952	4,952	4,952	4,952	4,952
Datu Odin Sinsuat	D31	Tanuel	Existing	0	1,146	1,146	1,146	1,146	1,146	1,146	1,146	1,146	1,146	1,146	1,146	1,146
Datu Odin Sinsuat	D32	Tapian	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D33	Taviran	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D34	Tenonggos	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0

出典: JICA 調査団

表 6-25 MCWD の給水人口（スルタン・マスツラ町／パラン町）
（2017 年～2028 年）（既存分）

City/Municipality	ID.No	Barangay	Syatem	Urban	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Sultan Mastura	SM01	Balut	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Mastura	SM02	Macabico	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Mastura	SM03	Solon	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Mastura	SM04	Tambo	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Mastura	SM05	Tapayan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Mastura	SM06	Tuka	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Parang	P01	Landasan	Expansion	1	0	0	0	0	0	0	0	0	0	0	0	0
Parang	P02	Compo Islam	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Parang	P03	Polloc	Expansion	1	0	0	0	0	0	0	0	0	0	0	0	0

出典: JICA 調査団

表 6-26 MCWD の給水人口（スルタン・マスツラ町／パラン町）
（2029 年～2040 年）（既存分）

City/Municipality	ID.No	Barangay	Syatem	Urban	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Sultan Mastura	SM01	Balut	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Mastura	SM02	Macabico	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Mastura	SM03	Solon	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Mastura	SM04	Tambo	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Mastura	SM05	Tapayan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Mastura	SM06	Tuka	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Parang	P01	Landasan	Expansion	1	0	0	0	0	0	0	0	0	0	0	0	0
Parang	P02	Compo Islam	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Parang	P03	Polloc	Expansion	1	0	0	0	0	0	0	0	0	0	0	0	0

出典: JICA 調査団

(6) MCWD の給水人口（2026年～2040年）（拡張分）

表 6-27 MCWD の給水人口（コタバト市）（2026年～2040年）（拡張分）

City/Minucipality	ID.No	Barangay	Syatem	Urban	2026	2027	2028	2029	2032	2033	2034	2035	2037	2038	2039	2040
Cotabato City	C01	Bagua	Existing	1	5,653	8,320	9,425	11,445	13,335	14,654	15,024	16,424	18,304	18,734	19,167	20,754
Cotabato City	C02	Bagua I	Existing	1	2,486	3,663	4,152	5,044	5,881	6,463	6,627	7,243	8,069	8,256	8,444	9,139
Cotabato City	C03	Bagua II	Existing	1	4,142	5,965	6,612	7,855	8,575	9,223	9,256	9,904	10,578	10,600	10,618	11,256
Cotabato City	C04	Bagua III	Existing	1	1,405	2,031	2,259	2,693	2,970	3,205	3,227	3,464	3,724	3,744	3,762	4,001
Cotabato City	C05	Kalanganan	Existing	1	4,662	6,837	7,717	9,338	10,769	11,796	12,054	13,135	14,546	14,843	15,139	16,343
Cotabato City	C06	Kalanganan I	Expansion	1	0	0	4,438	5,373	6,214	6,815	6,975	7,613	8,464	8,655	8,848	9,575
Cotabato City	C07	Kalanganan II	Existing	1	1,461	2,163	2,464	3,007	3,550	3,917	4,030	4,421	4,959	5,090	5,222	5,669
Cotabato City	C08	Poblacion	Existing	1	6,193	8,961	9,980	11,920	13,230	14,310	14,443	15,544	16,800	16,936	17,069	18,208
Cotabato City	C09	Poblacion I	Existing	0	1,268	1,731	2,216	2,490	2,647	2,945	3,252	3,313	3,699	4,033	4,375	4,449
Cotabato City	C10	Poblacion II	Existing	1	1,648	2,418	2,730	3,303	3,806	4,167	4,257	4,636	5,127	5,227	5,327	5,746
Cotabato City	C11	Poblacion III	Existing	0	887	1,233	1,608	1,839	2,062	2,334	2,623	2,718	3,139	3,480	3,839	3,969
Cotabato City	C12	Poblacion IV	Existing	1	1,344	1,984	2,253	2,740	3,202	3,521	3,610	3,947	4,396	4,497	4,598	4,974
Cotabato City	C13	Poblacion V	Existing	1	928	1,366	1,547	1,879	2,189	2,405	2,466	2,695	3,003	3,073	3,143	3,403
Cotabato City	C14	Poblacion VI	Existing	1	1,552	2,236	2,481	2,952	3,240	3,492	3,512	3,766	4,040	4,059	4,076	4,332
Cotabato City	C15	Poblacion VII	Existing	1	4,213	6,098	6,793	8,114	9,005	9,740	9,829	10,577	11,427	11,517	11,604	12,375
Cotabato City	C16	Poblacion VIII	Existing	1	2,795	4,032	4,479	5,336	5,879	6,344	6,387	6,858	7,378	7,421	7,462	7,943
Cotabato City	C17	Poblacion IX	Existing	1	2,382	3,556	4,085	5,030	6,109	6,805	7,073	7,836	8,971	9,305	9,647	10,585
Cotabato City	C18	Rosary Heights	Existing	1	2,539	3,779	4,325	5,298	6,312	6,981	7,200	7,913	8,905	9,153	9,401	10,216
Cotabato City	C19	Rosary Heights I	Existing	0	112	194	299	389	572	692	825	900	1,133	1,302	1,484	1,580
Cotabato City	C20	Rosary Heights II	Existing	1	436	578	586	633	495	467	404	365	252	186	121	61
Cotabato City	C21	Rosary Heights III	Existing	1	2,501	3,754	4,332	5,351	6,535	7,285	7,573	8,390	9,588	9,932	10,279	11,255
Cotabato City	C22	Rosary Heights IV	Existing	0	405	565	739	846	941	1,061	1,186	1,223	1,394	1,534	1,679	1,721
Cotabato City	C23	Rosary Heights V	Existing	1	714	1,048	1,183	1,428	1,631	1,779	1,809	1,962	2,149	2,180	2,209	2,369
Cotabato City	C24	Rosary Heights VI	Existing	1	1,109	1,675	1,945	2,413	2,976	3,326	3,464	3,844	4,403	4,563	4,725	5,174
Cotabato City	C25	Rosary Heights VII	Existing	1	2,472	3,649	4,144	5,043	5,909	6,504	6,679	7,311	8,168	8,370	8,572	9,290
Cotabato City	C26	Rosary Heights VIII	Existing	1	1,546	2,410	2,880	3,669	4,855	5,540	5,887	6,658	7,907	8,337	8,776	9,767
Cotabato City	C27	Rosary Heights IX	Existing	1	1,028	1,555	1,806	2,240	2,757	3,078	3,203	3,549	4,054	4,196	4,337	4,742
Cotabato City	C28	Rosary Heights X	Existing	1	2,261	3,343	3,801	4,623	5,398	5,930	6,076	6,635	7,370	7,526	7,681	8,293
Cotabato City	C29	Rosary Heights XI	Existing	1	476	779	966	1,264	1,763	2,035	2,181	2,484	2,975	3,144	3,314	3,689
Cotabato City	C30	Rosary Heights XII	Existing	0	909	1,257	1,628	1,850	2,029	2,279	2,540	2,613	2,969	3,265	3,573	3,662
Cotabato City	C31	Rosary Heights XIII	Existing	1	1,285	1,927	2,222	2,744	3,349	3,733	3,881	4,300	4,917	5,096	5,276	5,780
Cotabato City	C32	Tamontaka	Existing	1	4,056	6,090	7,034	8,704	10,705	11,969	12,482	13,874	15,975	16,614	17,267	18,990
Cotabato City	C33	Tamontaka I	Existing	0	951	1,313	1,698	1,926	2,106	2,364	2,633	2,706	3,071	3,376	3,692	3,783
Cotabato City	C34	Tamontaka II	Existing	0	2,419	3,508	4,765	5,681	7,200	8,486	9,926	10,711	13,404	15,468	17,760	19,108
Cotabato City	C35	Tamontaka III	Existing	0	1,023	1,416	1,838	2,095	2,326	2,626	2,942	3,042	3,500	3,874	4,267	4,405
Cotabato City	C36	Tamontaka IV	Existing	0	1,355	1,857	2,386	2,693	2,905	3,249	3,608	3,696	4,176	4,580	5,000	5,117
Cotabato City	C37	Tamontaka V	Existing	0	673	957	1,276	1,495	1,803	2,092	2,411	2,563	3,116	3,547	4,017	4,264

出典: JICA 調査団

表 6-28 MCWD の給水人口 (SK 町) (2026 年～2040 年) (拡張分)

City/Minucipality	ID.No	Barangay	Syatem	Urban	2026	2027	2028	2029	2032	2033	2034	2035	2037	2038	2039	2040
Sultan Kudarat	S01	Alamada	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S02	Banatin	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S03	Banubo	Existing	0	728	1,063	1,451	1,741	2,236	2,644	3,102	3,356	4,219	4,878	5,610	6,046
Sultan Kudarat	S04	Bulalo	Existing	1	1,439	2,095	2,348	2,826	3,213	3,505	3,567	3,872	4,259	4,332	4,406	4,744
Sultan Kudarat	S05	Bulibod	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S06	Calsada	Existing	0	971	1,303	1,638	1,812	1,845	2,024	2,206	2,219	2,418	2,605	2,795	2,811
Sultan Kudarat	S07	Crossing Simuay	Expansion	1	0	0	3,936	4,746	5,430	5,936	6,056	6,591	7,291	7,439	7,590	8,200
Sultan Kudarat	S08	Dalumangcob	Existing	1	1,993	2,882	3,209	3,840	4,289	4,651	4,708	5,083	5,532	5,598	5,666	6,071
Sultan Kudarat	S09	Damaniog	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S10	Darapanan	Expansion	0	0	0	0	0	2,838	3,295	3,799	4,044	4,934	5,626	6,388	6,799
Sultan Kudarat	S11	Gang	Existing	0	1,045	1,432	1,840	2,079	2,253	2,524	2,808	2,883	3,271	3,596	3,936	4,039
Sultan Kudarat	S12	Inawan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S13	Kabuntalan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S14	Kakar	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S15	Kapimpilan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S16	Katamlangan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S17	Katidtuan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S18	Katuli	Existing	0	898	1,222	1,559	1,750	1,858	2,068	2,284	2,329	2,605	2,845	3,092	3,150
Sultan Kudarat	S19	Ladia	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S20	Limbo	Existing	1	1,166	1,742	2,003	2,471	3,014	3,361	3,495	3,875	4,439	4,606	4,777	5,242
Sultan Kudarat	S21	Maidapa	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S22	Makaguiling	Existing	0	776	1,055	1,344	1,508	1,597	1,776	1,960	1,998	2,234	2,439	2,651	2,701
Sultan Kudarat	S23	Matengen	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S24	Mulaug	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S25	Nalanan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S26	Nara	Expansion	1	0	0	0	0	1,658	1,818	1,861	2,032	2,262	2,315	2,370	2,568
Sultan Kudarat	S27	Nekitan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S28	Olas	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S29	Panatan	Expansion	0	0	0	0	0	1,598	1,761	1,927	1,947	2,139	2,315	2,495	2,520
Sultan Kudarat	S30	Pigcalagan	Expansion	1	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S31	Pigkelegan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S32	Pinaring	Expansion	0	0	0	0	0	2,423	2,738	3,072	3,181	3,675	4,078	4,505	4,665
Sultan Kudarat	S33	Pingping	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S34	Raguisi	Expansion	0	0	0	0	0	1,685	1,883	2,090	2,141	2,420	2,656	2,903	2,974
Sultan Kudarat	S35	Rebuken	Existing	0	735	1,010	1,301	1,475	1,612	1,811	2,020	2,080	2,373	2,617	2,872	2,955
Sultan Kudarat	S36	Salimbao	Existing	1	446	684	805	1,015	1,305	1,476	1,555	1,745	2,042	2,138	2,236	2,472
Sultan Kudarat	S37	Sambolawan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S38	Senditan	Expansion	1	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S39	Ungap	Expansion	0	0	0	1,581	1,783	1,922	2,149	2,387	2,448	2,771	3,044	3,329	3,414

出典: JICA 調査団

表 6-29 MCWD の給水人口 (DOS 町) (2026 年～2040 年) (拡張分)

City/Municipality	ID.No	Barangay	Syatem	Urban	2026	2027	2028	2029	2032	2033	2034	2035	2037	2038	2039	2040
Datu Odin Sinsuat	D01	Ambolodto	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D02	Awang	Existing	0	1,200	1,773	2,437	2,931	3,724	4,366	5,068	5,415	6,610	7,516	8,493	8,981
Datu Odin Sinsuat	D03	Badak	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D04	Bagoenged	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D05	Baka	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D06	Benolen	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D07	Bitu	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D08	Bongued	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D09	Bugawas	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D10	Capiton	Existing	0	171	320	519	708	1,161	1,447	1,772	1,986	2,634	3,106	3,630	3,962
Datu Odin Sinsuat	D11	Dados	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D12	Dalican Poblacion	Expansion	1	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D13	Dinaig Proper	Expansion	0	0	0	0	0	2,965	3,294	3,635	3,702	4,136	4,513	4,903	4,994
Datu Odin Sinsuat	D14	Dulangan	Existing	0	287	393	505	570	616	689	766	786	890	978	1,070	1,097
Datu Odin Sinsuat	D15	Kakar	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D16	Kenebeka	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D17	Kurintem	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D18	Kusiong	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D19	Labungan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D20	Linek	Expansion	0	0	0	0	0	1,318	1,456	1,598	1,618	1,788	1,940	2,096	2,123
Datu Odin Sinsuat	D21	Makir	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D22	Margues	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D23	Mompong	Expansion	0	0	0	0	0	1,026	1,134	1,245	1,262	1,395	1,514	1,636	1,658
Datu Odin Sinsuat	D24	Nekitan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D25	Sapalan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D26	Semba	Existing	0	801	1,252	1,807	2,265	3,179	3,832	4,564	4,995	6,376	7,402	8,533	9,200
Datu Odin Sinsuat	D27	Sibuto	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D28	Sifaren	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D29	Tambak	Existing	0	277	394	524	612	729	842	965	1,019	1,223	1,381	1,553	1,636
Datu Odin Sinsuat	D30	Tamontaka	Existing	0	3,389	4,808	6,388	7,461	8,885	10,257	11,750	12,417	14,907	16,849	18,949	19,970
Datu Odin Sinsuat	D31	Tanuel	Existing	0	278	389	510	587	668	759	857	891	1,038	1,155	1,278	1,326
Datu Odin Sinsuat	D32	Tapian	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D33	Taviran	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D34	Tenonggos	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0

出典: JICA 調査団

表 6-30 MCWD の給水人口（スルタン・マスツラ町／パラン町）
 （2026 年～2040 年）（拡張分）

City/Municipality	ID.No	Barangay	Syatem	Urban	2026	2027	2028	2029	2032	2033	2034	2035	2037	2038	2039	2040
Sultan Mastsura	SM01	Balut	Expansion	0	0	0	0	0	1,503	1,664	1,829	1,855	2,057	2,236	2,421	2,456
Sultan Mastsura	SM02	Macabico	Expansion	0	0	0	0	0	3,443	3,895	4,376	4,537	5,254	5,837	6,456	6,695
Sultan Mastsura	SM03	Solon	Expansion	0	0	0	0	0	1,413	1,560	1,711	1,732	1,911	2,073	2,238	2,265
Sultan Mastsura	SM04	Tambo	Expansion	0	0	0	0	0	1,738	2,042	2,383	2,567	3,208	3,702	4,254	4,582
Sultan Mastsura	SM05	Tapayan	Expansion	0	0	0	0	0	2,961	3,275	3,598	3,647	4,038	4,386	4,744	4,810
Sultan Mastsura	SM06	Tuka	Expansion	0	0	0	0	0	1,029	1,177	1,337	1,403	1,662	1,868	2,090	2,193
Parang	P01	Landasan	Expansion	1	0	0	0	0	13,434	14,498	14,603	15,690	16,914	17,036	17,160	18,301
Parang	P02	Compo Islam	Expansion	0	0	0	0	0	2,574	2,873	2,993	3,325	3,834	3,993	4,160	4,588
Parang	P03	Polloc	Expansion	1	0	0	0	0	6,353	7,036	7,274	8,021	9,107	9,415	9,732	10,653

出典: JICA 調査団

(7) MCWD の給水人口（2026年～2040年）（既存分+拡張分）

表 6-31 MCWD の給水人口（コタバト市）（2026年～2040年）（既存+拡張分）

City/Minucipality	ID.No	Barangay	Syatem	Urban	2026	2027	2028	2029	2032	2033	2034	2035	2037	2038	2039	2040
Cotabato City	C01	Bagua	Existing	1	12,283	14,951	16,055	18,075	19,965	21,285	21,655	23,054	24,934	25,365	25,797	27,385
Cotabato City	C02	Bagua I	Existing	1	6,709	7,886	8,375	9,267	10,104	10,686	10,849	11,466	12,292	12,479	12,667	13,362
Cotabato City	C03	Bagua II	Existing	1	12,938	14,761	15,408	16,651	17,372	18,020	18,052	18,701	19,375	19,397	19,414	20,053
Cotabato City	C04	Bagua III	Existing	1	4,696	5,322	5,550	5,984	6,261	6,496	6,518	6,755	7,015	7,034	7,052	7,291
Cotabato City	C05	Kalanganan	Existing	1	9,746	11,921	12,800	14,421	15,853	16,879	17,138	18,218	19,630	19,926	20,223	21,427
Cotabato City	C06	Kalanganan I	Expansion	1	0	0	4,438	5,373	6,214	6,815	6,975	7,613	8,464	8,655	8,848	9,575
Cotabato City	C07	Kalanganan II	Existing	1	4,740	5,443	5,744	6,287	6,830	7,196	7,310	7,701	8,238	8,370	8,502	8,949
Cotabato City	C08	Poblacion	Existing	1	11,464	14,231	15,250	17,190	18,500	19,580	19,713	20,815	22,070	22,207	22,339	23,479
Cotabato City	C09	Poblacion I	Existing	0	3,725	4,188	4,673	4,947	5,104	5,402	5,709	5,770	6,156	6,490	6,832	6,905
Cotabato City	C10	Poblacion II	Existing	1	4,467	5,237	5,549	6,122	6,625	6,986	7,075	7,454	7,946	8,046	8,146	8,565
Cotabato City	C11	Poblacion III	Existing	0	2,082	2,429	2,803	3,035	3,258	3,530	3,818	3,914	4,335	4,676	5,035	5,164
Cotabato City	C12	Poblacion IV	Existing	1	5,199	5,839	6,108	6,595	7,057	7,376	7,466	7,802	8,252	8,352	8,453	8,829
Cotabato City	C13	Poblacion V	Existing	1	2,113	2,550	2,732	3,063	3,373	3,590	3,650	3,879	4,187	4,257	4,328	4,587
Cotabato City	C14	Poblacion VI	Existing	1	2,654	3,339	3,584	4,055	4,343	4,594	4,614	4,868	5,143	5,161	5,178	5,435
Cotabato City	C15	Poblacion VII	Existing	1	9,440	11,324	12,020	13,340	14,231	14,966	15,055	15,804	16,654	16,744	16,831	17,602
Cotabato City	C16	Poblacion VIII	Existing	1	4,385	5,623	6,070	6,927	7,469	7,934	7,978	8,449	8,968	9,011	9,053	9,533
Cotabato City	C17	Poblacion IX	Existing	1	4,291	5,465	5,993	6,939	8,017	8,714	8,981	9,745	10,879	11,213	11,555	12,494
Cotabato City	C18	Rosary Heights	Existing	1	12,158	13,398	13,944	14,917	15,931	16,600	16,819	17,533	18,524	18,773	19,021	19,835
Cotabato City	C19	Rosary Heights I	Existing	0	4,730	4,812	4,917	5,007	5,190	5,310	5,442	5,517	5,750	5,920	6,102	6,198
Cotabato City	C20	Rosary Heights II	Existing	1	3,014	3,155	3,164	3,211	3,073	3,044	2,981	2,942	2,829	2,763	2,699	2,638
Cotabato City	C21	Rosary Heights III	Existing	1	9,515	10,768	11,346	12,365	13,549	14,300	14,588	15,404	16,602	16,946	17,293	18,269
Cotabato City	C22	Rosary Heights IV	Existing	0	4,073	4,234	4,408	4,515	4,610	4,730	4,855	4,892	5,063	5,203	5,348	5,390
Cotabato City	C23	Rosary Heights V	Existing	1	5,091	5,425	5,560	5,805	6,007	6,155	6,186	6,338	6,525	6,556	6,585	6,745
Cotabato City	C24	Rosary Heights VI	Existing	1	6,527	7,094	7,363	7,831	8,395	8,744	8,883	9,262	9,821	9,982	10,143	10,593
Cotabato City	C25	Rosary Heights VII	Existing	1	6,898	8,075	8,570	9,469	10,335	10,930	11,104	11,737	12,594	12,795	12,997	13,716
Cotabato City	C26	Rosary Heights VIII	Existing	1	9,273	10,138	10,607	11,396	12,582	13,268	13,614	14,385	15,634	16,064	16,503	17,494
Cotabato City	C27	Rosary Heights IX	Existing	1	7,554	8,081	8,332	8,766	9,283	9,604	9,729	10,075	10,580	10,722	10,863	11,268
Cotabato City	C28	Rosary Heights X	Existing	1	13,755	14,837	15,296	16,118	16,892	17,425	17,571	18,129	18,864	19,021	19,175	19,787
Cotabato City	C29	Rosary Heights XI	Existing	1	8,861	9,164	9,351	9,649	10,148	10,420	10,567	10,869	11,361	11,530	11,699	12,074
Cotabato City	C30	Rosary Heights XII	Existing	0	3,618	3,966	4,337	4,559	4,738	4,988	5,250	5,322	5,679	5,975	6,282	6,371
Cotabato City	C31	Rosary Heights XIII	Existing	1	4,241	4,883	5,178	5,700	6,304	6,689	6,837	7,256	7,873	8,051	8,232	8,736
Cotabato City	C32	Tamontaka	Existing	1	9,776	11,810	12,753	14,424	16,425	17,689	18,202	19,594	21,695	22,334	22,987	24,710
Cotabato City	C33	Tamontaka I	Existing	0	3,271	3,633	4,018	4,246	4,426	4,684	4,953	5,025	5,391	5,696	6,012	6,103
Cotabato City	C34	Tamontaka II	Existing	0	3,669	4,758	6,015	6,932	8,450	9,737	11,177	11,961	14,654	16,718	19,011	20,358
Cotabato City	C35	Tamontaka III	Existing	0	1,517	1,910	2,331	2,588	2,819	3,119	3,436	3,536	3,994	4,367	4,761	4,898
Cotabato City	C36	Tamontaka IV	Existing	0	1,760	2,263	2,791	3,099	3,311	3,655	4,013	4,102	4,582	4,986	5,406	5,522
Cotabato City	C37	Tamontaka V	Existing	0	760	1,045	1,364	1,583	1,891	2,180	2,498	2,650	3,204	3,634	4,105	4,352

出典: JICA 調査団

表 6-32 MCWD の給水人口 (SK 町) (2026 年～2040 年) (既存+拡張分)

City/Minucipality	ID.No	Barangay	Syatem	Urban	2026	2027	2028	2029	2032	2033	2034	2035	2037	2038	2039	2040
Sultan Kudarat	S01	Alamada	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S02	Banatin	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S03	Banubo	Existing	0	1,650	1,984	2,373	2,662	3,157	3,566	4,024	4,278	5,140	5,799	6,532	6,967
Sultan Kudarat	S04	Bulalo	Existing	1	5,640	6,296	6,549	7,027	7,414	7,706	7,768	8,073	8,459	8,533	8,607	8,945
Sultan Kudarat	S05	Bulibod	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S06	Calsada	Existing	0	3,675	4,006	4,342	4,516	4,549	4,728	4,910	4,923	5,121	5,309	5,499	5,515
Sultan Kudarat	S07	Crossing Simuay	Expansion	1	0	0	3,936	4,746	5,430	5,936	6,056	6,591	7,291	7,439	7,590	8,200
Sultan Kudarat	S08	Dalumangcob	Existing	1	3,835	4,724	5,052	5,682	6,132	6,494	6,551	6,925	7,374	7,441	7,508	7,913
Sultan Kudarat	S09	Damaniog	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S10	Darapanan	Expansion	0	0	0	0	0	2,838	3,295	3,799	4,044	4,934	5,626	6,388	6,799
Sultan Kudarat	S11	Gang	Existing	0	2,049	2,436	2,843	3,083	3,257	3,528	3,812	3,886	4,274	4,600	4,940	5,042
Sultan Kudarat	S12	Inawan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S13	Kabuntalan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S14	Kakar	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S15	Kapimpilan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S16	Katamlangan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S17	Katidtuan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S18	Katuli	Existing	0	3,300	3,624	3,961	4,152	4,260	4,470	4,686	4,731	5,007	5,247	5,494	5,552
Sultan Kudarat	S19	Ladia	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S20	Limbo	Existing	1	4,605	5,181	5,442	5,910	6,452	6,799	6,934	7,313	7,878	8,045	8,215	8,681
Sultan Kudarat	S21	Maidapa	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S22	Makaguiling	Existing	0	1,292	1,570	1,860	2,023	2,112	2,291	2,476	2,513	2,750	2,955	3,167	3,217
Sultan Kudarat	S23	Matengen	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S24	Mulaug	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S25	Nalanan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S26	Nara	Expansion	1	0	0	0	0	1,658	1,818	1,861	2,032	2,262	2,315	2,370	2,568
Sultan Kudarat	S27	Nekitan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S28	Olas	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S29	Panatan	Expansion	0	0	0	0	0	1,598	1,761	1,927	1,947	2,139	2,315	2,495	2,520
Sultan Kudarat	S30	Pigcalagan	Expansion	1	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S31	Pigkelegan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S32	Pinarang	Expansion	0	0	0	0	0	2,423	2,738	3,072	3,181	3,675	4,078	4,505	4,665
Sultan Kudarat	S33	Pingping	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S34	Raguisi	Expansion	0	0	0	0	0	1,685	1,883	2,090	2,141	2,420	2,656	2,903	2,974
Sultan Kudarat	S35	Rebuken	Existing	0	1,371	1,646	1,937	2,111	2,249	2,447	2,657	2,716	3,009	3,253	3,508	3,591
Sultan Kudarat	S36	Salimbao	Existing	1	4,806	5,044	5,165	5,375	5,664	5,836	5,915	6,105	6,402	6,498	6,595	6,832
Sultan Kudarat	S37	Sambolawan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S38	Senditan	Expansion	1	0	0	0	0	0	0	0	0	0	0	0	0
Sultan Kudarat	S39	Ungap	Expansion	0	0	0	1,581	1,783	1,922	2,149	2,387	2,448	2,771	3,044	3,329	3,414

出典: JICA 調査団

表 6-33 MCWD の給水人口 (DOS 町) (2026 年～2040 年) (既存+拡張分)

City/Minucipality	ID.No	Barangay	Syatem	Urban	2026	2027	2028	2029	2032	2033	2034	2035	2037	2038	2039	2040
Datu Odin Sinsuat	D01	Ambolodto	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D02	Awang	Existing	0	13,155	13,728	14,393	14,887	15,679	16,321	17,023	17,371	18,565	19,472	20,448	20,936
Datu Odin Sinsuat	D03	Badak	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D04	Bagoenged	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D05	Baka	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D06	Benolen	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D07	Bitu	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D08	Bongued	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D09	Bugawas	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D10	Capiton	Existing	0	4,416	4,564	4,764	4,953	5,405	5,691	6,016	6,231	6,878	7,350	7,875	8,207
Datu Odin Sinsuat	D11	Dados	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D12	Dalican Poblacion	Expansion	1	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D13	Dinaig Proper	Expansion	0	0	0	0	0	2,965	3,294	3,635	3,702	4,136	4,513	4,903	4,994
Datu Odin Sinsuat	D14	Dulangan	Existing	0	529	635	746	811	857	931	1,007	1,027	1,132	1,219	1,311	1,338
Datu Odin Sinsuat	D15	Kakar	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D16	Kenebeka	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D17	Kurintem	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D18	Kusiong	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D19	Labungan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D20	Linek	Expansion	0	0	0	0	0	1,318	1,456	1,598	1,618	1,788	1,940	2,096	2,123
Datu Odin Sinsuat	D21	Makir	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D22	Margues	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D23	Mompong	Expansion	0	0	0	0	0	1,026	1,134	1,245	1,262	1,395	1,514	1,636	1,658
Datu Odin Sinsuat	D24	Nekitan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D25	Sapalan	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D26	Semba	Existing	0	8,018	8,470	9,024	9,483	10,396	11,049	11,781	12,213	13,593	14,619	15,750	16,418
Datu Odin Sinsuat	D27	Sibuto	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D28	Sifaren	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D29	Tambak	Existing	0	765	882	1,012	1,100	1,217	1,330	1,453	1,507	1,711	1,869	2,041	2,124
Datu Odin Sinsuat	D30	Tamontaka	Existing	0	8,341	9,760	11,340	12,414	13,837	15,209	16,702	17,369	19,859	21,801	23,902	24,923
Datu Odin Sinsuat	D31	Taniel	Existing	0	1,425	1,535	1,656	1,733	1,814	1,905	2,003	2,038	2,184	2,301	2,424	2,472
Datu Odin Sinsuat	D32	Tapian	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D33	Taviran	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0
Datu Odin Sinsuat	D34	Tenonggos	Expansion	0	0	0	0	0	0	0	0	0	0	0	0	0

出典: JICA 調査団

表 6-34 MCWD の給水人口（スルタン・マスツラ町／パラン町）
（2026 年～2040 年）（既存＋拡張分）

City/Municipality	ID No	Barangay	System	Urban	2026	2027	2028	2029	2032	2033	2034	2035	2037	2038	2039	2040
Sultan Mastsura	SM01	Balut	Expansion	0	0	0	0	0	1,503	1,664	1,829	1,855	2,057	2,236	2,421	2,456
Sultan Mastsura	SM02	Macabico	Expansion	0	0	0	0	0	3,443	3,895	4,376	4,537	5,254	5,837	6,456	6,695
Sultan Mastsura	SM03	Solon	Expansion	0	0	0	0	0	1,413	1,560	1,711	1,732	1,911	2,073	2,238	2,265
Sultan Mastsura	SM04	Tambo	Expansion	0	0	0	0	0	1,738	2,042	2,383	2,567	3,208	3,702	4,254	4,582
Sultan Mastsura	SM05	Tapayan	Expansion	0	0	0	0	0	2,961	3,275	3,598	3,647	4,038	4,386	4,744	4,810
Sultan Mastsura	SM06	Tuka	Expansion	0	0	0	0	0	1,029	1,177	1,337	1,403	1,662	1,868	2,090	2,193
Parang	P01	Landasan	Expansion	1	0	0	0	0	13,434	14,498	14,603	15,690	16,914	17,036	17,160	18,301
Parang	P02	Compo Islam	Expansion	0	0	0	0	0	2,574	2,873	2,993	3,325	3,834	3,993	4,160	4,588
Parang	P03	Poloc	Expansion	1	0	0	0	0	6,353	7,036	7,274	8,021	9,107	9,415	9,732	10,653

出典: JICA 調査団

6-2. 討議議事録

以下の討議議事録を次頁以降に示す。

- (1) インセプションレポート協議
- (2) コタバト市との協議
- (3) Bangsamoro Planning and Development Authority (BPDA) との協議
- (4) Ministry of Environment, Natural Resources and Energy (MENRE) との協議
- (5) Ministry of Public Works (MPW) との協議
- (6) 取締役員への第一回中間報告
- (7) 取締役員への第二回中間報告
- (8) ドラフト・ファイナルレポート協議

(1) インセプションレポート協議

SUMMARY RECORD OF THE MEETING

Inception Meeting/Courtesy Call with the Management of MCWD

Organization:	Metro Cotabato Water District (MCWD), JICA HQ, JICA Philippines, JICA Study Team, JICA Study Team Cotabato Office
Place:	MCWD Office, Cotabato City
Date & Time:	11 October 2022, 3:20 PM to 5:45 PM Philippine Time
Participants:	<p>MCWD: Miss Ma. Melinda Elain V. BARCIMO (OIC-General Manager), Engr. Venancio VILLARMA (Assistant General Manager), Mr. Winston SAPAL (Division Manager) and four other Division Managers</p> <p>JICA: Mr. Yoichi INOUE (Group Director for Water Resources Global Environment Department, JICA HQ), Mr. Hiroshi KUBOTA (Project Formulation Advisor for Water Resources Group, JICA HQ), Mr. Kohei HORI (Project Formulation Advisor, JICA Philippines)</p> <p>JICA Study Team: Mr. Hideki KONNO (Chief Consultant/Water Supply Planner), Mr. Toru TAKAHASHI (Water Resources/Intake Facilities Planner), Mr. Kenichi WAKABAYASHI (Facility/Construction/Project Planner), Mr. Akimasa MOCHIZUKI (O and M Planner)</p> <p>JICA Study Team Cotabato Office: Mr. Danny BUENBRAZO (Office Manager/Urban Planner), Engr. Nemerlito PEREZ (Engineer)</p>
Prepared by:	JICA Study Team Cotabato Office

Objectives:

Inception/Courtesy meeting and briefing to the Management of Metro Cotabato Water District.

Main Points Discussed:

Items	Notes
<p>Discussion</p> <p>Mr. Kohei HORI of JICA Philippines introduced the members of the team from JICA HQ and JICA Philippines and gave a short background of the Mission and the data collection survey on water supply improvement.</p> <p>Engr. Venancio VILLARMA sought clarification on the number of consultants and the frequency of their visit to Cotabato City.</p> <p>Mr. HORI stated that the JICA Study Team will be composed of five (5) and that they will be in Cotabato City from October to the second week of December 2022 and then will return again for a month stay on March 2023.</p> <p>Mr. Yoichi INOUE further clarified that the data collection survey intends to collect important information that could lead to the next step of JICA engagement with the</p>	<p>Copy of the proposal submitted to the BPDA by MCWD was provided to the JICA Study Team.</p> <p>Copy of the Project Background and other aspects of the Local Data Collection Survey were distributed by the JICA Study Team to the meeting participants..</p>

Items	Notes
<p>MCWD.</p> <p>Mr. Hideki KONNO introduced the consultants composing the JICA Study Team and gave the background, objectives, and scope of the data collection survey.</p> <p>OIC General Manager Ma. Melinda Elaine BARCIMO thanked JICA and the JICA Study for the presentation and he continuing support to the MCWD. She said that all division heads had been invited to the meeting so that they will have a clear understanding of the Project and would be able to provide necessary information and support.</p> <p>Engr. Winston SAPAL then updated the JICA and the JICA Study Team on the purchase of a property near the Rio Grande de Mindanao and the negotiation with the BARMM, particularly the Bangsamoro Planning and Development Authority (BPDA) on the possibility of the latter providing financial support to various proposed projects of the MCWD to include: water treatment plant, replacement/upgrading of the existing main distribution pipes, among other projects.</p> <p>Several months ago. Engr. SULAIK of the BPDA visited MCWD to discuss the possibility of MCWD accessing an initial P450.00 million (of the total P157 billion requirement of MCWD for various projects) from the 2022 Special Development Fund (SDF) of the BARMM Government.</p> <p>BPDA (whose Director General Engr. Mohajirin ALI) manages the SDF, is now asking the MCWD to submit the design parameters for their proposed water treatment plant project at Rio Grande de Mindanao so that the Technical Working Group (TWG) of the SDF can commence evaluation of the MCWD proposal so that the same can be passed on to the approving authority of the SDF.</p> <p>The design parameters is important since the procurement method is Design and Build. The JICA Study Team could possibly help MCWD come up with the design parameters.</p> <p>Mr. Hiroshi KUBOTA sought to clarify whether the proposed project of MCWD will be financed by corporate funds or other funding sources. He also would like to know how the facility will be maintained and operated after completion of construction.</p> <p>Ms. Helen SAMPIANO (Acting Head of the Finance Division) explained the financial system of the MCWD. That it is a government-owned and controlled corporation</p> <p>Mr. SAPAL added that the P450 million water treatment plant will be financed by the BARMM and not established using corporate funds. BARMM will be responsible for procurement through the Office of the Chief Minister. The MCWD will then be responsible for Operation and Maintenance once the facility is completed and turned</p>	

Items	Notes
<p>over to the MCWD.</p> <p>Mr. HORI explained to the Japanese how the BARMM Government works and the nature of the SDF (an annual P5.0 billion grant given by the Philippine Government for a period of 10 years).</p> <p>Mr. SAPAL mentioned that during his conversations with Engrs. SULAİK and USOP of BPDA, the BARMM seems to be interested in extending water services to the municipalities of Sultan Mastura and Parang (where the proposed new government center for BARMM is likely to be situated). He said that the MCWD will provide a copy of the proposal submitted to the BPDA for their review and comments.</p> <p>Mr. HORI expressed his surprise with this new development and asked when the discussions with the BPDA started regarding the possible allocation of P450 million from the SDF.</p> <p>Ms. BARCIMO said that the talks with BPDA started only around July 2022. The MCWD proposal was then submitted around two months ago to BPDA.</p> <p>Engr. SAPAL said that the MCWD plans to submit the requirements including the design parameters) of BPDA to access the SDF within one month.</p> <p>Mr. HORI further clarified on the deadline for submission to the BPDA.</p> <p>Mr. SAPAL said that the deadline is within one month and they expect approval (or disapproval) by the Technical Working Group (TWG) of the SDF on or before the end of December 2022.</p> <p>Mr. KUBOTA remarked that a good water development plan would need projections (particularly demand and supply). He asked if the MCWD already have such projections.</p> <p>Mr. SAPAL answered that the MCWD is still in the process of preparing the plan. The matter of expanding services to Sultan Mastura and Parang municipalities is not an initiative of the MCWD but was mentioned by the BPDA officials during the meetings regarding possible funding of MCWD project using the SDF.</p> <p>Mr. KUBOTA emphasized the need for a “big picture” plan if the MCWD would like to expand beyond its current service areas.</p> <p>Engr. VILARMA explained that the MCWD is at the moment serving only portions of Sultan Kudarat (7 barangays) and Datu Odin Sinsuat (10 Barangays), unlike Cotabato City where all 37 barangays have access to the water distribution service of MCWD. If the MCWD will expand beyond the three service areas, it has to comply first with</p>	

Items	Notes
<p>legal and other requirements.</p> <p>Before the meeting was adjourned, the MCWD and the JICA and JICA Study Team agreed on the schedule for the visits to MCWD facilities and proposed water extraction and treatment sites on Wednesday morning (12 October 2022).</p> <p>The meeting ended at around 5:45 in the afternoon.</p>	

(2) コタバト市との協議

SUMMARY RECORD OF THE MEETING

Inception Meeting/Courtesy Call with the Mayor of Cotabato City

Organization:	Cotabato City Mayor JICA HQ, JICA Philippines, JICA Study Team, JICA Study Team Cotabato Office
Place:	MCWD Office, Cotabato City
Date & Time:	12 October 2022, 9:45 AM to 10:45 AM Philippine Time
Participants:	<p>Cotabato City: Mohamad dela Cruz MATABALAO (City Mayor)</p> <p>JICA: Mr. Yoichi INOUE (Group Director for Water Resources Global Environment Department, JICA HQ), Mr. Hiroshi KUBOTA (Project Formulation Advisor for Water Resources Group, JICA HQ), Mr. Kohei HORI (Project Formulation Advisor, JICA Philippines)</p> <p>JICA Study Team: Mr. Hideki KONNO (Chief Consultant/Water Supply Planner), Mr. Toru TAKAHASHI (Water Resources/Intake Facilities Planner), Mr. Kenichi WAKABAYASHI (Facility/Construction/Project Planner), Mr. Akimasa MOCHIZUKI (O and M Planner)</p> <p>JICA Study Team Cotabato Office: Mr. Danny BUENBRAZO (Office Manager/Urban Planner), Engr. Nemerlito PEREZ (Engineer)</p>
Prepared by:	JICA Study Team Cotabato Office

Objectives:

Inception/Courtesy meeting and briefing to the Mayor of Cotabato City.

Main Points Discussed:

Items	Notes
<p>Discussion</p> <p>Mr. Kohei HORI of JICA Philippines introduced the members of the team from JICA HQ and JICA Philippines and gave a short background of the Mission and the data collection survey on water supply improvement.</p> <p>Mayor MATABALAO sought clarification on the duration of the Study.</p>	<p>Copy of the proposal submitted to the BPDA by MCWD was provided to the JICA Study Team.</p>

Items	Notes
<p>Mr. Inoue stated that the JICA Study Team will complete their field work by March 2023 and submit the completed Study thereafter.</p> <p>Mayor MATABALAO revealed that the City Government proposed to purchase a lot to be the site of a water treatment facility near Tamontaka River. However, land ownership issues prevented the City Government from pursuing the purchase.</p> <p>He assured JICA that the City Government is willing to invest in water projects and if a suitable area had been identified, he advised that the City Government be informed so that the latter can allocate funds to purchase such property.</p> <p>The Mayor said that there is a need to identify private investors to increase and improve water supply in the City. He expressed concern with water extraction projects at Matampay River since the area is near the existing dumpsite of Cotabato City.</p> <p>Mr. Hideki KONNO inquired into the relationship between the City Government and the BARMM Government.</p> <p>The Mayor informed the group that the City had been included in the jurisdiction of the BARMM since the passage of the Bangsamoro Organic Law (BOL) in 2019. He characterized the relationship of the City government with the BARMM as good.</p> <p>Mr. HORI asked the Mayor why some BARMM agencies are asking the JICA for some assistance when they have the Special Development Fund (SDF). He wanted to know how fast is the approval of proposed projects to the SDF and its implementation.</p> <p>According to Mayor MATABALAO, the programs to be funded using the SDF are identified. However, just like the case of Cotabato City that only receives around P1.5 billion of Internal Revenue Allotment (IRA), the BARMM Government also have limited funds and needs to tap outside funders such as JICA. It would be much better if JICA could fast-track approval and implementation of projects since with the current process, it takes a number of years from proposal preparation to conduct of various studies, and actual implementation.</p> <p>Unlike ordinary local governments and government agencies, unused funds of the BARMM for certain fiscal year can still be utilized in succeeding years and not reverted to the National Treasury..</p> <p>Mr. KONNO asked if the passage of the BARMM Local Government Code will affect the working relations between the BARMM and the local governments.</p> <p>The Mayor said that the BARMM LGC will not diminish the powers of the local governments and will not affect their operations on the economic and social aspects.</p>	<p>Copy of the Project Background and other aspects of the Local Data Collection Survey were distributed by the JICA Study Team to the meeting participants..</p>

Items	Notes
<p>Mr. KONNO asked where does the MCWD need to get permits if they have new projects.</p> <p>According to the Mayor, there are several entities from whom the MCWD gets permits, principally from the Local Water Utilities Administration (LWUA) but also from local government on permission to construct. Environmental Compliance Certificate (ECC) may be obtained from the Ministry of Environment, natural Resources, and Energy (MENRE).</p> <p>Mayor MATABALAO asked when the Survey would begin.</p> <p>Mr. HORI explained that the Survey begins on the day of the meeting with the Mayor.</p> <p>The Mayor informed the JICA representatives that the two (2) priority projects of the City Government that can be funded by JICA are:</p> <ol style="list-style-type: none"> 1. Drainage System 2. Solid Waste Facility <p>Mayor MATABALAO said that the City Government can provide counterpart such as manpower for any project that JICA would fund for the City.</p> <p>Before the meeting was adjourned, the Mayor thanked the visitors for their continuing assistance to the City Government and invited the JICA and JICA Study Team for photo-taking and told them that they can visit the City Government for any assistance related to the conduct of the Survey.</p> <p>The meeting ended at around 10:45 in the morning.</p>	

(3) BPDA との協議

SUMMARY RECORD OF THE MEETING

**Meeting with Director-General
of the Bangsamoro Planning and Development Authority (BPDA)**

Organization:	BPDA, JICA HQ, JICA Philippines, JICA Study Team, JICA Study Team Cotabato Office
Place:	BPDA Office, Cotabato City
Date & Time:	12 October 2022, 4:30 PM to 5:45 PM Philippine Time
Participants:	<p>BPDA: Engr. Mohajirin ALI (Director-General of BPDA), Mr. Norhan Hadji ABDULLAH (SDF Project Coordinator), Mr. Akmad GUINTA (Director I, SDF), and other staff from BPDA</p> <p>JICA: Mr. Yoichi INOUE (Group Director for Water Resources Global Environment Department,</p>

	<p>JICA HQ), Mr. Hiroshi KUBOTA (Project Formulation Advisor for Water Resources Group, JICA HQ), Mr. Kohei HORI (Project Formulation Advisor, JICA Philippines)</p> <p>JICA Study Team: Mr. Hideki KONNO (Chief Consultant/Water Supply Planner), Mr. Toru TAKAHASHI (Water Resources/Intake Facilities Planner), Mr. Kenichi WAKABAYASHI (Facility/Construction/Project Planner), Mr. Akimasa MOCHIZUKI (O and M Planner)</p> <p>JICA Study Team Cotabato Office: Mr. Danny BUENBRAZO (Office Manager/Urban Planner), Engr. Nemerlito PEREZ (Engineer)</p>
Prepared by:	JICA Study Team Cotabato Office

Objectives:

Inception/Courtesy meeting with the BPDA and its Director General.

Main Points Discussed:

Items	Notes
<p>Discussion</p> <p>The meeting was done through ZOOM and a continuation of the discussion started late morning on the same day on the matter of the proposal of the MCWD submitted to the BPDA-SDF unit for funding under the Special Development Fund (SDF).</p> <p>Mr. Kohei HORI of JICA Philippines introduced the members of the team from JICA HQ and JICA Philippines and gave a short background of the Mission and the data collection survey on water supply improvement.</p> <p>The BPDA Director General Engr. Mohajirin ALI thanked the JICA for its continuing support to the BPDA and for another project that would benefit the constituents of BARMM.. He asked if the water project would cover the entire BARMM area.</p> <p>Mr. HORI explained that the data collection survey for the water project will not cover the entire BARMM but only the area identified by a previous JICA Study.</p> <p>He inquired into the proposal of the MCWD seeking to get funding from the SDF which is being managed by BPDA.</p> <p>Director General ALI said that the MCWD is a semi-private entity and income generating. He said that the BPDA would like to understand how the MCWD operates and how their income is utilized. MCWD obtained several loans from the LWUA, BPDA wants to know more what loans the MCWD got from LWUA and other sources. The BPDA also wants to know if the MCWD is generating income for the government.</p> <p>The Bangsamoro Organic Law (BOL) empowers the BARMM to organize its own water agency. BPDA would like to engage the MCWD in the coming weeks to find out how</p>	

Items	Notes
<p>the agency can be supported by BPDA.</p> <p>Mr. HORI said that JICA has recognized MCWD as a stable organization, he asked that the JICA Mission be allowed to explain the purpose of their mission and the purpose of the new project.</p> <p>Mr. Hideki KONNO asked if there is a criteria used to evaluate projects seeking to be funded under the SDF.</p> <p>Mr. INOUE of JICA HQ explained that the JICA Study Team will stay in Cotabato for two months and will come up with a Water Development Master Plan.</p> <p>Mr. KONNO explained the background of the study and what the JICA Study Team will be doing (such as determining supply and demand situation, examine current and needed water facilities, and the distribution system). Upon the completion of the data collection survey in 2023, there will be a list of possible projects that the JICA could decide to support.</p> <p>Engr. ALI revealed that he had a meeting with the Mayor of Cotabato City and the later mentioned that the projects most needed by Cotabato City are: improvement of garbage collection and disposal system and the improvement of its drainage system. He mentioned to the Mayor the importance of making studies to look into current developments (such as the construction of the KCC Mall) that would have impact on the demand for water, electricity, and other sectors.</p> <p>Mr. KONNO asked the if Parang municipality has its own water district.</p> <p>Engr. ALI said that Parang has their own water district but coverage area is limited mostly to barangays in the downtown area. He said that JICA and the JICA Study Team could visit Parang to check on their water system.</p> <p>Mr. HORI said that the current study is limited to the current service area of the MCWD but JICA could look into the proposed projects of BARMM.</p> <p>There being no other matters to discuss, the meeting ended at around 5:45 in the afternoon.</p>	

(4) MENRE との協議

SUMMARY RECORD OF THE MEETING

Meeting with the Ministry of Environment, Natural Resources, and Energy (MENRE)

Organization:	MENRE JICA HQ, JICA Philippines, JICA Study Team, JICA Study Team Cotabato Office
Place:	MENRE Office, Cotabato City
Date & Time:	13 October 2022, 10:20 AM to 11:30 AM Philippine Time
Participants:	<p>MENRE: Mr. Akmad BRAHIM (Minister), Atty. Badr SALENDAB (Director General), Mr. Jesse ONDOY (Head, Planning Division), Mr. Jalani PAMLIAN (Director II, Environmental Management Services), Mr. Raphael REMO (Director II, Mines and Geosciences Division), Mr. Mohamad Ali DIMAREN (Director II)</p> <p>JICA: Mr. Yoichi INOUE (Group Director for Water Resources Global Environment Department, JICA HQ), Mr. Hiroshi KUBOTA (Project Formulation Advisor for Water Resources Group, JICA HQ), Mr. Kohei HORI (Project Formulation Advisor, JICA Philippines)</p> <p>JICA Study Team: Mr. Hideki KONNO (Chief Consultant/Water Supply Planner), Mr. Toru TAKAHASHI (Water Resources/Intake Facilities Planner), Mr. Kenichi WAKABAYASHI (Facility/Construction/Project Planner), Mr. Akimasa MOCHIZUKI (O and M Planner)</p> <p>JICA Study Team Cotabato Office: Mr. Danny BUENBRAZO (Office Manager/Urban Planner), Engr. Nemerlito PEREZ (Engineer)</p>
Prepared by:	JICA Study Team Cotabato Office

Objectives:

Inception/Courtesy meeting and briefing to the Mayor of Cotabato City.

Main Points Discussed:

Items	Notes
<p>Discussion</p> <p>Director General Badr SALENDAB of the MENRE welcome the JICA and JICA Study Team members to the Ministry.</p> <p>Mr. INOUE identified himself as coming from JICA Headquarters and Head of the Mission. The other members of the JICA HQ and JICA Philippines representatives also introduced themselves.</p> <p>Mr. Hideki KONNO introduced himself and the members of the JICA Study Team.</p> <p>Director General SALENDAB explained the organizational structure of the MENRE and inquired into the purpose of the visit of JICA and the JICA Study Team.</p>	

Items	Notes
<p>Mr. INOUE explained the purpose of the Mission. It is a follow up to the previous Urban Infrastructure Development in Greater Cotabato Master Plan. Based on that study, JICA decided to support water improvement project through MCWD. The data collection shall be done from October 2022 to March 2023, thereafter the JICA Study Team will submit their Report. The JICA will then decide on what projects it can further support for the improvement of water supply in Cotabato City area.</p> <p>Mr. KONNO explained more on the purpose and the scope of the Data Collection Survey that will be done by the JICA Study Team. He mentioned that the possible assistance needed from MENRE would include information on: Water Quality, Water Volume, and Water Rights.</p> <p>Director General SALENDAB said that water supply projects would fall under the jurisdiction of the Environmental Management Bureau of the MENRE.</p> <p>Minister Akmad BRAHIM mentioned that there seems to be a good number of proposed projects related to water.</p> <p>Mr. KONNO said the listed projects will be evaluated and the ones that appear to be most viable will be subjected to screening for environmental and social considerations.</p> <p>The Director of the Environmental Management Bureau inquired if the JICA Study Team is asking MENRE to assist in data gathering. As of now, the MENRE is still working on the devolution of water-related functions from the national government to the BARMM.</p> <p>Director REMO said that Dimapatoy River was proclaimed as a watershed area to ensure sustainable water for domestic use. The MENRE is concerned if it is possible to increase water supply to 5,000 to 8,000 cubic meters per day. He said that there is a need to study the capacity of the environment to produce additional water supply.</p> <p>The MENRE would also like to explore the payment of environmental services fee by the MCWD.</p> <p>He also suggested that the JICA Study Team look into the water turbidity of some water sources and how this can be addressed.</p> <p>The Director General clarified that as of date, the National Water Resources Board (NWRB) still has jurisdiction over uses of water. The MENRE is working on the devolution or delegation of the powers of the NWRB to the BARMM.</p> <p>According to the Minister, he is from Tinungkaan where the water going to Dimapatoy originates and he is interested to have water services expand beyond</p>	

Items	Notes
<p>Cotabato City.</p> <p>The Director General said that the MCWD should be paying environmental fees.</p> <p>Director PAMLIAN of the Environmental Management Services asked why there is still data collection when there was already a Pre-Feasibility Study on the water system of MCWD. What would be the role of the MENRE in the data collection and the schedule.</p> <p>Director General SALENDAB reiterated that MENRE is willing to assist in providing data to the JICA Study Team but cautioned that the MENRE still has little data, particularly on water.</p> <p>Mr. Kohei HORI of JICA Philippines said that JICA has previous engagement with the NWRB.</p> <p>Director REMO said that JICA could probably help the MENRE in studying payment of environmental fees.</p> <p>The Director General said that MENRE could assist in data collection and hoped that JICA would share with them the results of the Data Collection Survey.</p> <p>The Minister asked if JICA has any agency that can help the MENRE on solid waste management since this is one of the concerns raised by the Cotabato City Government.</p> <p>There being no other matters to discuss, the meeting ended at around 11:30 in the morning.</p>	

(5) MPW との協議

SUMMARY RECORD OF THE MEETING

Meeting with the Ministry of Public Works (MPW)

Organization:	MPW, JICA Study Team, JICA Study Team Cotabato Office
Place:	MPW Office, Cotabato City
Date & Time:	21 October 2022, 3:35 AM to 4:20 PM Philippine Time
Participants:	<p>MPW: Engr. Danilo ONG (Director General), Engr. Salonga SUMAMPAO (Director for Technical Services), Engr. Tarhata KALIM (Division Chief, Planning)</p> <p>JICA Study Team: Mr. Toru TAKAHASHI (Water Resources/Intake Facilities Planner), Mr. Akimasa MOCHIZUKI (O and M Planner)</p> <p>JICA Study Team Cotabato Office: Mr. Danny BUENBRAZO (Office Manager/Urban Planner), Engr. Nemerlito PEREZ (Engineer), Engr. Rhymon Joseph ARCE</p>

Prepared by:	JICA Study Team Cotabato Office
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Objectives:

Courtesy meeting and briefing to the Director General of MPW

Main Points Discussed:

Items	Notes
<p>Discussion</p> <p>Director General Engr. Danilo ONG of the MPW welcomed the JICA Study Team members to the Ministry.</p> <p>Mr. Toru TAKAHASHI introduced himself and revealed that there are 5 members of the JICA Study Team. He explained that the Team is collecting information to understand the water situation in the area covered by MCWD and based on their findings, some projects could be proposed for JICA funding.</p> <p>Director General ONG disclosed that the Assistant General Manager of MCWD (Engr, VILLARMA) has already informed him about this new JICA project on the water system of Metro Cotabato.</p> <p>Mr. TAKAHASHI explained his specific assignments for the data collection survey (water sources) and said that the MCWD has commissioned the Maynilad to a study for the institution.</p> <p>Mr. Akimasa MOCHIZUKI said that the MCWD is looking into two new sources of water, Rio Grande de Mindanao and Tamontaka River.</p> <p>Mr. TAKAHASHI said that this is his first deployment in the Cotabato City area and not yet familiar with the possible water sources. He wants to know who has jurisdiction over bodies of water such as Rio Grande and Tamontaka River.</p> <p>Director General ONG said that under the law creating the BARMM, the national government retains jurisdiction over large infrastructure projects (through DPWH).</p> <p>But MPW has good relationship with the DPWH National Office and the DPWH BARMM. The MPW can and have submitted project proposals to DPWH (including those that are in or around large bodies of water such as Rio Grande and Tamontaka River).</p> <p>The DPWH National Office involves the MPW in the design and procurement of projects proposed and implemented in the BARMM areas.</p>	

Items	Notes
<p>Director General ONG said that the Ministry is very thankful for JICA for past and continuing assistances such as: the DRIMS (a system to determine road conditions), study tour and training of MPW officials in Japan, provision of vehicles and Equipment, among others. The Government of Japan is also going ahead with the Road Network Development Project (RNDP) that will create new roads in the BARMM.</p> <p>He also said that the MPW has submitted a proposal to DPWH for the repair or replacement of the bridge crossing Simuay River.</p> <p>For the Simuay – Ambal Rivers Flood Control project, Director General ONG said that the said project is still under negotiation between the Philippine Government and the potential funder,</p> <p>Mr. TAKAHASHI said that in considering/evaluating possible source of water, the Study Team needs to know the proposed or approved projects in that water source (such as dikes, dams, and the like).</p> <p>Engr. KALIM said that the Study Team may consider sending a letter to MPW BARMM (that they could endorse to DPWH National Office) or directly to DPWH National Office, copy furnished MPW (for the latter to help follow up the request) for list of proposed and approved projects on or near water sources.</p> <p>Mr. TAKAHASHI revealed the information that they need regarding the potential water sources, to include:</p> <ul style="list-style-type: none"> -water volume -water quality -highest and lowest level of water -siltation <p>Director General ONG said that it is probably the Flood Control Management Cluster under DPWH Undersecretary Emil Sadain who may have the information that the Study Team need on the various bodies of water under consideration.</p> <p>Engr. KALIM suggested that the Study Team should also consider including the dumpsite at Barangay Biniruan in their study/analysis since this is quite proximate to Dimapatoy River and other water bodies that are current and proposed water sources of MCWD.</p> <p>Mr. TAKAHASHI asked on the coverage areas of the MPW – BARMM.</p> <p>The Director General explained that the BARMM covers five (5) provinces, three (3) cities, and the additional 63 barangays of Cotabato Province that opted to join BARMM at its creation.</p>	

Items	Notes
After all topics had been discussed, the meeting ended at around 4:20 in the afternoon.	

(6) 取締役員への第一回中間報告

SUMMARY RECORD OF THE MEETING

Meeting with Board off Directors and Management of MCWD

Organization:	Metro Cotabato Water District (MCWD), JICA Study Team, JICA Study Team Cotabato Office
Place:	MCWD Office, Cotabato City
Date & Time:	27 October 2022, 10:15 AM to 11:05 AM Philippine Time
Participants:	<p>MCWD: Mr. Bimbo Sinsuat Jr. (Chairman of the Board) Miss Ma. Melinda Elaine V. BARCIMO (OIC-General Manager), Engr. Venancio VILLARMA (Assistant General Manager), and other technical personnel.</p> <p>Board Members: Ramon CHUA Jr., Lourdes MASTURA, Cecilia BARROGA, and Eugenio SOYAO attended the meeting via ZOOM.</p> <p>JICA Study Team: Mr. Hideki KONNO (Chief Consultant/Water Supply Planner), Mr. Toru TAKAHASHI (Water Resources/Intake Facilities Planner), Mr. Kenichi WAKABAYASHI (Facility/Construction/Project Planner), Mr. Akimasa MOCHIZUKI (O and M Planner), Mr. Akinori MIYOSHI (Organization/Finance)</p> <p>JICA Study Team Cotabato Office: Mr. Danny BUENBRAZO (Office Manager/Urban Planner), Engr. Nemerlito Perez (Engineer), Engr. Rhymon Joseph ARCE (Engineer)</p>
Prepared by:	JICA Study Team Cotabato Office

Objectives:

Present the First Progress Report of the JST to Metro Cotabato Water District, discuss data requirements and future field visits.

Main Points Discussed:

Items	Notes
<p>Discussion</p> <p>Engr. Venancio VILLARMA welcomed the JICA Study Team and introduced the Team Leader of the JST, Mr. Hideki KONNO.</p> <p>Mr. KONNO presented the Report which covered the following topics:</p> <ol style="list-style-type: none"> 1. Members of the JICA Study Team 2. Data Collection Status 3. Initial Findings on Water Sources 4. Site Survey Result of existing WTF, Pump Stations, and Reservoirs 	

Items	Notes
<p>5. Survey Items for Facility Development</p> <p>6. Operation and Maintenance Issues</p> <p>Engr. VILLARMA thanked the JICA Study Team for the Report and asked the members of the Board if they have any question.</p> <p>Chairman SINSUAT asked where is the exact location of the flood control project in Tamontaka, Tamontaka has five barangays.</p> <p>Engr. VILLARMA said that the flood control project is under DPWH national and some consultants for the project visited MCWD and indicated that the entire area of Tamontaka will be part of the flood control project.</p> <p>Director Eugenio SOYAO commented on the last slide presented (Operation and Maintenance Issues) and said that some of these should be addressed like the low capacity of water reservoirs.</p> <p>Engr. VILLARMA responded that these issues are being addressed. For example, the Maynilad was commissioned to make a study to solve the problem of high NRW. As recommended by Maynilad, 14 District Metering Areas should be established to better detect NRW and to reduce it. There are three (3) pilot DMAs that the MCWD can implement.</p> <p>He also said that the capacity of water reservoir should be increased to 8,000 cubic meters.</p> <p>The NRW should be reduced to below 20% to conform to Philippine standard. Currently, the NRW of MCWD is above 20%.</p> <p>The MCWD is also improving service connection saddles by using stainless steel bolts to lessen leakages.</p> <p>Chairman SINSUAT said that it is really important to address the NRW problem since the range for the last 3 months is 27% to 29%.</p> <p>Engr. VILLARMA said that the DMA system could help lower the NRW.</p> <p>Director SOYAO asked how old are the pumps of MCWD since the Report mentioned the use of old pumps.</p> <p>Engr. VILLARMA said that based on Philippine standards, an old pump is one that is already more than 10 years old. MCWD pumps are still mostly 10 years old or below.</p> <p>Chairman SISUAT asked if there are further questions from MCWD side.</p>	

Items	Notes
<p>Manager BARCIMO asked Mr. KONNO on the schedule of their use of the office space at MCWD so that they can prepare it and also to inform the MCWD counterparts for them to be available.</p> <p>Mr. KONNO said that they intend to use the office space on Tuesdays and Wednesdays.</p> <p>Manager BARCIMO said that if the JST would like to use the space on Thursdays or Fridays, they just inform MCWD management in advance.</p> <p>Chairman SISUAT said that how much the capacity of the water tank truck referring to the last slide.</p> <p>Engr. VILLARMA said that it was 8 cubic meter and only one tank is in operation.</p> <p>Mr. MOCHIZUKI said that how many water tank trucks MCWD needs.</p> <p>Engr. VILLARMA said that it would be 2 or 3 more trucks, which also should be used in narrow roads.</p> <p>There being no other matters to discuss, the meeting was ended at 11:05AM.</p>	

(7) 取締役員への第二回中間報告

SUMMARY RECORD OF THE MEETING

JICA Study Team Presentation to the MCWD Board of Directors the of Initial Survey Results of the Project “Data Collection Survey on Water Supply Improvement for Cotabato City”

Organization:	MCWD Board of Directors, Key personnel of MCWD, JICA Study Team, JICA Study Team Cotabato Office
Place:	MCWD Office, Cotabato City
Date & Time:	01 December 2022, 9:40 -10:30 AM, Philippine Time
Participants:	<p>MCWD Board of Directors: BOD Chair Bimbo A. SINSUAT, Jr., BOD Member Eugenio SOYAO, BOD Member Ramon CHUA, Jr., BOD Member Lourdes MASTURA, BOD Member Cecilia BARROGA.</p> <p>MCWD Key Personnel: GM Ma. Melinda Elaine BARCINO, AGM Venancio VILLARMA, Mr. Joselito NUNEZ, Jr., Engr. Grace MARTINEZ, Ms. Jocelyn PLAZOS, Engr. Winston SAPAL.</p> <p>JICA Study Team: Mr. Hideki Konno (Team Leader), Mr. Toru Takahashi (Water Resources/Intake Facilities Planner), Mr. Akinori Miyoshi (Organization/Finance).</p> <p>JICA Study Team Cotabato Office: Mr. Danny Buenbrazo (Office Manager/Urban Planner), Engr. Nemerlito PEREZ (Engineer), Engr. Rhymon Joseph ARCE (Engineer).</p>
Prepared by:	JICA Study Team Cotabato Office

Objective:

Present to the MCWD Board of Directors the initial results of the data collection survey on water improvement project for Cotabato City and adjacent municipalities served by MCWD.

Main Points Discussed:

Items	Notes
<p>Discussion</p> <p>Mr. Danny Buenbrazo introduced the members of the JICA Study Team (JST). MCWD BOD Chair Bimbo A. SINSUAT, Jr. thanked the JST for the time and efforts exerted to come up with the presentation of the initial results of the survey on water supply improvement project of MCWD.</p> <p>Mr. Konno of JST proceeded with the presentation of the 3rd Progress Report. He presented first the Outline of the report that consists of the following:</p> <ol style="list-style-type: none">1. Water Supply Plan<ul style="list-style-type: none">-Population in Related City and Municipalities-Existing and Future Supply Area-Water Supply Area and Served Population-Demand Projection2. Water Resource/Intake Facility Plan<ul style="list-style-type: none">-Existing Sources and Planned Water Sources in MCWD-Field Survey for Existing and Planned Intake Site-Issues to be Checked through the Design for Planned Intake Site-Selection of the River for Planned Water Intake Site3. Organization/Finance<ul style="list-style-type: none">-MCWD's Personnel and Financial Conditions for the past five years-Property, Plant and Equipment Depreciation Rate-Operational Results in the past five years-Cash Flows, Billing Data and Water Sales Collection Data in the past five years4. Facility Development<ul style="list-style-type: none">-Menu of Facility Development Plan-Selection of Facility Plans5. Operation and Maintenance<ul style="list-style-type: none">-NRW Ratio-Lack of Reservoirs and Equipment-Pressure Concerns and Sedimentation Issues-Others <p>Mr. KONNO through different matrices, maps, graphs, photographs and narratives</p>	

Items	Notes
<p>has presented before the Members of the Board of Directors the initial results of the survey conducted by the Study Team, following the outline above.</p> <p>Queries from the Members of the Board of Directors were the following:</p> <ul style="list-style-type: none"> a) BOD Chair Bimbo A. SINSUAT, Jr. asked the location of the proposed Tamontaka Water Treatment Plant (WTP). Mr. Konno pinpointed that it is proposed to be located near the Tamontaka 2 Bridge along the Cotabato City East Diversion Road. The site is at the upstream section of the river to prevent salt intrusion and at a higher elevation. b) Chairman SINSUAT commented that it is more than four (4) kilometers away from the existing transmission line of MCWD and will entail high cost. Why not locate the WTP in another site that is nearer to the MCWD lines. c) MCWD will be conducting a more thorough study to identify the most appropriate location of the proposed Tamontaka WTP. d) Chairman SINSUAT also asked MCWD personnel on the report that there were 25 data logger procurement have been rejected. The concerned MCWD staff replied that the procurement was not rejected but rather just put on-hold and will be done in 2023. e) On the proposed tapping a water source from Lake Balut in Sultan Mastura municipality, Mr. KONNO informed the Board that Lake Balut may not be a good source of a water system in the long-term since it is just a small lake and it may not be sustainable in the future, unlike a spring, river or water falls. f) The members of the Board were appreciative of the initial results of the survey since they were able to get some relevant information about the operation of the MCWD, particularly on some findings and recommendations of the JST. g) On the Standard Operating Procedure for technical operations, the JICA Study Team commented that it is ideal that a manual of operation be developed. Engr. SAPAL said that the current SOP was done in relation to the adoption of ISO standards by MCWD. Board Member Lourdes MASTURA said that the comment of the JST is very good and MCWD should really develop an operations' manual. <p>The members of the Board were very grateful for the comprehensive analysis of the operations and the finance and administrative aspects of the water district.</p> <p>There being no more matters to discuss with the JST, the Board politely allowed the team to be excused from the meeting at about 10:30 AM.</p>	

(8) ドラフト・ファイナルレポート協議

SUMMARY RECORD OF THE MEETING

JICA Study Team Presentation to the MCWD Board of Directors and MCWD key personnel of the Draft Final Report of the “Data Collection Survey on Water Supply Improvement for Cotabato City”

Organization:	MCWD Board of Directors, Key personnel of MCWD, JICA Study Team, JICA Study Team Cotabato Office
Place:	MCWD Office, Cotabato City
Date & Time:	15 March 2023, 8:50 AM – 10:05 AM, Philippine Time
Participants:	<p>MCWD Board of Directors: BOD Member Ramon CHUA, Jr., BOD Member Lourdes MASTURA, BOD Member Cecilia BARROGA</p> <p>MCWD Key Personnel: GM Ma. Melinda Elaine BARCINO, AGM Venancio VILLARMA, Mr. Joselito NUNEZ, Jr., Engr. Grace MARTINEZ, Ms. Jocelyn PLAZOS, Ms. Helen SAMPIANO, Mr. Dennis DIMALIBOT, Mr. Chris Angelo GUERRA, Engr. Randy Moses LIMBA, Engr. Winston SAPAL.</p> <p>JICA Representatives from JICA Philippines and HQ, Japan: Kohei HORI (Project Formulation Advisor, JICA Philippines), Nobuhiko AOKI (Deputy Director of Division for South East Asia), Shintaro SHINGUCHI (Country Officer)</p> <p>JICA Study Team: Mr. Hideki KONNO (Team Leader), Mr. Toru TAKAHASHI (Water Resources/Intake Facilities Planner).</p> <p>JICA Study Team Cotabato Office: Mr. Danny BUENBRAZO (Office Manager/Urban Planner), Engr. Nemerlito PEREZ (Engineer), Engr. Rhymon Joseph ARCE (Engineer).</p>
Prepared by:	JICA Study Team Cotabato Office

Objective:

Present to the MCWD Board of Directors and key personnel the Draft Final Report of the data collection survey on water improvement project for Cotabato City and adjacent municipalities served by MCWD and solicit comments and/or recommendations for enhancement.

Main Points Discussed:

<p>Discussion</p> <p>MCWD GM Ma. Melinda Elaine BARCINO introduced the members of the MCWD Board of Directors present, as well as the members of her staff.</p> <p>Mr. Kohei HORI then introduced the Japanese members from JICA. Mr. Nobuhiko AOKI briefly informed the group that they are here to know about this proposed grant aid project and present to JICA.</p> <p>Mr. Hideki KONNO, the Team Leader of the JICA Study Team presented the draft final report through a power</p>
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point. He presented first the outline containing nine chapters, to wit:

1. Overview of the Survey
2. Current Status of Water Supply in Cotabato City and Surrounding Areas, Outline of Water Supply Facilities
3. Population Status and Water Demand in Cotabato City and Surrounding Areas
4. Overview of Organizational Structure of MCWD
5. Water Supply Area of MCWD and Water Supply Area of Expansion Plan
6. Water Intake Plan in the Service Area of MCWD
7. Facility Development Plan for MCWD
8. Project Proposal for Grant Aid and Issues in Preparatory Surveys
9. Recommendations to the MCWD, and Facility Development Schedule

Then, Mr. KONNO presented the foregoing items one by one. He made the presentation consisting of 85 slides in about 35 minutes.

In the open forum, the following comments and concerns were taken up:

- AGM Venancio VILLARMA suggested that the water demand projection until year 2040 should consider the projected water demand for the proposed Tamontaka WTP, particularly the expected water requirements for the different existing and proposed facilities along the western side of the city, to include the Timako Port, housing projects, and other public and commercial facilities.
- BOD Ramon CHUA asked whether the proposed Tamontaka WTP is different from the proposed Rio Grande WTP or the existing WTPs. Mr. Konno replied that the proposed Tamontaka WTP is basically the same with other WTPs which are of conventional and modular type.
- BOD Lourdes MASTURA asked what are the obligations of MCWD and the obligations of JICA? Mr. KONNO

Referred back to item number 9 of the presentation that specifies the expected obligations of the recipient country or the recipient agency (MCWD). Included in these are the land acquisition and site preparation for intake facility and WTP. Mr. Konno said that at least one hectare area of land is needed for the facility. The obligation to secure a temporary site is needed only for the duration of the construction phase.

- BOD CHUA said that land in the area is being sold by square meter and one hectare is estimated to cost P 3.5M.
- Mr. Danny BUENBRAZO put a cost estimate of P 9-10M for the acquisition of about three-hectare land area. He also conveyed to the group that Cotabato City Mayor Bruce MATABALAO has committed to provide assistance in land acquisition for the proposed project. While, other agencies, e.g., MPW may assist in flood control and land preparation components. He also informed that COLIGHT has already committed to provide the necessary power lines once the project site has been specifically identified.
- AGM VILLARMA inquired if MCWD would acquire the land needed, could JICA assure the approval of the grant aid for the project? Mr. Aoki replied that JICA will still conduct some surveys and evaluation by the concerned committee before the approval. The process may be completed within the year. BOD

Chua suggested that MCWD will wait for an official communication from JICA as regards the approval of the project before taking action on the MCWD obligations.

- Mr. HORI commented that land acquisition usually takes long time (4 years for a JICA project in Lanao del Sur). Hence, BOD Chua suggested that MCWD can already start the identification of the owners of the potential sites of the Tamontaka Intake facility and WTP project. Mr. Buenbrazo said that properties in Cotabato City have titles, hence may be easier to undertake acquisition, compared to Marawi City where most lands have no titles as proof of ownership.
- BOD Cecilia BARROGA informed that MCWD will study the draft final report if they are ready to pursue the implementation of the project. They will also coordinate with the Cotabato City Government and the BARMM Government. Mr. Buenbrazo suggested that if they have comments and suggestions on the report, they may email them to Mr. Konno and/or JST.
- Mr. AOKI asked if LWUA is providing loans to water districts? GM BARCINO replied that MCWD has a loan application with LWUA but it is still pending. The loan is for the replacement of old pipelines. AGM VILLARMA said that LWUA loan takes long time to be approved. BOD Chua said that new LWUA Administrator has been appointed last month. The position has been vacant for some time which further delayed the loan approval process.
- Mr. AOKI further asked if MCWD is considering to apply loan from LWUA for the Rio Grande WTP? Engr. SAPAL replied that LWUA has no funds of its own but it is just a conduit of funding institutions. The money of the pending loan of MCWD with LWUA is from ADB coursed through the LWUA. BOD Mastura said that LWUA will still charge 2% interest if the pending loan application is withdrawn.
- Mr. AOKI inquired that if MCWD will experience financial deficit, who will provide the necessary financial support? Ms. Helen SAMPIANO of the Finance Department replied that if the financial standing shows decreasing trend, MCWD could resort to increase the water rates. This was confirmed by BOD CHUA. But according to him, if that happens, MCWD can also use its available reserve funds. GM BARCINO said that LWUA's approval is still required for water rates increase and needed to undergo public consultation. The latest schedule of rates of MCWD was approved in 2006 but just implemented in 2022.
- GM BARCINO, in behalf of MCWD expressed gratitude to the JST for the report. BOD Chua also said that they acknowledge the recommendations contained in the report.

The presentation and discussions ended at 10:05 AM.

6-3. DOH 飲料水質基準



Republic of the Philippines
Department of Health
OFFICE OF THE SECRETARY

JUN 23 2017

ADMINISTRATIVE ORDER

No. 2017 - 0010

SUBJECT: Philippine National Standards for Drinking Water of 2017

I. RATIONALE

The history of the Philippine National Standards for Drinking Water (PNSDW) started in the year 1963. It was based on the 1958 World Health Organization International Standard for Drinking Water and the 1962 United States Public Health Service Standards. The 1963 PNSDW edition was subsequently revised in 1978, 1993 and 2007.

Since the last revision of PNSDW in 2007, a number of issues and concerns from various stakeholders have emerged. Among these are: (i) experiences of water service providers in complying with the standards; (ii) publication of the fourth edition of the Guidelines for Drinking-Water Quality by the World Health Organization in 2011, which includes new parameters and an improved framework for drinking-water safety that should be considered in water quality monitoring, testing, and analysis; (iii) issuance of DOH Administrative Order Number 2014-0027, which requires all drinking-water service providers to develop and implement water safety plans; (iv) new scope and definitions of Sustainable Development Goal (SDG) water supply indicators; and (v) the need for water quality standards during emergency situations.

This led to the updating of the PNSDW of 2007 through the Inter-agency Technical Working Group (TWG), headed by the Department of Health (DOH) with support from the World Health Organization (WHO).

II. OBJECTIVES

This Administrative Order shall prescribe the standards and procedures on drinking-water quality to protect public/consumer's health.

III. SCOPE AND COVERAGE

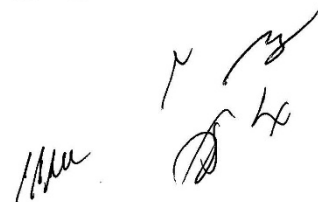
The PNSDW of 2017 shall apply to all drinking-water service providers including government and private developers and operators, bulk water suppliers, water refilling station operators, and water vending machine operators; ice manufacturers; all food establishments, residential, commercial, industrial and institutional buildings that use/supply/serve drinking water; water testing laboratories; health and sanitation authorities; the general public and all others who are involved in determining the safety of public's drinking-water.

IV. DEFINITION OF TERMS

1. **Acceptability** – physical and chemical quality of water that refers to the appearance, taste and odor of drinking-water satisfactory to the consumer.
2. **Bulk Water Supply** – drinking-water supplied to water service providers or associated infrastructures including pumping stations, reservoirs, and pipe lines.
3. **Certified sampling personnel** – a person who underwent training for drinking-water sampling and certified by the DOH.
4. **Contamination** – a general term referring to the presence of substances found in water that make water less desirable or unfit for drinking.
5. **Drinking-water** – water intended for direct human consumption or for use in food preparation and related processes.
6. **Emergency** - any situation in which there is actual disruption or damage to communities, i.e., any actual threat to public health and safety.
7. **Health-based targets** – are measurable health, water quality or performance objectives that are established based on a judgement of safety and on risk assessments of water-borne hazards.
8. **Limit of Quantitation (LOQ)** – the analyte concentration that produces a signal sufficiently stronger than the blank, such that it can be detected with a specified level of reliability during routine operations. Typically, it is the concentration that produces the signal above the reagent water blank signal, and should have a defined precision and bias at that level.
9. **Maximum Allowable Level (MAL)** - the highest level of a contaminant that is allowed in drinking-water.
10. **Method Detection Limit (MDL)** - the constituent/contaminant concentration that when processed through the complete method, produces a signal with a 99% probability that is different from the blank.
11. **Mobile Water Tanks** – tanks designed to deliver water for domestic use or emergency purposes.
12. **Potable/Safe Water** – water with quality within the standard limits set in this PNSDW both for acceptability and health aspects.
13. **Surveillance** – the continuous and vigilant public health assessment and review of safety and acceptability of drinking-water supplies.

V. GENERAL GUIDELINES

1. Standards for drinking-water quality, water sampling and examination and evaluation of results shall conform to the criteria prescribed under this Order and its Manual of Operations.
2. To ensure the safety of drinking-water, the standards shall be applied in accordance to the improved framework for drinking-water safety comprising of three key components:
 - A. Health-based targets established by the health authority;
 - B. Safely managed water systems (application of water safety plan); and
 - C. A system of independent surveillance.

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VI. SPECIFIC GUIDELINES

The Philippine National Standards for Drinking Water of 2017 shall consist of the following criteria:

1. Standards for Drinking-water Quality

- A. Drinking-water must be clear and does not have objectionable taste, odor and color. It must be pleasant to drink and free from all harmful organisms, chemical substances and radionuclides in amounts which could constitute a hazard to the health of the consumer.
- B. The quality of drinking-water shall be measured in terms of its microbiological, physical, chemical and radiological constituents. Refer to *Annex A* for the Standard Values and Methods of Analysis.
- C. The parameters of drinking-water quality shall be classified as mandatory, primary and secondary. Refer to *Annex B*.

2. Standards for Water Sampling and Examination

- A. Initial examination shall be conducted for new or newly constructed water sources while periodic examination shall be done for existing water sources. Water samples for initial and periodic examination from all water sources shall cover microbiological, physical, chemical and radiological parameters. Refer to *Annex C* for the Minimum Frequency of Sampling.
- B. The minimum number of samples to be collected and examined periodically shall be based on the source and mode of distribution of drinking-water supply. Refer to *Annex C*.
- C. The collection of water samples shall comply with the standard sampling requirements. Refer to *Annex D*.
- D. Only certified sampling personnel shall collect water samples for regulatory purposes.
- E. All water samples for regulatory purposes shall be examined only in DOH-Accredited Laboratory. The standard methods of examination shall be based on the "22nd edition (2012) of the Standard Methods for the Examination of Water and Wastewater" unless otherwise stated in the Manual of Operations.
- F. Examination of water samples for radiological quality shall be done by the Philippine Nuclear Research Institute.

3. Standards for Other Modes of Distribution of Drinking-water

- A. Drinking-water from refilling stations, vending machines, mobile tanks and bulk water supply shall be subject for initial and periodic examinations for microbiological, physical, chemical and radiological quality.
- B. All standard values of mandatory parameters shall be applicable to product water from refilling stations and vending machines, except for the standard values of *pH* and total dissolved solids (TDS). The *pH* value shall be 5-7 while the TDS levels of product water shall not exceed 10 mg/L to validate the efficiency of reverse osmosis or distillation process.
- C. Water from mobile tanks shall have chlorine residual (as free chlorine) of at least 0.5 mg/L but not to exceed to 1.50 mg/L at the point of delivery.

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- D. Bulk water supply shall maintain chlorine residual (as free chlorine) level between 0.3 mg/L to 1.5 mg/L or chlorine dioxide residual between 0.2 mg/L to 0.4 mg/L prior to distribution.
- E. All water-refilling stations, vending machines, mobile tanks and bulk water supply shall comply with the standard minimum number of samples and frequency of sampling requirements. Refer to *Annex C*.

4. Evaluation of Results

A. Expression of Results

- a. Microbiological examination for drinking water shall provide the numbers/presence of Total Coliform, *E. coli*/Thermotolerant Coliform, and Heterotrophic Bacteria present in 100 mL of water.
- b. All results from physico-chemical and radiological examinations that are not detected shall be reported as less than the method detection limit (MDL). For trace analysis, the MDL and level of quantitation (LOQ) shall be reflected in the laboratory test report.

B. Interpretation of Results

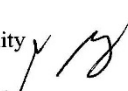

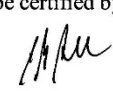
- a. Drinking-water service providers shall consult the DOH/Local Drinking Water Quality Monitoring Committee (LDWQMC)/local health office for the interpretation of results.
- b. When *E. coli*/Thermotolerant Coliform is present in water, a sanitary survey shall be conducted within 24 hours to determine the cause of contamination which include resampling. If resampled water still contains *E. coli*/Thermotolerant coliform, corrective actions should be applied. At the same time, the drinking-water service provider shall issue an advisory to “boil water” or other household water treatment options, or provide an alternative drinking-water supply.
- c. In case of exceedance of standard values of physical and chemical parameters, monitoring shall be carried out for the next three (3) consecutive months wherein all results must comply with the standards. If the results still exceed, further study must be done to determine the cause of contamination for proper identification of corrective actions.

5. Classification of Drinking-Water Quality Parameters

A. Mandatory Parameters

- a. Mandatory parameters are legally enforceable. These core parameters shall be required for examination by all drinking-water service providers. The criteria used for selection of mandatory core parameters are: parameters that directly affect health through acute or chronic exposure and/or will render the water unacceptable for drinking; indicate the possible presence of other contaminants; exceed tolerable values/standards based on local monitoring data of the previous years; have wide spatial distribution across the Philippines based on local monitoring data; and viable indicators for general quality and stability of water supply.

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- b. The frequency of testing for mandatory parameters, except for *E. coli*/Thermotolerant Coliform and residual disinfectant, may be reduced to every three (3) years if the LDWQMC found the consolidated water quality reports showed undetectable levels (below MDL) of a particular mandatory parameter for three (3) consecutive years.
 - c. The mandatory parameters are the minimum parameters required to be tested for initial and periodic examinations. However, the mandatory parameters may include additional parameters from the list of primary and secondary as determined by the LDWQMC. The additional parameters shall be based on the result of the risk assessment of the water sources where potential contamination from the natural or anthropogenic activities may occur.
- B. Primary parameters
- a. Primary parameters are site-specific. These are chemical impurities in water that directly affect health through acute or chronic exposure.
 - b. Primary parameters can also be adopted as enforceable parameters, in addition to the mandatory parameters.
- C. Secondary parameters
- a. Secondary parameters are those that render the water unacceptable for drinking.
 - b. These include operational parameters which affect the efficiency of the treatment processes.
- D. Emergency Drinking-Water Parameters
- a. During the first 72 hours, temporary supply of water shall be provided by the local government unit (LGU). Water should be disinfected as a minimum treatment (i.e. boiling, chlorination, etc.). Mobile treatment plant can be used as an alternative source of water.
 - b. The water supply shall be monitored daily for at least seven (7) days by the LGU and other respondents in terms of residual chlorine, and *E. coli*. The acceptable level of residual chlorine shall be 0.5 mg/L and a maximum level of 1.5 mg/L. *E. coli* should be absent per 100 mL sample.
 - c. Regular monitoring shall resume after normal condition has been declared by the appropriate government agency.
- E. Sustainable Development Goal (SDG) Parameters
- a. Relative to Target 6.1.1 of the SDG in achieving universal and equitable access to safe and affordable drinking water for all by 2030, the population should be using safely managed drinking water services.
 - b. This entails that the population uses a drinking water source which is located on premises, available when needed, and free of fecal and priority chemical contamination.
- 6. Quality Assurance/Quality Control for Water Laboratories**
- A. Only laboratories accredited by the DOH shall perform drinking-water quality examination for regulatory purposes.
 - B. All accredited laboratories shall provide highest quality service through the establishment, documentation, and effective operation of a Quality System (QS).
 - C. The laboratory personnel involved in water sampling shall be certified by the DOH.
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7. Water Safety Plan (WSP) and Drinking-water Quality Surveillance

- A. The implementation of WSP approach can secure the safety of drinking-water. It utilizes a risk assessment and risk management approach that encompasses all steps in the water supply system, from catchment/source to consumers.
- B. All drinking-water service providers shall be required to prepare WSP as provided by the DOH Administrative Order No. 2014 – 0027 “National Policy on Water Safety Plan for All Drinking-Water Service Providers”, dated September 4, 2014.
- C. The WSP of a drinking-water service provider shall be subject for review and approval as provided by the DOH Administrative Order No. 2017-0006 “Guidelines for the Review and Approval of the Water Safety Plans of Drinking-Water Service Providers“, dated April 20, 2017.
- D. The WSP shall be developed to meet health-based targets consistent with the Philippine National Standards for Drinking Water.
- E. The drinking-water quality surveillance agency shall ensure that monitoring of the WSP implementation and its effectiveness meets the Philippine National Standards for Drinking Water. The surveillance activity shall include audit and direct assessment approaches.

VII. ROLES AND RESPONSIBILITIES

- A. Department of Health
 - a. Develop systems and procedures to operationalize this Order.
 - b. Ensure compliance of all drinking-water service providers and operators to this Order.
 - c. Perform independent surveillance of drinking-water service providers.
 - d. Provide technical assistance to the local government units, drinking-water service providers and to the general public.
 - e. Accredite water laboratories, certify training providers and water sampling personnel.
- B. Local Government Unit
 - a. Enforce the provisions of this Order.
 - b. Develop and implement drinking water quality surveillance program.
 - c. Establish a local drinking water quality monitoring committee.
 - d. Advocate and create awareness to general population on the importance of drinking water quality standards, impact of water contamination on health, and control measures on addressing water quality issues and problems.
- C. Water Laboratory
 - a. Comply with the provisions of this Order.
 - b. Secure accreditation from the Department of Health.
 - c. Implement QS and develop a manual of operations describing the laboratory’s policies and plans for ensuring the quality of their work provided to the public.
- D. Drinking-Water Service Provider/Operator of Establishment and Building
 - a. Comply with the provisions of this Order.
 - b. Develop and implement WSP.
 - c. Institute corrective actions for any unsatisfactory results of water sampling.
 - d. Submit to the accredited laboratories water samples for examination in a manner and at such intervals prescribed under this Order.
 - e. Submit results of water quality testing to the local health authority.
 - f. Educate consumers on how to keep drinking-water safe at all times.

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VIII. PENAL PROVISION

As provided in Sec. 103 of the Code on Sanitation of the Philippines (PD No. 856):

- A. Any person who shall violate, disobey, refuse, omit or neglect to comply with any of the provisions of this Order, shall be guilty of misdemeanor and upon conviction shall be punished by imprisonment for a period of not exceeding six (6) months or by a fine of not exceeding Php 1,000.00 or both depending upon the discretion of the court.
- B. Any person who shall interfere with or hinder, or oppose any officer, agent or member of the Department or of the bureaus and offices under it, in the performance of his duty as such under this Order, or shall tear down, mutilate, deface or alter any placard, or notice, affixed to the premises in the enforcement of this Order, shall be guilty of a misdemeanor and punishable upon conviction by imprisonment for a period of not exceeding six (6) months or by a fine of not exceeding Php 1,000.00 or both depending upon the discretion of the court.

IX. SEPARABILITY CLAUSE

In the event that any rule, section, paragraph, sentence, clause, or word of this Order is declared invalid for any reason, the other provisions thereof shall not be affected thereby.

X. REPEALING CLAUSE

Administrative Order No. 2007 – 0012 (2007 PNSDW) is hereby repealed. All laws, rules and regulations and administrative issuances or parts thereof inconsistent with the provisions of these standards are hereby repealed or amended accordingly.

XI. EFFECTIVITY

This order takes effect fifteen (15) days after its publication in an official gazette or in a newspaper of general circulation.


PAULYN JEAN B. ROSELL-UBIAL, MD, MPH, CESO II
Secretary of Health

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Table A-1. Standard Values, Methods of Detection and Points of Compliance for Microbiological Quality of Drinking-Water

Parameter	Standard Values	Methods of Analysis (SMEWW 22 nd ed.)	Point of Compliance
1. Total Coliform	MTFT: < 1.1 MPN/ 100 mL	<ul style="list-style-type: none"> 9221 Multiple Tube Fermentation Technique 	<ul style="list-style-type: none"> Consumer's taps Water treatment works/plants Water refilling stations Water vending machines Mobile treatment devices Point of use treatment devices Water haulers Bulk Water
	EST: Absent or <1 MPN/100 mL	<ul style="list-style-type: none"> 9223 Enzyme Substrate Coliform Test* 	
	MFT: < 1 total coliform colonies / 100 mL	<ul style="list-style-type: none"> 9222B Standard Total Coliform Membrane Filter Technique 9222CDelayed Incubation Total Coliform Procedure* 9222H Simultaneous Detection of Total Coliform and E. coli by Dual-Chromogen Membrane Filter Technique* 	
2. Thermotolerant Coliform/E.coli	MTFT: < 1.1 MPN/ 100 mL	<ul style="list-style-type: none"> 9221 Multiple Tube Fermentation Technique 9221 E1 Thermotolerant Coliform Test (EC medium) 9221 E2 Thermotolerant Coliform Test (A-1 medium)* 	<ul style="list-style-type: none"> Point sources Consumer's taps Water treatment works Water refilling stations Water vending machines Mobile treatment devices Point of use treatment devices Water haulers Bulk Water Food Establishments All buildings Ice Plants
	EST: Absent or <1 MPN/100 mL	<ul style="list-style-type: none"> 9223 Enzyme Substrate Coliform Test* 	
	MFT: < 1 thermotolerant coliform colonies / 100 mL	<ul style="list-style-type: none"> 9222B Standard Total Coliform Membrane Filter Technique 	
3. Heterotrophic Plate Count (HPC)	<500 CFU/mL	<ul style="list-style-type: none"> 9215 B Pour Plate Method 9215 C Spread Plate Method 9215 D Membrane Filter Method 	<ul style="list-style-type: none"> Consumer's taps Water treatment works Water refilling stations Water vending machines Mobile treatment devices Point of use treatment devices Water haulers Bulk Water Food Establishments All buildings Ice Plants

MTFT: Multiple Tube Fermentation Technique, **MPN:** Most Probable Number

EST: Enzyme Substrate Test, **CFU:** Colony Forming Units

MFT: Membrane Filter Technique, *should be verified and approved by the DOH

Table A-2. Summary of Standard Values and Methods of Analysis for Inorganic Chemical Parameters of Drinking-Water

Parameter	Chemical Abstracts Service (CAS) No.	Maximum Allowable Level (MAL)	Methods of Analysis
1. Antimony (Sb)	7440-36-0	0.02 mg/L	<p>A. Sample Preparation</p> <ul style="list-style-type: none"> · 3030 E. Nitric Acid Digestion · 3030 F. Nitric Acid-Hydrochloric Acid Digestion · 3030 K. Microwave-Assisted Digestion <p>B. Instrumentation</p> <ul style="list-style-type: none"> · 3113 B. Electrothermal Atomic Absorption Spectrometric Method · 3120 B. Inductively Coupled Plasma Method · 3125 B. Inductively Coupled Plasma-Mass Spectrometry
2. Arsenic(As)	7440-38-2	0.01 mg/L	<p>A. Sample Preparation</p> <ul style="list-style-type: none"> · 3030 E. Nitric Acid Digestion · 3030 G. Nitric Acid-Sulfuric Acid Digestion · 3030 K. Microwave-Assisted Digestion <p>B. Instrumentation</p> <ul style="list-style-type: none"> · 3114 B. Manual Hydride Generation/Atomic Absorption Spectrometric Method · 3113 B. Electrothermal Atomic Absorption Spectrometric · 3120 B. Inductively Coupled Plasma Method · 3125 B. Inductively Coupled Plasma-Mass Spectrometry Method
3. Barium (Ba)	7440-39-3	0.70 mg/L	<p>A. Sample Preparation</p> <ul style="list-style-type: none"> · 3030 E. Nitric Acid Digestion · 3030 F. Nitric Acid-Hydrochloric Acid Digestion · 3030 K. Microwave-Assisted Digestion <p>B. Instrumentation</p> <ul style="list-style-type: none"> · 3111 D. Direct Nitrous Oxide-Acetylene Flame Method · 3113 B. Electrothermal Atomic Absorption Spectrometric · 3120 B. Inductively Coupled Plasma Method · 3125 B. Inductively Coupled Plasma-Mass Spectrometry Method
4. Boron (B)	7440-42-8	2.00 mg/L	<p>A. Sample Preparation</p> <ul style="list-style-type: none"> · 3030 E. Nitric Acid Digestion · 3030 G. Nitric Acid-Sulfuric Acid Digestion · 3030 K. Microwave-Assisted Digestion <p>B. Instrumentation</p> <ul style="list-style-type: none"> · 3120 B. Inductively Coupled Plasma Method

Parameter	Chemical Abstracts Service (CAS) No.	Maximum Allowable Level (MAL)	Methods of Analysis
			<ul style="list-style-type: none"> · 3125 B. Inductively Coupled Plasma-Mass Spectrometry Method 4500B B. Curcumin Method 4500B C. Carmine Method
5. Cadmium (Cd)	7440-43-9	0.003 mg/L	<p>A. Sample Preparation</p> <ul style="list-style-type: none"> · 3030 E. Nitric Acid Digestion · 3030 F. Nitric Acid-Hydrochloric Acid Digestion · 3030 K. Microwave-Assisted Digestion <p>B. Instrumentation</p> <ul style="list-style-type: none"> · 3113 B. Electrothermal Atomic Absorption Spectrometric · 3120 B. Inductively Coupled Plasma Method · 3125 B. Inductively Coupled Plasma-Mass Spectrometry Method
6. Chromium, Total (Cr)	7440-47-3	0.05 mg/L	<p>A. Sample Preparation</p> <ul style="list-style-type: none"> · 3030 E. Nitric Acid Digestion · 3030 F. Nitric Acid-Hydrochloric Acid Digestion · 3030 K. Microwave-Assisted Digestion <p>B. Instrumentation</p> <ul style="list-style-type: none"> · 3113 B. Electrothermal Atomic Absorption Spectrometric Method · 3120 B. Inductively Coupled Plasma Method · 3125 B. Inductively Coupled Plasma-Mass Spectrometry Method
7. Cyanide, Total (CN ⁻)	57-12-5	0.50 mg/L	<ul style="list-style-type: none"> · 4500-CN⁻ D. Titrimetric Method · 4500-CN⁻ E. Colorimetric Method · 4500-CN⁻ F. Cyanide-Selective Electrode Method
8. Fluoride (F ⁻)	16984-48-8	1.50 mg/L	<p>A. Sample Preparation</p> <ul style="list-style-type: none"> · Preliminary Distillation <p>B. Instrumentation</p> <ul style="list-style-type: none"> · 4110 B. Ion Chromatography with Chemical Suppression of Eluent Conductivity · 4110 C. Single-Column Ion Chromatography with Direct Conductivity Detection · 4500-F⁻ C. Ion-selective Electrode Method
9. Lead (Pb)	7439-92-1	0.01 mg/L	<p>A. Sample Preparation</p> <ul style="list-style-type: none"> · 3030 E. Nitric Acid Digestion · 3030 K. Microwave-Assisted Digestion <p>B. Instrumentation</p> <ul style="list-style-type: none"> · 3113 B. Electrothermal Atomic Absorption Spectrometric · 3120 B. Inductively Coupled Plasma Method

Parameter	Chemical Abstracts Service (CAS) No.	Maximum Allowable Level (MAL)	Methods of Analysis
			<ul style="list-style-type: none"> · 3125 B. Inductively Coupled Plasma-Mass Spectrometry Method
10. Manganese (Mn)	N/A	0.4 mg/L	<p>A. Sample Preparation</p> <ul style="list-style-type: none"> · 3030 E. Nitric Acid Digestion · 3030 F. Nitric Acid-Hydrochloric Acid Digestion · 3030 K. Microwave-Assisted Digestion <p>B. Instrumentation</p> <ul style="list-style-type: none"> · 3111 B. Direct Air-Acetylene Flame Method · 3111 C. Extraction/Air-Acetylene Flame Method · 3113 B. Electrothermal Atomic Absorption Spectrometric · 3120 B. Inductively Coupled Plasma Method · 3125 B. Inductively Coupled Plasma-Mass Spectrometry Method
11. Mercury, Total (Hg)	7439-97-6	0.001 mg/L	<p>A. Sample Preparation</p> <ul style="list-style-type: none"> · 3030 E. Nitric Acid Digestion · 3030 G. Nitric Acid-Sulfuric Acid Digestion · 3030 K. Microwave-Assisted Digestion <p>B. Instrumentation</p> <ul style="list-style-type: none"> · 3112 B. Cold-Vapor Atomic Absorption Spectrometric Method · 3125 B. Inductively Coupled Plasma-Mass Spectrometry Method · EPA 245.7 / BS EN 13506 Atomic Fluorescence Spectrometric Method · EPA 7473 Thermal Decomposition, Amalgamation, Atomic Absorption Spectrometric Method
12. Nickel (Ni)	7440-02-0	0.07 mg/L	<p>A. Sample Preparation</p> <ul style="list-style-type: none"> · 3030 E. Nitric Acid Digestion · 3030 F. Nitric Acid-Hydrochloric Acid Digestion · 3030 K. Microwave-Assisted Digestion <p>B. Instrumentation</p> <ul style="list-style-type: none"> · 3113 B. Electrothermal Atomic Absorption Spectrometric · 3120 B. Inductively Coupled Plasma Method · 3125 B. Inductively Coupled Plasma-Mass Spectrometry Method
13. Nitrate (NO ₃ ⁻)	C-005	50.00 mg/L	<ul style="list-style-type: none"> · 4110 B. Ion Chromatography with Chemical Suppression of Eluent Conductivity · 4110 C. Single-Column Ion Chromatography with Direct Conductivity Detection

Parameter	Chemical Abstracts Service (CAS) No.	Maximum Allowable Level (MAL)	Methods of Analysis
			<ul style="list-style-type: none"> · 4500-NO₃ B. Ultraviolet Spectrophotometric Screening Method · 4500-NO₃ E. Cadmium Reduction Method · 4500-NO₃ I. Cadmium Reduction Flow Injection Method · 4140. Capillary Ion electrophoresis · 4500-NO₃ D. Nitrate Electrode Method
14. Nitrite (NO ₂)	C-005	3.00 mg/L	<ul style="list-style-type: none"> · 4110 B. Ion Chromatography with Chemical Suppression of Eluent Conductivity · 4110 C. Single-Column Ion Chromatography with Direct Conductivity Detection · 4500-NO₂ B. Colorimetric Method · 4130. Flow Injection Analysis · 4140. Capillary Ion electrophoresis · 4500-NO₂ B. Colorimetric (Diazotization)
15. Selenium (Se)	7782-49-2	0.04 mg/L	<p>A. Sample Preparation</p> <ul style="list-style-type: none"> · 3030 E. Nitric Acid Digestion · 3030 G. Nitric Acid-Sulfuric Acid Digestion · 3030 K. Microwave-Assisted Digestion <p>B. Instrumentation</p> <ul style="list-style-type: none"> · 3114 B. Manual Hydride Generation/Atomic Absorption Spectrometric Method · 3114 C. Continuous Hydride Generation AAS · 3113 B. Electrothermal Atomic Absorption Spectrometric · 3120 B. Inductively Coupled Plasma Method · 3125 B. Inductively Coupled Plasma-Mass Spectrometry Method

Table A-3. Summary of Standard Values and Methods of Analysis for Organic Chemical Parameters from Industrial Pollution of Drinking-Water

Parameter	Chemical Abstracts Service (CAS) No.	Maximum Allowable Level (MAL) (mg/L)	Method of Analysis
1. Benzene	71-43-2	0.01	<ul style="list-style-type: none"> • 6200B. Purge and Trap Capillary-Column Gas Chromatographic/Mass Spectrometric Method • 6200B. Purge and Trap Capillary-Column Gas Chromatographic/Mass Spectrometric Method • 6200 C. Purge and Trap Capillary Column Gas Chromatographic Method
2. Benzo(a)pyrene	50-32-8	0.0007	<ul style="list-style-type: none"> • 6410B. Liquid-Liquid Extraction Gas Chromatographic/Mass Spectrometric Method • 6440B. Liquid-Liquid Chromatographic Method
3. Carbon Tetrachloride	56-23-5	0.004	<ul style="list-style-type: none"> • 6200B. Purge and Trap Capillary-Column Gas Chromatographic/Mass Spectrometric Method • 6200 C. Purge and Trap Capillary Column Gas Chromatographic Method
4. 1,2-Dichlorobenzene	95-50-1	1	<ul style="list-style-type: none"> • 6200B. Purge and Trap Capillary-Column Gas Chromatographic/Mass Spectrometric Method • 6200 C. Purge and Trap Capillary Column Gas Chromatographic Method
5. 1,4-Dichlorobenzene	106-46-7	0.3	<ul style="list-style-type: none"> • 6200B. Purge and Trap Capillary-Column Gas Chromatographic/Mass Spectrometric Method • 6200 C. Purge and Trap Capillary Column Gas Chromatographic Method
6. 1,2-Dichloroethane	107-06-2	0.03	<ul style="list-style-type: none"> • 6200B. Purge and Trap Capillary-Column Gas Chromatographic/Mass Spectrometric Method • 6200 C. Purge and Trap Capillary Column Gas Chromatographic Method
7. 1,2-Dichloroethene	156-59-2 (cis) 156-60-5 (trans)	0.05	<ul style="list-style-type: none"> • 6200B. Purge and Trap Capillary-Column Gas Chromatographic/Mass Spectrometric Method • 6200 C. Purge and Trap Capillary Column Gas Chromatographic Method
8. Dichloromethane	75-09-2	0.02	<ul style="list-style-type: none"> • 6200B. Purge and Trap Capillary-Column Gas Chromatographic/Mass Spectrometric Method • 6200 C. Purge and Trap Capillary Column Gas Chromatographic Method
9. Di(2-ethylhexyl) phthalate	117-81-7	0.008	<ul style="list-style-type: none"> • 6410B. Liquid-Liquid Extraction Gas Chromatographic/Mass Spectrometric Method
10. Ethylbenzene	100-41-4	0.3	<ul style="list-style-type: none"> • 6200B. Purge and Trap Capillary-Column Gas Chromatographic/Mass Spectrometric Method • 6200 C. Purge and Trap Capillary Column Gas Chromatographic Method

Parameter	Chemical Abstracts Service (CAS) No.	Maximum Allowable Level (MAL) (mg/L)	Method of Analysis
11. Styrene	100-42-5	0.02	<ul style="list-style-type: none"> • 6200B. Purge and Trap Capillary-Column Gas Chromatographic/Mass Spectrometric Method • 6200 C. Purge and Trap Capillary Column Gas Chromatographic Method
12. Tetrachloroethene	127-18-4	0.04	<ul style="list-style-type: none"> • 6200B. Purge and Trap Capillary-Column Gas Chromatographic/Mass Spectrometric Method • 6200 C. Purge and Trap Capillary Column Gas Chromatographic Method
13. Toluene	108-88-3	0.7	<ul style="list-style-type: none"> • 6200B. Purge and Trap Capillary-Column Gas Chromatographic/Mass Spectrometric Method • 6200 C. Purge and Trap Capillary Column Gas Chromatographic Method
14. Vinyl Chloride	75-01-4	0.0003	<ul style="list-style-type: none"> • 6200B. Purge and Trap Capillary-Column Gas Chromatographic/Mass Spectrometric Method • 6200 C. Purge and Trap Capillary Column Gas Chromatographic Method
15. Xylenes (total)	1330-20-7	0.5	<ul style="list-style-type: none"> • 6200B. Purge and Trap Capillary-Column Gas Chromatographic/Mass Spectrometric Method • 6200 C. Purge and Trap Capillary Column Gas Chromatographic Method

Table A-4. Summary of Standard Values and Methods of Analysis for Organic Chemical Parameters (Pesticides) of Drinking-Water

Parameter	Chemical Abstracts Service (CAS) No.	Maximum Allowable Level (mg/L)	Method of Analysis
1. Aldrin and Dieldrin (combined)	Aldrin: 309-00-2 Dieldrin: 60-57-1	0.00003	<ul style="list-style-type: none"> • 6410B. Liquid-Liquid Extraction Gas Chromatographic/Mass Spectrometric Method • 6630B. Liquid-Liquid Extraction Gas Chromatographic Method I • 6630C. Liquid-Liquid Extraction Gas Chromatographic Method II
2. Atrazine and its chloro-s-triazine metabolites	1912-24-9	0.1	<ul style="list-style-type: none"> • USEPA 525.2 Gas Chromatography/Mass Spectrometry • 6630C. Liquid-Liquid Extraction Gas Chromatographic Method II
3. Carbofuran	1563-66-2	0.007	<ul style="list-style-type: none"> • 6610B. High-Performance Liquid Chromatographic Method
4. Chlordane	57-74-9	0.0002	<ul style="list-style-type: none"> • 6410B. Liquid-Liquid Extraction Gas Chromatographic/Mass Spectrometric Method • 6630B. Liquid-Liquid Extraction Gas Chromatographic Method I • 630C. Liquid-Liquid Extraction Gas Chromatographic Method II
5. 1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	0.001	<ul style="list-style-type: none"> • 6200B. Purge and Trap Capillary-Column Gas Chromatographic/Mass Spectrometric Method • 6200 C. Purge and Trap Capillary Column Gas Chromatographic Method • 6231B Liquid-liquid extraction- Gas Chromatographic Method
6. Dichlorodiphenyltrichloroethane (DDT)	50-29-3	0.001	<ul style="list-style-type: none"> • 6410B. Liquid-Liquid Extraction Gas Chromatographic/Mass Spectrometric Method • 6630B. Liquid-Liquid Extraction Gas Chromatographic Method I • 6630C. Liquid-Liquid Extraction Gas Chromatographic Method II
7. Endrin	72-20-8	0.0006	<ul style="list-style-type: none"> • 6410B. Liquid-Liquid Extraction Gas Chromatographic/Mass Spectrometric Method • 6630B. Liquid-Liquid Extraction Gas Chromatographic Method I • 6630C. Liquid-Liquid Extraction Gas Chromatographic Method II
8. Ethylene Dibromide or 1,2-Dibromoethane	106-93-4	0.0004	<ul style="list-style-type: none"> • 6200B. Purge and Trap Capillary-Column Gas Chromatographic/Mass Spectrometric Method • 6200 C. Purge and Trap Capillary Column Gas Chromatographic Method
9. Glyphosate	1071-83-6	1	<ul style="list-style-type: none"> • 6651B. Liquid Chromatographic Post-Column Fluorescence Method

Parameter	Chemical Abstracts Service (CAS) No.	Maximum Allowable Level (mg/L)	Method of Analysis
10. Lindane	58-89-9	0.002	<ul style="list-style-type: none"> • 6410B. Liquid-Liquid Extraction Gas Chromatographic/Mass Spectrometric Method • 6630B. Liquid-Liquid Extraction Gas Chromatographic Method I • 6630C. Liquid-Liquid Extraction Gas Chromatographic Method II
11. Pendimethalin	40487-42-1	0.02	<ul style="list-style-type: none"> • USEPA 525.2 Liquid-solid extraction and capillary column Gas Chromatography/Mass Spectrometry

Table A-5. Summary of Standard Values and Methods of Analysis for Physical and Chemical Quality for Acceptability Aspects of Drinking-Water

Parameter	Chemical Abstracts Service (CAS) No.	Maximum Allowable Level (MAL)	Methods of Analysis
1. Taste	N/A	No objectionable taste	Sensory Evaluation Technique Testing of taste shall be based on consumers' complaints.
2. Odor	N/A	No objectionable odor	Sensory Evaluation Technique
3. Color (Apparent)	N/A	10 CU	2120 B. Visual Comparison Method – for apparent color only
4. Turbidity	N/A	5 NTU	2130 B. Nephelometric Method
5. Aluminum (Al)	N/A	0.2 mg/L (Aesthetic)	A. Sample Preparation <ul style="list-style-type: none"> · 3030 E. Nitric Acid Digestion · 3030 F. Nitric Acid-Hydrochloric Acid Digestion · 3030 K. Microwave-Assisted Digestion B. Instrumentation <ul style="list-style-type: none"> · 3500-A1 B. Eriochrome Cyanine R Method · 3113 B. Electrothermal Atomic Absorption Spectrometric · 3120 B. Inductively Coupled Plasma Method · 3125 B. Inductively Coupled Plasma-Mass Spectrometry Method
6. Chloride (Cl)	16887-00-6	250 mg/L	<ul style="list-style-type: none"> ● 4500 – Cl- B Argentometric method ● 4500 – Cl- D Potentiometric Method ● 4110 B. Ion Chromatography with Chemical Suppression of Eluent Conductivity ● 4110 C. Single-Column Ion Chromatography with Direct Conductivity Detection
7. Copper (Cu)	N/A	1.0 mg/L	A. Sample Preparation <ul style="list-style-type: none"> · 3030 E. Nitric Acid Digestion · 3030 F. Nitric Acid-Hydrochloric Acid Digestion · 3030 K. Microwave-Assisted Digestion B. Instrumentation <ul style="list-style-type: none"> · 3111 B. Direct Air-Acetylene Flame Method · 3111 C. Extraction/Air-Acetylene Flame Method · 3113 B. Electrothermal Atomic Absorption Spectrometric · 3120 B. Inductively Coupled Plasma Method · 3125 B. Inductively Coupled Plasma-Mass Spectrometry Method · 3500-Cu C. Bathocuproine Method
8. Total Hardness	N/A	300 mg/L	2430 C EDTA Titrimetric method
9. Hydrogen sulfide (H ₂ S)	7783-06-4	0.05 mg/L	<ul style="list-style-type: none"> ● 4500 S²⁻ D. Methylene Blue Method ● 4500 S²⁻ E. Gas Dialysis, Automated Methylene Blue Method

Parameter	Chemical Abstracts Service (CAS) No.	Maximum Allowable Level (MAL)	Methods of Analysis
			<ul style="list-style-type: none"> ● 4500 S²-I. Distillation, Methylene Blue Flow Injection Analysis Method ● 4500 S²-F. Iodometric Method
10. Iron (Fe)	N/A	1.0 mg/L	<p>A. Sample Preparation</p> <ul style="list-style-type: none"> · 3030 E. Nitric Acid Digestion · 3030 F. Nitric Acid-Hydrochloric Acid Digestion · 3030 K. Microwave-Assisted Digestion <p>B. Instrumentation</p> <ul style="list-style-type: none"> · 3111 B. Direct Air-Acetylene Flame Method · 3111 C. Extraction/Air-Acetylene Flame Method · 3113 B. Electrothermal Atomic Absorption Spectrometric · 3120 B. Inductively Coupled Plasma Method · 3125 B. Inductively Coupled Plasma-Mass Spectrometry Method · 3500-Fe B. Phenanthroline Method
11. pH	N/A	6.5 – 8.5	4500-H ⁺ B. Electrometric Method
12. Sodium (Na)	N/A	200 mg/L	<p>A. Sample Preparation</p> <ul style="list-style-type: none"> · 3030 E. Nitric Acid Digestion · 3030 F. Nitric Acid-Hydrochloric Acid Digestion · 3030 K. Microwave-Assisted Digestion <p>B. Instrumentation</p> <ul style="list-style-type: none"> · 3111 B. Direct Air-Acetylene Flame Method · 3113 B. Electrothermal Atomic Absorption Spectrometric · 3120 B. Inductively Coupled Plasma Method · 3125 B. Inductively Coupled Plasma-Mass Spectrometry Method · 3500-Na B. Flame Emission Photometric Method
13. Sulfate (SO ₄ ²⁻)	14808-79-8	250 mg/L	<ul style="list-style-type: none"> ● 4110 B. Ion Chromatography with Chemical Suppression of Eluent Conductivity ● 4140 B. Capillary Ion Electrophoresis with Indirect UV Detection ● 4500-SO₄²⁻-C. Gravimetric method with Ignition of Residue ● 4500- SO₄²⁻-D. Gravimetric Method with Drying of Residue ● 4500- SO₄²⁻-E. Turbidimetric Method ● 4500- SO₄²⁻-F. Automated Methylthymol Blue Method ● 4500- SO₄²⁻-G. Methylthymol Blue Flow Injection Analysis
14. Total Dissolved Solids	N/A	600 mg/L	2540 C. Total Dissolved Solids Dried at 180°C

Parameter	Chemical Abstracts Service (CAS) No.	Maximum Allowable Level (MAL)	Methods of Analysis
15. Zinc (Zn)	N/A	5.0 mg/L	<p>A. Sample Preparation</p> <ul style="list-style-type: none"> · 3030 E. Nitric Acid Digestion · 3030 F. Nitric Acid-Hydrochloric Acid Digestion · 3030 K. Microwave-Assisted Digestion <p>B. Instrumentation</p> <ul style="list-style-type: none"> · 3111 B. Direct Air-Acetylene Flame Method · 3113 B. Electrothermal Atomic Absorption Spectrometric · 3111 C. Extraction/Air-Acetylene Flame Method · 3120 B. Inductively Coupled Plasma Method · 3125 B. Inductively Coupled Plasma-Mass Spectrometry Method · 3500-Zn B. Zincon Method

Table A-6. Summary of Standard Values and Methods of Analysis for Treatment Chemicals Used in Treatment and Disinfection and Disinfection by-products of Drinking-Water

Parameter	Chemical Abstracts Service (CAS) No.	Maximum Allowable Level (mg/L)	Method of Analysis
a. Contaminants from Treatment Chemicals			
1. Acrylamide	79-06-1	0.0005	<ul style="list-style-type: none"> • USEPA 8316 High-performance Liquid Chromatography with UV Detection
2. Epichlorohydrin	106-89-8	0.0004	<ul style="list-style-type: none"> • 6200 B. Purge and Trap Capillary-Column Gas Chromatographic/Mass Spectrometric Method
b. Disinfection Chemicals			
1. Chlorine Dioxide Residual	10049-04-4	0.2 min and 0.4 max ¹	<ul style="list-style-type: none"> • Colorimeter-Refer to manufacturer's manual provided with the test equipt.
2. Chlorine Residual (as free chlorine)	Chlorine: 7782-50-5	0.3 min and 1.5 max	<ul style="list-style-type: none"> • DPD Colorimetric Method –Refer to manufacturer's manual provided with the test kit
c. Disinfection By-Products			
1. Bromate	15541-45-4	0.01	<ul style="list-style-type: none"> • 4110 B. Ion Chromatography with Chemical Suppression of Eluent Conductivity • 4110 C. Single-Column Ion Chromatography with Direct Conductivity Detection • 4110 D. Ion Chromatographic Determination of Oxyhalides and Bromide
2. Chlorate	7775-09-9	0.7	<ul style="list-style-type: none"> • 4110 B. Ion Chromatography with Chemical Suppression of Eluent Conductivity • 4110 C. Single-Column Ion Chromatography with Direct Conductivity Detection • 4110 D. Ion Chromatographic Determination of Oxyhalides and Bromide
3. Chlorite	7758-19-2	0.7	<ul style="list-style-type: none"> • 4110 B. Ion Chromatography with Chemical Suppression of Eluent Conductivity • 4110 C. Single-Column Ion Chromatography with Direct Conductivity Detection • 4110 D. Ion Chromatographic Determination of Oxyhalides and Bromide
4. Dibromoacetonitrile	3252-43-5	0.07	<ul style="list-style-type: none"> • Gas Chromatography / Electron Capture Detector

¹Note: WHO 2011 did not specify any guideline values for chlorine dioxide because of its rapid hydrolysis to chlorite. In addition, the provisional guideline value for chlorite (i.e. 0.7 mg/L) is considered to be adequately protective against potential toxicity from chlorine dioxide. The taste and odor threshold for this compound is 0.4 mg/L [4]

Parameter	Chemical Abstracts Service (CAS) No.	Maximum Allowable Level (mg/L)	Method of Analysis
5. Dichloroacetate	79-43-6	0.05	<ul style="list-style-type: none"> • Gas Chromatography / Electron Capture Detector • Gas Chromatography / Mass Spectrometry • 6251 B. Micro Liquid-Liquid Extraction Gas Chromatographic Method
6. Dichloroacetonitrile	3018-12-0	0.02	<ul style="list-style-type: none"> • Gas Chromatography / Electron Capture Detector • 5710 D. Formation of Other Disinfection By-Products (DBPs) • USEPA 551.1
7. Monochloroacetate	79-11-8	0.02	<ul style="list-style-type: none"> • 6251 B. Micro Liquid-Liquid Extraction Gas Chromatographic Method
8. Trichloroacetate	76-03-9	0.2	<ul style="list-style-type: none"> • 6251 B. Micro Liquid-Liquid Extraction Gas Chromatographic Method
9. 2,4,6-Trichlorophenol	88-06-2	0.2	<ul style="list-style-type: none"> • 6251 B. Micro Liquid-Liquid Extraction Gas Chromatographic Method • 6410 B. Liquid-Liquid Extraction Gas Chromatographic/Mass Spectrometric Method • 6420 B. Liquid-Liquid Extraction Gas Chromatographic Method
Trihalomethanes			
10. Bromoform	75-25-2	0.1	<ul style="list-style-type: none"> • 6040 B. Closed-Loop Stripping, Gas Chromatographic/Mass Spectrometric Analysis; • 6200 B. Purge and Trap Capillary-Column Gas Chromatographic/Mass Spectrometric Method • 6200 C. Purge and Trap Capillary – Column Gas Chromatographic Method • 6232 B. Liquid-Liquid Extraction Gas Chromatographic Method
11. Bromodichloromethane (BDCM)	75-27-4	0.06	<ul style="list-style-type: none"> • 6040 B. Closed-Loop Stripping, Gas Chromatographic/Mass Spectrometric Analysis; • 6200 B. Purge and Trap Capillary-Column Gas Chromatographic/Mass Spectrometric Method • 6200 C. Purge and Trap Capillary – Column Gas Chromatographic Method • 6232 B. Liquid-Liquid Extraction Gas Chromatographic Method
12. Chloroform	67-66-3	0.3	<ul style="list-style-type: none"> • 6200 B. Purge and Trap Capillary-Column Gas Chromatographic/Mass Spectrometric Method • 6200 C. Purge and Trap Capillary – Column Gas Chromatographic Method

Parameter	Chemical Abstracts Service (CAS) No.	Maximum Allowable Level (mg/L)	Method of Analysis
			<ul style="list-style-type: none"> • 6232 B. Liquid-Liquid Extraction Gas Chromatographic Method
13. Dibromochloromethane (DBCM)	124-48-1	0.1	<ul style="list-style-type: none"> • 6040 B. Closed-Loop Stripping, Gas Chromatographic/Mass Spectrometric Analysis; • 6200 B. Purge and Trap Capillary-Column Gas Chromatographic/Mass Spectrometric Method • 6200 C. Purge and Trap Capillary – Column Gas Chromatographic Method • 6232 B. Liquid-Liquid Extraction Gas Chromatographic Method
14. Total THM	N/A	1	The sum of the ratio of the concentration of each to its maximum allowable level should not exceed 1.

Table A-7. Standard Values and Methods of Analysis for Radiological Parameters

Radionuclides Analysis	Screening Level	Methods of Analysis
1. Gross alpha	0.5 Bq/L	<ul style="list-style-type: none"> ● 7110 B. Evaporation Method for Gross Alpha-Beta ● 7110 C. Co-precipitation Method for Gross Alpha Radioactivity in Drinking Water ● Low Level Liquid Scintillation Counting
2. Gross beta	1.0 Bq/L	<ul style="list-style-type: none"> ● 7110 B. Evaporation Method for Gross Alpha-Beta ● 7110 C. Co-precipitation Method for Gross Alpha Radioactivity in Drinking Water ● Low Level Liquid Scintillation Counting
3. Radon	11.0 Bq/L MCL-maximum contaminant level [EPA 2000]	<ul style="list-style-type: none"> ● 7500-Rn B. Liquid Scintillation Method
	Guidance Level	
4. Gamma* (Ra-226)	1 Bq/L	<ul style="list-style-type: none"> ● 7120 B. Gamma Spectroscopic Method
5. Gamma* (Ra-228)	0.1 Bq/L	<ul style="list-style-type: none"> ● 7120 B. Gamma Spectroscopic Method
6. Gamma* (Sr-90, I-131, Cs-134, Cs-137)	10 Bq/L	<ul style="list-style-type: none"> ● 7120 B. Gamma Spectroscopic Method
7. Tritium* (H-3)	10,000 Bq/L	<ul style="list-style-type: none"> ● 7500-3H B. Liquid Scintillation Spectrometric Method

*Gamma and Tritium in drinking water are analyzed only during emergency situations such as nuclear accidents and radioactive material spills and leakages.

Table B-1. Mandatory Drinking-Water Quality Parameters

No.	Parameter	Sampling Location*
1	Thermotolerant Coliform <i>E. coli</i>	Treatment Plant Outlet/Source and Consumers' Taps
2	Arsenic (As)	Treatment Plant Outlet/Source
3	Cadmium (Cd)	Consumers' Taps
4	Lead (Pb)	Consumers' Taps
5	Nitrate (NO ₃ ⁻)	Treatment Plant Outlet/Source
6	Color (Apparent)	Treatment Plant Outlet/Source and Consumers' Taps
7	Turbidity	Consumers' Taps
8	pH	Treatment Plant Outlet/Source and Consumers' Taps
9	Total Dissolved Solids	Treatment Plant Outlet/Source
10	Disinfectant Residual	Treatment Plant Outlet/Source and Consumers' Taps

*applicable to all Level II and Level III water facilities

Table B-2. Primary Drinking-Water Quality Parameters

No.	Parameter	No.	Parameter
1	1,2-Dibromo-3-chloropropane (DBCP)	29	Dibromochloromethane (DBCM)
2	1,2-Dichlorobenzene	30	Dibromoacetonitrile
3	1,2-Dichloroethane	31	Dichloroacetate
4	1,2-Dichloroethene	32	Dichloroacetonitrile
5	1,4-Dichlorobenzene	33	Dichlorodiphenyltrichloroethane (DDT)
6	2,4,6-Trichlorophenol	34	Dichloromethane
7	Acrylamide	35	Endrin
8	Aldrin and Dieldrin	36	Epichlorohydrin
9	Alpha Particles	37	Ethylbenzene
10	Atrazine	38	Ethylene Dibromide
11	Antimony	39	Fluoride
12	Barium	40	Glyphosate
13	Benzene	41	Lindane
14	Benzo(a)pyrene (PAHs)	42	Manganese
15	Beta Particles	43	Mercury (Total)
16	Boron	44	Monochloroacetate
17	Bromate	45	Nickel
18	Bromodichloromethane (BDCM)	46	Nitrite
19	Bromoform	47	Pendimethalin
20	Carbon Tetrachloride	48	Radon
21	Carbofuran	49	Sulfate
22	Chlorate	50	Selenium
23	Chlordane	51	Styrene
24	Chlorite	52	Tetrachloroethene
25	Chloroform	53	Trichloroacetate
26	Chromium (Total)	54	Toluene
27	Cyanide (Total)	55	Total Trihalomethane (THM)
28	Di(2-ethylhexyl)phthalate	56	Vinyl chloride

Table B-3. Secondary Drinking-Water Quality Parameters

No.	Parameter	No.	Parameter
1	Aluminum	7	Manganese
2	Chloride	8	Odor
3	Copper	9	Sodium
4	Total Hardness	10	Taste
5	Hydrogen Sulfide	11	Xylenes (total)
6	Iron	12	Zinc

Annex C

Table C-1. Minimum Frequency of Sampling for Microbiological Examination of Drinking-Water

Source and Mode of Supply	Population Served	Minimum Frequency of Sampling for Total Coliform and Thermotolerant coliform/ <i>E.coli</i> *	Minimum Frequency of Sampling for Heterotrophic Plate Count (HPC)*	Point of Compliance
1. Level I	-	1 sample every three (3) months	Not required	Point source
2. Level II	-	1 sample every other month	1 sample every other month <i>(required if treated)</i>	Communal faucet
3. Level III	Less than 5,000	2 samples monthly	2 samples monthly	Consumer's tap
	5,000 – 100,000	1 sample per 5,000 population + 2 additional samples monthly	1 sample per 5,000 population + 2 additional samples monthly	Consumer's tap
	More than 100,000	1 sample per 10,000 population, plus 12 additional samples monthly <i>Collection of samples should be spread out within a month</i> <i>Compliance to total coliform: At least 95% of standard samples taken in each month from each reservoir and distribution point is total coliform negative, provided that thermotolerant coliform is absent</i> <i>Compliance to thermotolerant coliform: No samples should test positive for thermotolerant coliform</i>	Required, at least 40% of the sampling points	Consumer's tap
4. All buildings (i.e. residential, commercial, industrial and institutional buildings)	Less than or equal to 600	1 sample every other month	1 sample every other month	Consumer's tap
	More than 600	1 sample monthly	Once a month	Consumer's tap
5. Food Establishments	-	1 sample every other month	1 sample every other month	Consumer's tap
6. Ice Plants	-	Once a month	Once a month	Product ice

* Refer to Table 1 for specific microbiological point of compliance

Parameters	Container Material	Minimum Volume of Sample	Mode of Preservation	Holding Time
12. Nickel	Plastic or Glass bottle	500 mL	Add $K_2Cr_2O_3$ Add HNO_3 to pH <2	6 months
13. Nitrate	Glass or Plastic/Polyethylene container	500 mL	Refrigerate (unfiltered samples) Filter on site (0.45 m cellulose acetate membrane filter and freeze)	24 hours 1 month – consult analyst depending on analytical method
14. Nitrite	Glass or Plastic/Polyethylene container	<u>Colorimetric Method:</u> 50 mL sample	Freeze at $-20^{\circ}C$ or store at $4^{\circ}C$.	1 to 2 days
15. Selenium	Plastic/Polyethylene or Glass containers rinsed with 50% HNO_3	100 mL	Add HNO_3 to pH < 2	28 days

Sources: APHA 22nd ed., 2007 PNSDW, 2011 ADWG

Table D-2. Summary of Sampling Requirements for Organic Parameters

Parameters	Container Material	Minimum Volume of Sample	Mode of Preservation	Holding Time
<i>Industrial Pollutants</i>				
1. Benzene	Screw-cap vial with a hole in the center and TFE-faced silicone septum	2 x 40 mL	<ul style="list-style-type: none"> Cool, $\leq 6^{\circ}\text{C}$ For samples that contain volatile constituents but do not contain residual chlorine, add HCl to pH <2.0 (4 drops, 1:1 HCl) For samples that contain residual chlorine, add 1000 mg ascorbic acid/L or 0.008% sodium thiosulfate 	14 days
2. Benzo(a)pyrene	Amber glass bottles with a screw cap lined with TFE	1 liter	<ul style="list-style-type: none"> Cool, $\leq 6^{\circ}\text{C}$ For samples that contain residual chlorine, add 1000 mg ascorbic acid/L or 0.008% sodium thiosulfate 	7 days until extraction; 40 days after extraction
3. Carbon Tetrachloride	See Benzene			
4. 1,2-Dichlorobenzene	See Benzene			
5. 1,4-Dichlorobenzene	See Benzene			
6. 1,2-Dichloroethane	See Benzene			
7. 1,2-Dichloroethene	See Benzene			
8. Dichloromethane	See Benzene			
9. Di(2-ethylhexyl)phthalate	See Benzo(a)pyrene			
10. Ethylbenzene	See Benzene			
11. Styrene	See Benzene			
12. Tetrachloroethene	See Benzene			
13. Toluene	See Benzene			
14. Vinyl Chloride	See Benzene			
15. Xylenes (total)	See Benzene			
<i>Pesticides</i>				
1. Aldrin and Dieldrin	See Benzo(a)pyrene Amber glass bottles filled with a screw cap lined with TFE.	1 liter	<ul style="list-style-type: none"> Cool, $\leq 6^{\circ}\text{C}$ For samples that contain residual chlorine, add 1000 mg ascorbic acid/L or 0.008% sodium thiosulfate 	7 days until extraction; 40 days after extraction
2. Atrazine	See Aldrin and Dieldrin			
3. Carbofuran	Amber glass bottles fitted with polytetrafluoroethylene (PTFE)-lined screw caps.	None specified	<ul style="list-style-type: none"> Add a sufficient amount of potassium dihydrogen citrate to yield a concentration in the sample of 9.2 to 9.5 g/L to prevent hydrolysis of oxamyl, 3-hydroxycarbofuran, carbaryl, and methiocarb Add sodium thiosulfate to yield a sample concentration in the range of 80 to 320 	28 days

Parameters	Container Material	Minimum Volume of Sample	Mode of Preservation	Holding Time
			mg/L to eliminate residual chlorine <ul style="list-style-type: none"> • During transport: Ice, temperature should not exceed 10 degrees Celsius during the first 48 hours after collection • In the laboratory: Store samples at temperature below 6 degrees Celsius and protect from light until extraction. Do not freeze sample 	
4. Chlordane	See Benzo(a)pyrene			
	See Aldrin and Dieldrin			
5. 1,2-Dibromo-3-chloropropane (DBCP)	See Benzene			
6. Dichlorodiphenyltrichloroethane (DDT)	See Benzo(a)pyrene			
	See Aldrin and Dieldrin			
7. Endrin	See Benzo(a)pyrene			
	See Aldrin and Dieldrin			
8. Ethylene Dibromide or 1,2-Dibromoethane	See 1,2-Dibromo-3-chloropropane (DBCP)			
	See 1,2-Dichlorobenzene			
	See Benzene			
9. Glyphosate	Polypropylene or amber glass container	500 mL representative sample	Add 100 mg/L sodium thiosulfate for chlorinated water and store at 4°C away from light	14 days
10. Lindane	See Aldrin and Dieldrin			
Disinfection Chemicals and By-Products				
1. Acrylamide	See Benzene			
2. Epichlorohydrin	See Benzene			
3. Chlorine Dioxide	None specified	None specified	Analyse immediately	-
4. Chlorine Residual	Plastic (polyethylene or equivalent) or Glass container	500 mL	Analyse immediately. Keep out of direct sunlight	5 minutes
5. Bromate	Glass or Plastic/Polyethylene container	500 mL	Refrigerate (unfiltered samples)	24 hours
			Filter on site (0.45 µm cellulose acetate membrane filter and freeze)	1 month - Consult analyst depending on analytical method
6. Chlorate	Glass or Plastic/Polyethylene container	500 mL	Refrigerate (unfiltered samples)	24 hours
			Filter on site (0.45 µm cellulose acetate membrane filter and freeze)	1 month - Consult analyst depending on analytical method
7. Chlorite	Glass or Plastic/Polyethylene	500 mL	Refrigerate (unfiltered samples)	24 hours

Parameters	Container Material	Minimum Volume of Sample	Mode of Preservation	Holding Time
	hylene container		Filter on site (0.45 µm cellulose acetate membrane filter and freeze)	1 month - Consult analyst depending on analytical method
8. Dibromoacetonitrile	Glass vial with TFE-lined screw caps	40-mL	Cool, ≤6°C -1 gram/ 60-ml amber glass vial (1% sodium phosphate dibasic/99% potassium phosphate monobasic + 0.6% ammonium chloride)	-14 Days
9. Dichloroacetate	Screw-cap vial with a hole in the center and TFE-faced silicone septum; zero headspace	25 or 40 mL (depending on vial used)	Refrigerate at 4°C	-14 days 21 days for sample extracts freeze at -11°C
10. Dichloroacetonitrile	Glass vial with TFE-lined screw caps	40-mL	Cool, ≤6°C -1 gram/ 60-ml amber glass vial (1% sodium phosphate dibasic/99% potassium phosphate monobasic + 0.6% ammonium chloride)	-14 Days
11. Monochloroacetate	See Dichloroacetate			
12. Trichloroacetate	See Dichloroacetate			
13. 2,4,6-Trichlorophenol	See Dichloroacetate			
	See Benzo(a)pyrene			
	Amber glass bottles with a screw cap lined with TFE	1 liter	<ul style="list-style-type: none"> Refrigerate at 4°C Add 80 g sodium thiosulfate per liter of sample if residual chlorine is present 	40 days
14. Bromoform	See 1,2-Dichlorobenzene			
	See Benzene			
	Glass bottle sealed with TFE-lined screw caps	1 liter	Chill to 4°C	14 days
15. Bromodichloromethane (BDCM)	See 1,2-Dichlorobenzene			
	See Benzene			
	See Bromoform			
16. Chloroform	See Benzene			
	See Bromoform			
17. Dibromochloromethane (DBCM)	See 1,2-Dichlorobenzene			
	See Benzene			
	See Bromoform			

Sources: APHA 22nd ed., 2011 ADWG

Table D-3. Summary of Sampling Requirements for Physical and Chemical Parameters for Acceptability Aspects

Parameter	Container Material	Minimum Volume of Sample	Mode of Preservation	Holding Time
1. Taste	<ul style="list-style-type: none"> • Glass-stoppered bottles • TFE-lined enclosures 	500 mL	Keep cool at $\leq 6^{\circ}\text{C}$	Not more than 6 hrs
2. Odor	<ul style="list-style-type: none"> • Glass-stoppered bottles • TFE-lined enclosures 	500 mL	Keep cool at $\leq 6^{\circ}\text{C}$	6 hrs
3. Color	<ul style="list-style-type: none"> • Acid-washed amber glass bottles • Covered plastic bottles 	100 mL	Keep cool Analyze same day	24 hours
4. Turbidity	<ul style="list-style-type: none"> • Polyethylene bottle • Glass bottle 	100 mL	Keep cool at $\leq 4^{\circ}\text{C}$	24 hrs
5. Aluminum	Acid-rinsed Plastic bottles	25 mL or a portion diluted to 25 mL (In absence of fluoride and complex phosphates)	Examine sample immediately	Examine sample immediately
6. Chloride	<ul style="list-style-type: none"> • Plastic bottle • Glass bottle 	100 mL (maximum sample portion) or a suitable portion diluted to 100 mL	No special preservative is necessary	28 days
7. Copper	Acidified Polyethylene Bottle	1 liter	Use 0.5 mL 1 + 1 HCl/100mL sample or acidify to pH <2 with HNO ₃	28 days
8. Total Hardness	Plastic/Glass Container	500 mL	Add HNO ₃ or H ₂ SO ₄	7 days
9. Hydrogen sulfide	Glass bottle	100 mL	Preserve using zinc acetate solution	<ul style="list-style-type: none"> • 2 weeks for refrigerated samples • 1 month for frozen samples
10. Iron	Acidified Polyethylene Bottle	50 mL	Use 0.5 mL 1 + 1 HCl/100mL sample or acidify to pH <2 with HNO ₃	28 days
11. pH	Polyethylene bottles	50 ml	None required	Analyze immediately or not to exceed 6 hours after sample collection

Parameter	Container Material	Minimum Volume of Sample	Mode of Preservation	Holding Time
12. Sodium	Polyethylene bottles	1 liter	None required	28 days
13. Sulfate	<ul style="list-style-type: none"> • Polyethylene bottles • Glass bottles 	100 mL	Keep cool at 4°C	7 days
14. Total Dissolved Solids	<ul style="list-style-type: none"> • Resistant-glass • Plastic bottles 	500 mL	Keep cool at 4°C	7 days
15. Zinc	<ul style="list-style-type: none"> • Quartz or TFE containers • Polypropylene or linear polyethylene with a polyethylene cap • Borosilicate glass 	50 mL	<ul style="list-style-type: none"> • Acidify with concentrated nitric acid to pH <2 • Refrigerate at 4°C 	<ul style="list-style-type: none"> • 6 months • 5 weeks if sample contains mercury

Sources: APHA 22nd ed., 2007 PNSDW, 2011 ADWG

Table D-4. Summary of Sampling Requirements for Radiological Parameters

Parameter	Container Material	Minimum Volume of Sample	Mode of Preservation	Holding Time
1. Alpha	Plastic (polyethylene or equivalent) or Glass container	1L	Concentrated HNO ₃ or HCl to pH <2	28 days
2. Beta	Plastic (polyethylene or equivalent) or Glass container	1L	Concentrated HNO ₃ or HCl to pH <2	28 days
3. Radon	Gas-tight PET bottles	1L	Bottles are to be filled full (up to the brim and no air spaces); no acidification required; samples are to be brought to PNRI lab within the day	8 days
4. Gamma	Plastic container	2L	Concentrated HNO ₃ or HCl to pH <2	6 months
5. Tritium	Plastic (polyethylene or equivalent) or Glass container	1L	No preservative	6 months