INSTALLATION OF SERVICE CONNECTION

Objectives - To ensure that installation of service connections are carried out according to COWD Service Standards.

Tools needed:

1. Water Meter
2. Fittings for the service pipe and meter assembly
3. Adequate length of High Density Polyethylene (HDPE) pipe
4. Tools and equipment for installing fittings and for making service pipe joints
5. Hand Excavation Tools
6. Hand Compacting Tools
7. Mechanical Compacting Equipment
8. Granular (sand) material
9. Appropriate backfill material

Procedure:

1. The Service Connection Installation Team shall excavate down to the water main and expose the proposed tapping point.
2. The Installation Team shall excavate the proposed path of the service pipe to its appropriate depth.
3. Install the appropriate saddle clamp.
4. Install the HDPE service pipe using the approved fittings as per manufacturer's instructions. Note: Water must be shut-off until the connection is complete.
5. The Installer shall confirm meter assembly location is large enough to permit fitting, removal, maintenance and reading.
6. The Installer shall confirm prior to meter installation, the property details for the property actually being supplied.
7. As soon as connection is ready, the control valve shall be opened to allow water to flow into the service connection.
8. Service pipe and supply pipe (service connection) shall be flushed before meter is installed. The internal terminations, within the property to be supplied, are first checked and tested to ensure proper connection and isolation for controlled flushing.
9. Following meter installation (please refer to diagram in the next pages for Single and Multiple Meters), a tap inside the property to be turned on to prove effective operation of the installed meter and to purge any air from the supply pipe.
10. The new meter is to be suitably tagged with its respective supplied property details.
11. The Installer shall ensure that the full Property Address or Plot Number with the meter reference number and initial reading are recorded and entered on the form specified (AR-SCI-mm-nn).
12. The Installer must provide meter location details with sketch and triangulated measurements from permanent structure points where possible with their specified Meter Return Forms.
13. All excavations shall be backfilled using appropriate granular (sand) bedding and protection around the mainline.

STEP DRAWDOWN TEST

Objective –

The purpose of this document is to ensure the efficient conduct of a Step Drawdown Test for new and existing Production Wells. This procedure would create short term yield versus draw-down data. The test comprises pumping the well in a series of steps, each at a different discharge rate.

Definition of Terms:

Qmax	-	Maximum discharge derived during well development
PWL	-	Known as Pumping Water Level, water level in a well that is being pumped at a given rate
Piezometer Height	-	Height to which water will rise in the piezometer tube attached to the discharged pipe

Work Instructions –

1. The Drilling Inspector shall prepare the Form for Step Drawdown Test.

2. The Drilling Inspector should bring the following equipment/ tools to conduct SDT, as follows:
   a. Water Level Indicator
   b. Steel Tape
   c. Stopwatch
   d. SDT Form and Pencil

3. Input pumping water level, piezometer height and discharge for every step according to the appropriate time interval.

Step	Discharge
1	Qmax * 0.1
2	Qmax * 0.25
3	Qmax * 0.5
4	Qmax * 0.75
5	Qmax

4. At the end of the activity, a total of Five (5) Steps for Step Drawdown Test, with the Final Step Test Flow Rate allowing an estimate of the wells maximum yield.

5. Each step of the test should be equal in duration and for operational and data analysis reasons. It is common for steps to be 60 minutes in duration.

Prepared By:	Approved By:
Euljun B. Salarda Process Owner	Quality Management Representative

CONSTANT DISCHARGE TEST

Objective –

The purpose of this document is to obtain data on the characteristics of an aquifer within the radius of influence of the pumped well.

Definition of Terms:

Qmax	-	Maximum discharge derived during well development
PWL	-	Known as Pumping Water Level, water level in a well that is being pumped at a given rate
Piezometer Height	-	Height to which water will rise in the piezometer tube attached to the discharged pipe

Work Instructions –

1. The Drilling Inspector shall prepare the form for Constant Discharge Test.

2. The Drilling Inspector should bring the following equipment/ tools to conduct SDT, as follows:
   a. Water Level Indicator
   b. Steel Tape
   c. Stopwatch
   d. CDT Form and Pencil

3. Input pumping water level and piezometer height at appropriate time intervals while the well is being pumped at Qmax. In addition, the necessary items to be filled are casing diameter, static water level, pump setting and orifice.

4. The total number of minutes to conduct CDT is 4320 minutes which is equivalent to 72 hours or 3 days.

RECOVERY TEST

Objective –

The purpose of this document is to form a useful check on transmissivity values derived from the Discharge Test. It is dependent upon a foot valve being fitted to the rising main. This is necessary to prevent a rapid rise in water levels.

Definition of Terms:

SWL - Known as Static Water Level, stable water level in a well not affected by withdrawal (pumping) of ground water

Work Instructions –

1. The Drilling Inspector shall prepare the form for Recovery Test.

2. The Drilling inspector should bring the following equipment/ tools to conduct SDT, as follows:
   a. Water Level Indicator
   b. Steel Tape
   c. Stopwatch
   d. Recovery Form and Pencil

3. Input static water level at appropriate time intervals after the pump is stopped and the well is recovering.

4. The total number of minutes to conduct recovery test is 4320 minutes which is equivalent to 72 hours or 3 days. Thus, monitoring the well until the static water level is stable.