



REPUBLIC OF THE PHILIPPINES
METROPOLITAN NAGA WATER DISTRICT
40 J. MIRANDA AVENUE, NAGA CITY

ENGINEERING AND ENVIRONMENT DEPARTMENT

PROCEDURES AND WORK INSTRUCTIONS MANUAL (PAWIM)

(EEDPW02) WATER RESOURCES DEVELOPMENT

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	PROCEDURE	Revision No.:	0
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1. PURPOSE

1.1. This document describes the procedures for water resources development as one of the core processes of the MNWD, which includes:

- 1.1.1.** Production Well Development
- 1.1.2.** Spring Development
- 1.1.3.** Watershed Rehabilitation and Development

1.2. The objectives of the Water Resources Development are:

- 1.2.1.** Construction or project implementation of various infrastructure and related structures for water supply and other capital expenditure
- 1.2.2.** Sustainability of water resources

2. SCOPE

This procedure will apply to the MNWD- Quality Management System on one core process which is the Water Resources Development, which focuses on the:

- 2.1.** Planning, Design and Construction
- 2.2.** Watershed Management

3. DEFINITION OF TERMS AND ACRONYMS

Refer to "[Annex A](#)" for the GLOSSARY OF TERMS and "[Annex B](#)" for the ACRONYMS.

4. RESPONSIBILITIES

4.1. PLANNING, DESIGN AND CONSTRUCTION DIVISION

- 4.1.1.** Responsible for the conceptualization, preparation of documentary requirements, program of works, cost estimates and other related activities including the implementation of various infrastructure, transmission, distribution and lateral lines relative to water resources development for MNWD.
- 4.1.2.** Monitoring and evaluation of the status of project implementation being undertaken by administration or their external constructors or service providers including submission of regular reports for the Management and the Board of Directors.
- 4.1.3.** Ensures that project implementation is within the standards, specifications and post-project requirements such as: water quality analysis, warranties and workmanship are accordingly complied with.

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4.2. ENVIRONMENT AND WATER RESOURCES DIVISION

- 4.2.1. Ensure the development and protection of the well-field area of the water sources of the MNWD to guarantee the provision of continual, safe, adequate and affordable potable water through the maintenance of watersheds, environmental protection and wastewater management.
- 4.2.2. Conceptualization of the Integrated Watershed Management Plan (IWMP).
- 4.2.3. In-charge of the overall implementation of programs and projects aligned with the IWMP.
- 4.2.4. Ensure the effective implementation of the watershed rehabilitation, conservation, maintenance and protection.

5. PROCEDURES

This section describes the procedures involve in one of the core processes of the District which is the Water Resource Development.

•PROCEDURE DETAILS: **PRODUCTION WELL DEVELOPMENT** ([Figure 1](#))

5.1. PROJECT IDENTIFICATION

- 5.1.1. 10-year projected water demand; and/or
- 5.1.2. Monthly pressure survey; and/or
- 5.1.3. Requests for additional water services.

5.2. ENGINEERING SURVEY

- 5.2.1. Site Identification
- 5.2.2. Site Negotiation and Acquisition
- 5.2.3. Survey and Data Gathering

5.3. PREPARATION OF PRELIMINARY DESIGN

- 5.3.1. Prepare preliminary Well Design
- 5.3.2. Prepare preliminary site development and building plans,
- 5.3.3. Prepare program of works with the corresponding specifications (“[EEDF04](#)”).
- 5.3.4. Apply for water permit filed with the National Water Resource Board (NWRB) and the corresponding Permit to Drill in accordance with the flowchart (“[EEDF05](#)”)

5.4. APPROVAL AND FINALIZATION OF DESIGN

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5.4.1. Submit Plans, Design, Program of Works and Specifications to the Division Manager and General Manager for approval.

5.4.2. Submit finalized copies are to the Board of Directors for approval and issuance of the corresponding Board Resolution.

5.5. REQUEST FOR CONSTRUCTION, BIDDING & PROJECT IMPLEMENTATION

5.5.1. Prepare request for construction together with the Permit to Drill, Environmental Compliance Certificate (ECC)

5.5.2. File Building Permit with the concerned agencies.

5.5.3. Bidding

5.5.4. Implement Construction Project. (“[EEDPW01](#)”)

• **PROCEDURE DETAILS: SPRING DEVELOPMENT** ([Figure 2](#))

5.6. PROJECT IDENTIFICATION

5.6.1. 10-year projected water demand; and/or

5.6.2. Monthly pressure survey; and/or

5.6.3. Requests for additional water services.

5.7. ENGINEERING SURVEY

5.7.1. Site Identification

5.7.2. Site Negotiation and Acquisition

5.7.3. Survey, Data Gathering and Water Quality Analysis (“[PDPW03](#)”)

5.8. PREPARATION OF PRELIMINARY DESIGN

5.8.1. Prepare preliminary intake box design

5.8.2. Prepare program of works, specifications and other details

5.8.3. Prepare requirements for the water rights, building permit and Environmental Compliance Certificate (ECC)

5.9. APPROVAL AND FINALIZATION OF DESIGN

5.9.1. Submit Plans, Design, Program of Works and Specifications to the Division Manager and General Manager for approval.

5.9.2. Submit finalized copies to the Board of Directors for approval and issuance of the corresponding Board Resolution.

5.10. REQUEST FOR CONSTRUCTION, BIDDING & PROJECT IMPLEMENTATION

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- 5.10.1. Prepare request for construction together with the Permit to Drill, Environmental Compliance Certificate (ECC)
- 5.10.2. File Building Permit with the concerned agencies.
- 5.10.3. Bidding
- 5.10.4. Construction Project implementation. (“[EEDPW01](#)”)
- 5.10.5. Water Quality Analysis (“[PDPW03](#)”)

•PROCEDURE DETAILS: WATERSHED REHABILITATION AND DEVELOPMENT
([Figure 3](#))

5.11. PREPARATORY WORKS

- 5.11.1. Plantation Site Identification
- 5.11.2. Needs Assessment
- 5.11.3. Requisition of Materials

5.12. NURSERY ESTABLISHMENT

- 5.12.1. Wildling Collection
- 5.12.2. Potting
- 5.12.3. Watering of seedlings
- 5.12.4. Sorting and inventory of seedlings

5.13. WATERSHED PLANTATION

- 5.13.1. Strip brushing
- 5.13.2. Hole digging
- 5.13.3. Tree planting
- 5.13.4. Staking

5.14. WATERSHED MAINTENANCE

- 5.14.1. Ring weeding
- 5.14.2. Rebrushing
- 5.14.3. Climber cutting

5.15. FOREST PROTECTION

- 5.15.1. Foot patrol
- 5.15.2. Apprehension of illegal activities

6. FORMS AND TEMPLATES

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6.1. Environmental Compliance Certificate (ECC) (“[EEDF06](#)”)

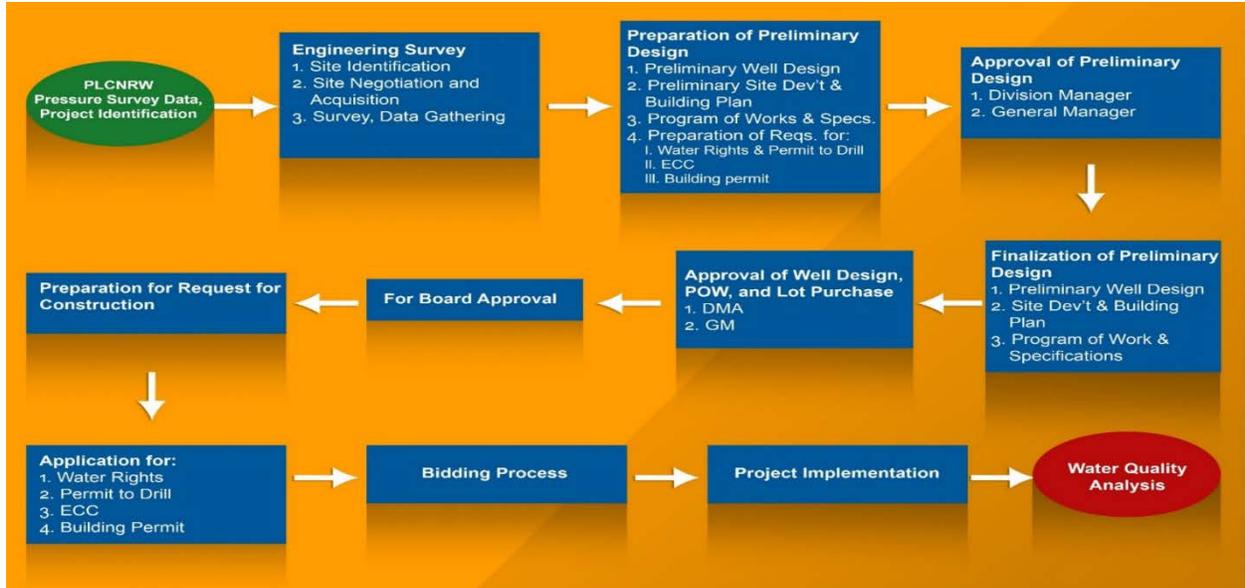
	METROPOLITAN NAGA WATER DISTRICT	Document Code:	
	ANNEX A	Revision No.:	0
	GLOSSARY OF TERMS	Effectivity Date:	March 2017
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TERMS	DEFINITION
PRODUCTION WELL	A WELL DRILLED WITH THE PRIMARY PURPOSE OF BRINGING POTABLE WATER TO THE SURFACE FOR COMMERCIAL UTILIZATION.
SPRING	A SPRING IS ANY NATURAL SITUATION WHERE WATER FLOWS FROM AN AQUIFER TO THE EARTH'S SURFACE.
WATERSHED	A WATERSHED IS A BASIN-LIKE LANDFORM DEFINED BY HIGHPOINTS AND RIDGELINES THAT DESCEND INTO LOWER ELEVATIONS AND STREAM VALLEYS. A WATERSHED CARRIES WATER "SHED" FROM THE LAND AFTER RAIN FALLS. DROP BY DROP, WATER IS CHANNLED INTO SOILS, GROUND WATERS, CREEKS, AND STREAMS, MAKING ITS WAY TO LARGER RIVERS AND EVENTUALLY THE SEA.
SEPTAGE	REFERS TO THE PARTIALLY TREATED SLUDGE STORED IN A SEPTIC TANK. IT IS ONE TYPE OF FECAL SLUDGE. IT IS A BY-PRODUCT FROM THE PRETREATMENT OF HOUSEHOLD WASTEWATER IN A SEPTIC TANK WHERE IT ACCUMULATES OVER TIME. IT IS PUMPED OUT OF A SEPTIC TANK OR ONSITE SEWAGE FACILITY WITH A VACUUM TRUCK.
ENGINEERING SURVEY	ENGINEERING SURVEY INVOLVES PROJECT PLANNING AND DESIGN; QUALITY CONTROL OF CONSTRUCTION PROJECTS TO ENSURE THE PROJECTS PROGRESS ACCORDING TO THEIR DESIGNS AND GIVEN TOLERANCES; AND MONITORING THE PERFORMANCE AND HEALTH CONDITIONS OF COMPLETED STRUCTURES AND FACILITIES.
DAILY PROJECT MONITORING	A DAILY LOGBOOK ACCOMPLISHED BY THE FIELD PERSONNEL THAT RECORD THE MANPOWER, PROJECT ACTIVITIES, WEATHER, PHYSICAL ACCOMPLISHMENT, AND OTHER RELATED INFORMATION CONCURRED BY THE CONTRACTORS REPRESENTATIVE.
WEEKLY STATUS REPORT	THIS REPORT INCLUDES CONSOLIDATION OF ALL THE DAILY LOGBOOKS OF EACH PROJECT, PLANNED PROJECT SCHEDULES FOR THE WEEK, AND PROBLEMS ENCOUNTERED DURING THE WEEK. THIS REPORT IS SUBMITTED TO THE GENERAL MANAGER AS IT IS DISCUSSED DURING THE BOARD OF DIRECTORS MEETING.
MONTHLY ACCOMPLISHMENT REPORT	REFERS TO THE SUMMARY OF PROJECT ACCOMPLISHMENT REPORTS INCLUDED IN THE CAPITAL EXPENDITURES (CAPEX) OF THE CURRENT YEAR AND TO BE SUBMITTED TO THE FINANCE DIVISION AND OFFICE OF THE GENERAL MANAGER.

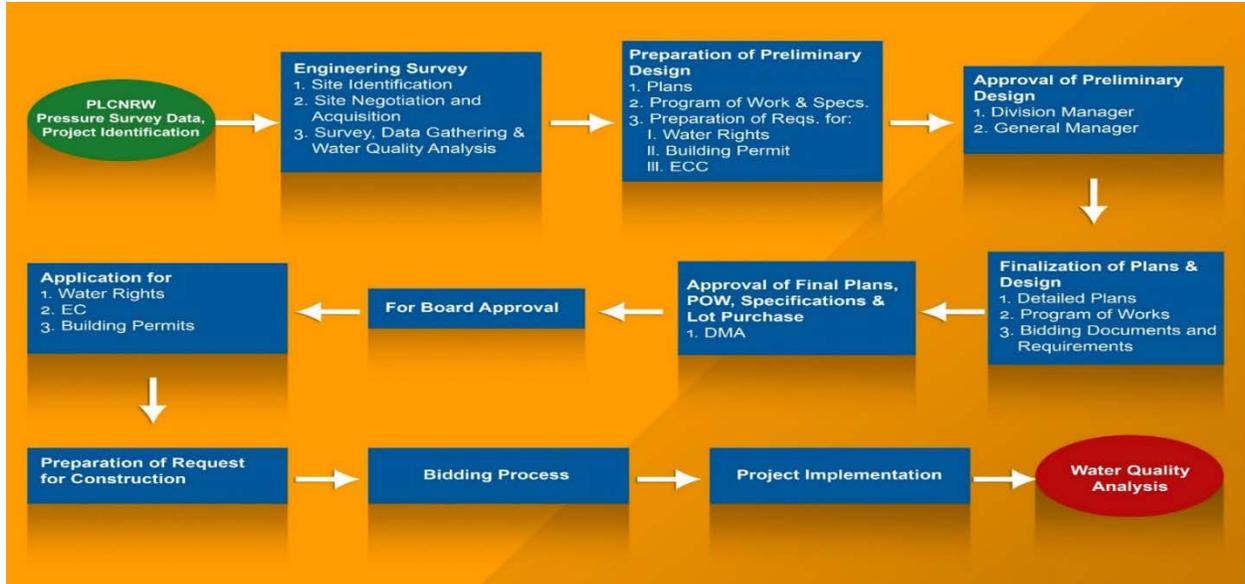
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ACRONYM	DEFINITION
MNWD	METROPOLITAN NAGA WATER DISTRICT
IWMP	INTEGRATED WATERSHED MANAGEMENT PLAN
CFC	CONSERVATION FARMING COMMUNITY
PLC	PIPELINE LEAKAGE CONTROL
NRWMD	NON-REVENUE WATER MANAGEMENT DIVISION
ECC	ENVIRONMENTAL COMPLIANCE CERTIFICATE
NWRB	NATIONAL WATER RESOURCE BOARD
DENR-EMB	DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES- ENVIRONMENTAL MANAGEMENT BOARD
LGU	LOCAL GOVERNMENT UNIT
PMS	PROJECT MANAGEMENT STAFF

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	WATERSHED REHABILITATION AND DEVELOPMENT (FIGURE 3)		Effectivity Date:	March 2017
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