URBAN DEVELOPMENT DIRECTORATE (UDD)

Ministry of Housing and Public Works

Government of the People's Republic of Bangladesh

Establishment of Monitoring Well and Field Investigation Report

On

HYDRO-GEOLOGICAL SURVEYS AND STUDIES UNDER PREPARATION OF DEVELOPMENT PLAN FOR MEHERPUR ZILLA

Package No.: 6 (Six)

April 2025

Submitted by

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2 Acronyms

UDD	Urban Development Directirate
CGR	Center for Geoservices and Research
VES	Vertical Electrical Sounding
EC	Electrical Conductivity
TDS	Total Dissolved Solid
ASTM	American Society for Testing and Materials

3 Introduction

This report describes the establishment of a groundwater monitoring network in Meherpur districts under the hydrogeological surveys and studies in the Preparation of Development Plan for Meherpur Zilla project. Additionally, details of field investigations for water samplings and slug tests have been described. The field investigation on water quality represents for Arsenic concentration the whole project area is free of Arsenic according to WHO and Bangladesh Standard and for salinity of shallow and intermediate aquifer is low to moderate intense. (Source: CGR)

The establishment of these monitoring networks is the first step in a detailed hydrogeological investigation in the study area that will be carried out over the period of more than a year from now. A total of 21 monitoring wells have been drilled and installed at seven (07) locations. At each location, three (03) co-located wells (5 to 10 feet apart) have been installed at different depths. The deepest of each set is about 500 ± 100 feet deep, the intermediate one is about 300 feet deep, and the shallowest one is about 100 feet deep.

Groundwater level as well as water quality in the study area will be monitored for about a year from now in each of these monitoring wells. The data that will be collected will be of outmost importance characterizing the hydrogeological condition in the study area. Detail methodology, locations, and lithological data collected during the drilling of these wells are discussed in the subsequent sections.

4 Methodology:

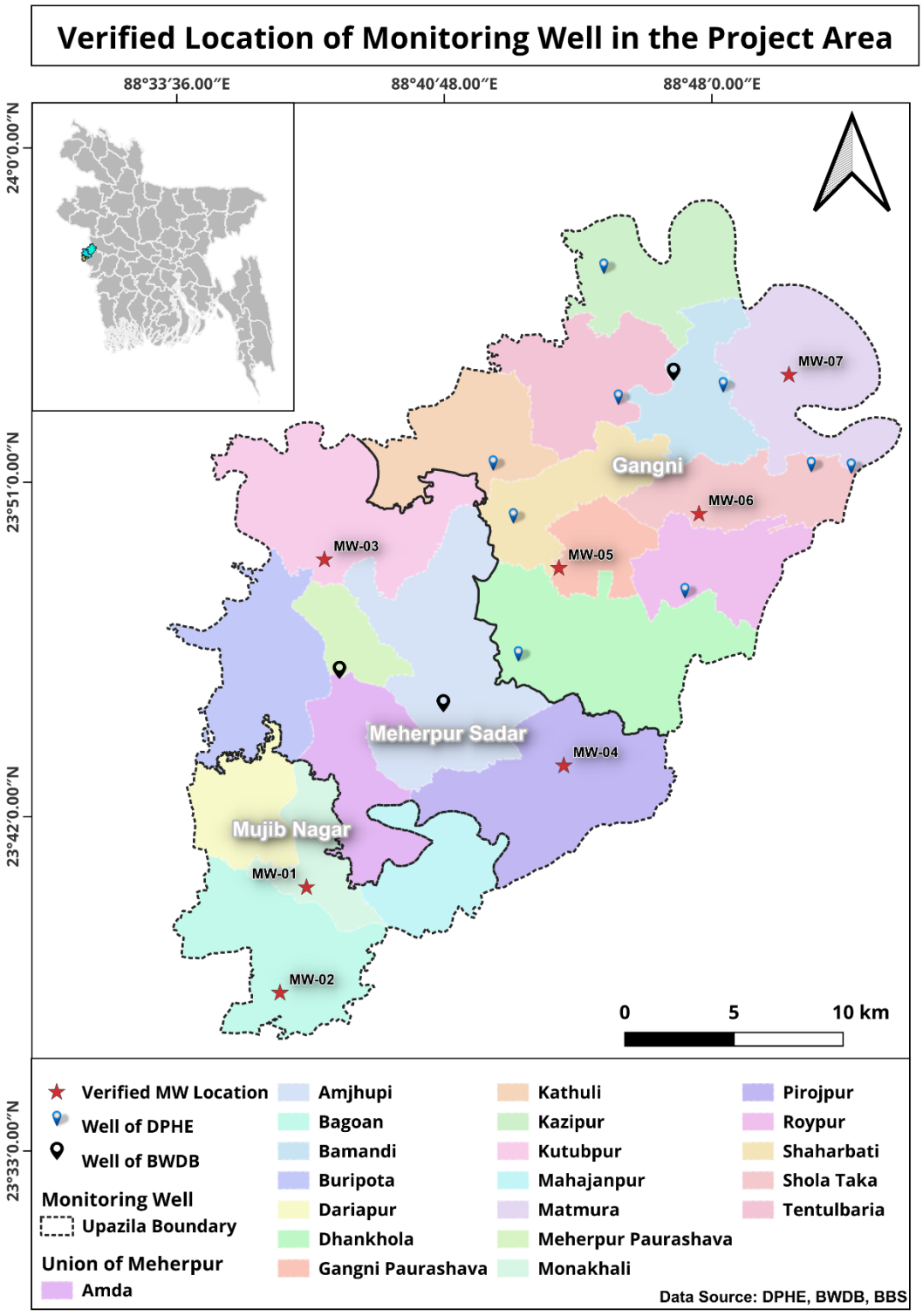
In order to establish the monitoring network in the field a field trip was carried out between 20 February and 22 March 2025. A team consisting of 1 geologist and 1 Civil Engineer worked together in the field for the entire period. The drilling team was employed to drill and install monitoring wells one by one. Detail methodology for site selection, drilling, sampling, logging, and installation of the monitoring network is discussed in the subsequent sections.

4.1 Monitoring Well Installation

4.1.1 Site Selection:

Monitoring well locations were selected first on the basis of Geological, Geomorphological, and hydrogeological variability, and the location of existing data in the study area. Later on, the locations were verified by physical observation and shifted a bit on the basis of local access and

available space for the investigation as well as the permission of the landowners. All the locations are verified finally, and permission is also obtained from the landowners. Locations of the monitoring wells are shown in Figure 1 and in Table 1 in the Appendix.



Map 1 Location map of the monitoring nests (Source: CGR)

4.1.2 Drilling of Monitoring Wells:

Since the groundwater quality in the study area varies with depth, monitoring wells at multiple depth intervals is essential. A total of 21 monitoring wells have been installed at Seven (07) locations (one set of 3 wells, Map 1 & Figure 2). At each location a cluster/nest[1] of three wells (one at around 500±100 feet depth, one at around 300 feet depth and the other at around 100 feet depth, each well will be within 5-10 ft from the other) have been installed as shown in Figure-2.

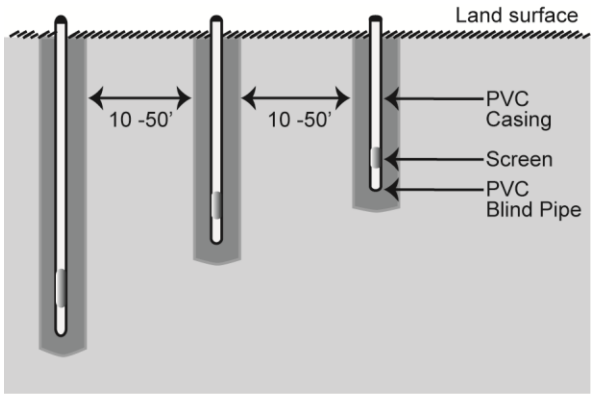


Figure 1 Cross Sectional View of Well Nest/Cluster

Reverse circulation conventional drilling method (Figure 2) was used for drilling the monitoring wells. In this method, drilling fluid enters the hole through the drill pipe and comes up to the surface with a mixture drill cutting through the annulus. Fluid was piped through the pipe using a high-speed mechanical pump. A mixture of water and cow dung was used as drilling fluids. For the deepest piezometer drilling was continued for at least 1000 feet.

4.1.3 Lithological Sampling and Logging:

A well site Geologist was present at each site during drilling, and he was responsible for logging the samples in standard format, collected every 10 feet interval. He logged the lithology in the log sheet provided by the consultancy firm and preserved the samples for further laboratory test i.e. Grain size analysis. The drill cuttings were collected in bucket and preserved in polyethylene bag for further laboratory analysis. The samples were analyzed visually by an onsite geologist and a driller's log was prepared at the field. All the bore logs are presented in appendix 3.

[1] **Nest well:** A cluster of wells where tubes or pipes are constructed in separate (5-10 feet distance to each other), individual boreholes that are drilled and completed at different depths.

Figure 2 Drilling Procedure of Monitoring well in Mujibnagar Upazila.

4.1.4 Installation of Monitoring Wells

After the drilling was completed, a monitoring well was installed at every drill hole. The deepest monitoring wells have 20 feet screens at the bottom of the well but above 10 to 30 feet blind pipes. The shallower monitoring wells have a 10 feet screen above 10 feet blind pipe. Both the well casing and screen consist of PVC materials (Figure 3). After installing the pipes, gravel packing was done around the well screen. The well annulus was back filled by clays collected during the drilling.

Figure 3 Installation of Monitoring Well in Mujibnagar Upazila

4.1.5 Development of Monitoring Wells

After installation, each monitoring well was developed by both manual pumping for duration of several hours for the shallow wells to tens of hours for the deep well until the EC of the well water was stable and by an electrical compressor. A local hand pump was used for the manual pumping for well development.

4.1.6 Water Level Measurement and Sampling

After the successful development of the monitoring wells groundwater level at the monitoring wells were measured using an electronic groundwater level meter. Afterwards the wells were pumped, and water samples were collected for laboratory analysis. During water sampling a number of onsite geochemical parameters were also measured in the field using field test kits. These parameters include $P^{H,}$ Electrical conductivity (EC), TDS, and Arsenic (Figure 4 & 5). Water levels will be measured automatically in hourly interval in the deep wells using automatic data loggers for a period of one year. In shallow wells water level will be measured bi-weekly using a water level meter for the same period.

Figure 4 Water Sampling and Field Test.

Figure 5 Water Sampling and Field test.

4.2 Water Sampling from Existing Wells

A total of 60 existing wells were sampled in 3 Upazilas. Before sampling each well was purged for 5-10 minutes. Samples were collected in 100 ml plastic bottles. Two samples were collected from each well, one sample was acidified, and the other was non-acidified. Both samples were filtered before filling the sampling bottle. Each sample was given a sampling ID and sample bottle was labeled with ID. In addition to sample collection a number of onsite geochemical parameters were also measured in the field using field test kits. These parameters include $P^{H,}$

Electrical conductivity (EC), TDS, and Arsenic (Figure 5). Details of the sample locations and field parameters are given in Table 2 in Appendix.

a) 5

Figure 6 Water Sampling from Existing Well

4.3 Slug Test

Since pump tests are very expensive, they are usually carried out at only a few locations, providing very sparse data on the aquifer properties. A cheap alternative of pump test is slug test. For high density coverage of hydraulic conductivity data slug test will be performed in a large number of wells throughout the study area. Slug test is a field method where a slug (usually a

rod) is inserted in a well below the water table, which causes an instantaneous rise of water level in the well. Dissipation of the water level in the well is then recorded, usually by an automatic water level logger (Figure 7). The temporal rate of this water level declination provides information on the hydraulic conductivity and specific yield/storage of the aquifer surrounding the well. This is a quick but accurate method of estimating hydraulic conductivity in any small diameter tube wells.

Figure 7 Automatic data logger

A slug test is a controlled field experiment, performed by groundwater hydrologists to estimate the hydraulic properties of aquifers and aquitards, in which the water level in a control well is caused to change suddenly (rise or fall) and the subsequent water-level response (displacement or change from static) is measured through time in the control well and one or more surrounding observation wells (Figure 8 &9).

Figure 8 Slug test in the monitoring well

Slug tests are frequently designated as rising-head or falling-head tests to describe water-level recovery in the control well following test initiation. Other terms sometimes used instead of slug test include baildown test, slug-in test and slug-out test. The goal of a slug test, as in any aquifer test, is to estimate hydraulic properties of an aquifer system such as hydraulic conductivity.

Figure 9 Slug Test in Existing Well

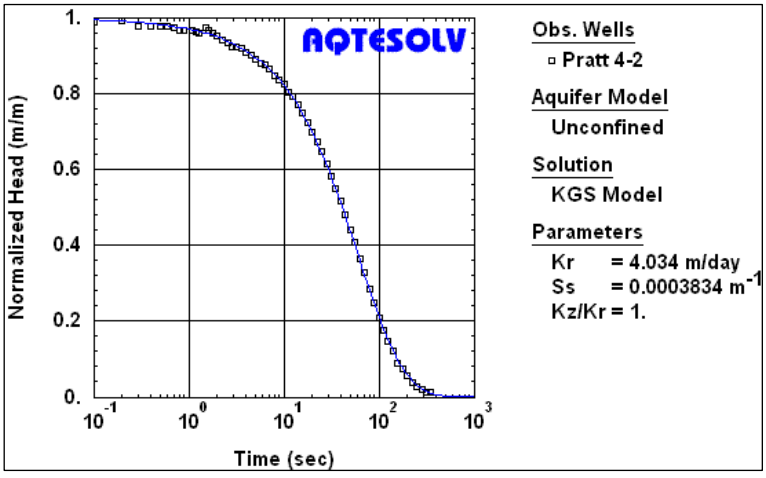
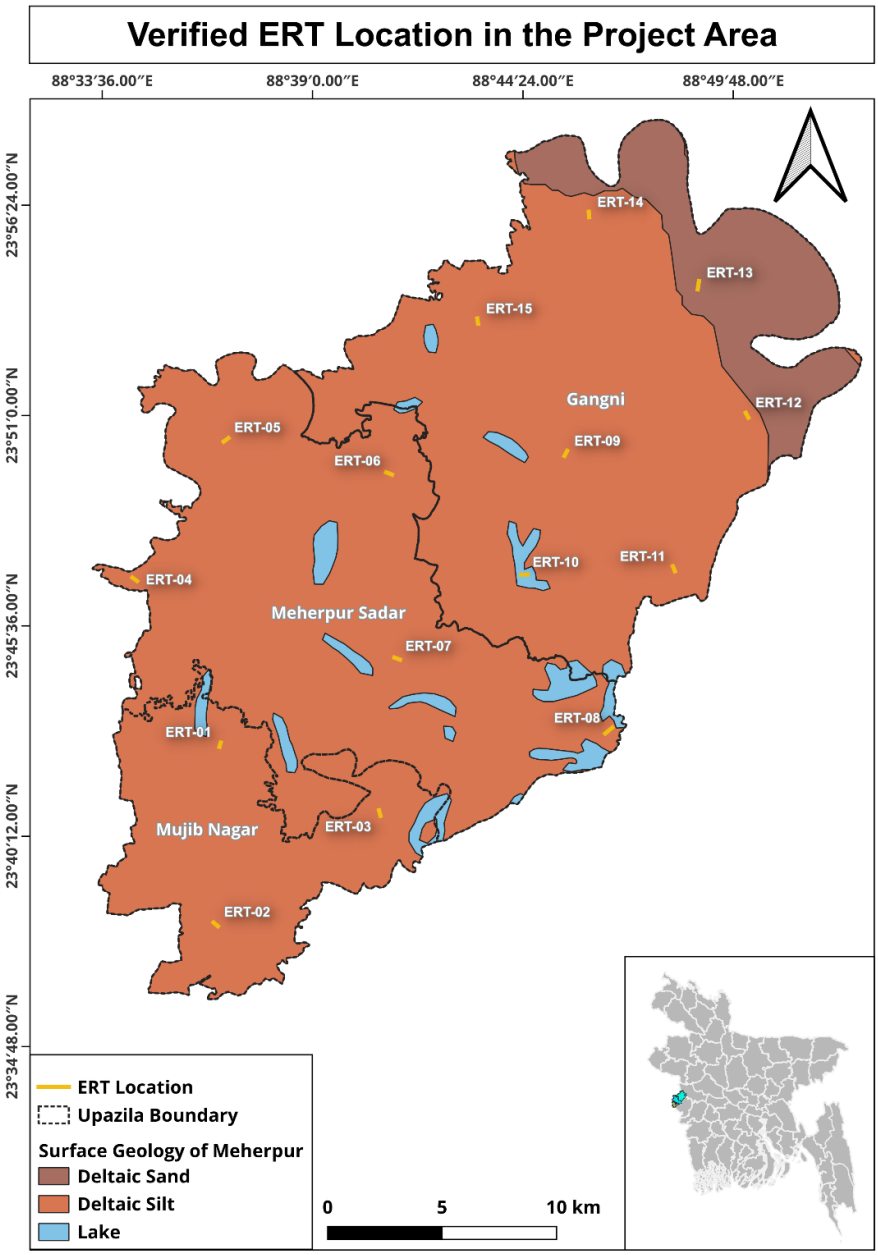


Figure 10 Estimation of aquifer properties from time-displacement data collected during an overdamped slug.

In addition to the 21 monitoring wells that have been installed under this study, slug test have been carried out in at least 60 locations in the existing hand tube wells throughout the study area.

4.4 Electrical Resistivity Tomography

Boreholes provide direct information about the subsurface. However, drilling boreholes is expensive and their density in an area is usually low resulting in a spare point data about the subsurface geology. Interpolation of these sparse data for mapping subsurface geology/aquifers can be erroneous since usually there are data gaps over a large area between each borehole. Geophysical methods can be very useful in minimizing the data gap. In this study, Electrical Resistivity Tomography (ERT) will be conducted in a total of 15 locations in three Upazilas, Map 3.



Map 2 Location Map of ERT (Source: CGR)

4.4.1 METHODOLOGY

Geo-electrical resistivity surveys have long been used for geo-engineering studies, and the method is found to be very successful. Geophysical methods are now widely used in solving complicated geological, hydrological, and environmental problems. Among all the geophysical methods, electrical and electromagnetic techniques are the most popular in groundwater exploration, geotechnical investigations, disaster science due to the close inter-relationship among electrical conductivity, hydrogeological properties of the aquifer such as porosity, clay content, mineralization of the groundwater, degree of water saturation, and lithology. Several case histories conducted in different parts of the world proved that the conventional direct current (DC) resistivity method is one of the most effective tools to decipher the underlying soil conditions in complicated geological setting.

4.4.2 RESISTIVITY OF ROCKS

The resistivity of rocks varies considerably with lithology. The resistivity of rocks varies considerably with lithology. Sediments comprising aquifers are sands of various grain sizes. The electrical conductivity of these sediments depends on the salt concentration of the pore space water they contain. Clay and silt, rich in water-soluble minerals, have low resistivity even when their water content is low. The conductivity of sand and gravel is exclusively the consequence of their pore space water content, as they are composed of electrically non-conducting minerals. Consequently, sand and gravel show very high specific resistivity above groundwater level, and lower values below it. Resistivity is usually the most important property in determining the flow of electric current.

4.4.3 RESISTIVITY PRINCIPLES

In the resistivity method, artificially generated electric currents are introduced into the ground, and the resulting potential differences are measured at the surface. Generally, actual resistivity values are determined from apparent resistivity, which are computed from the measurements of current and potential differences between two pairs of electrodes placed on the ground surface. Two main types of procedures related to the resistivity survey are: vertical electrical sounding (VES) and constant separation traversing (CST). In groundwater exploration, vertical electrical sounding is widely used to identify the aquifer position, their lateral extent, variations in thickness, and water quality.

The resistivity of a material is defined as the resistance in ohms between the opposite faces of a unit cube of the material. For a conducting cylinder of resistance ΔR with a cross-sectional area ΔA and a length ΔL (Fig. 1), the resistivity of the cylinder can be expressed as:

$$\rho = \Delta R.\ \Delta A / \Delta L$$

The SI unit of resistivity is ohm-meter (Ω-m). The reciprocal of resistivity is termed as the conductivity and the SI unit of conductivity is ohm per meter or Siemens. The Ohm's law, which states that temperature remaining constant, the potential difference 'V' across a current bearing conductor is given by the product of the current 'I' and the resistance 'R' of the conductor.

$$V=IR \qquad (1)$$

Let the conductor be a plate of thickness 'L' and area of cross-section 'A', then

$$R= \rho L/A \qquad (2)$$

Where ρ is the resistivity of the plate

Putting equation (2) in equation (1) we get,

$$V = I\rho L/A,$$

$$\text{Or, } V= j\rho L \quad [j =I/A= \text{current density}] \qquad (3)$$

If 'L' is very small, the potential difference 'V' will also be small Δv, then the ratio $-\Delta v/\Delta l$ is given by the potential gradient E

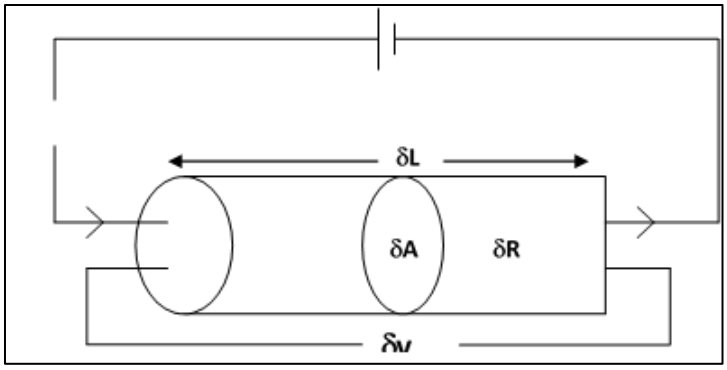


Figure 11 The parameters used in defining resistivity

Therefore, $-\Delta v/\Delta l = E= j\rho$ or

$$j = E/\rho = \sigma E \qquad (4)$$

Where, σ is the conductivity of the plate.

4.4.4 RESISTIVITY OF HOMOGENEOUS ISOTROPIC MEDIUM

The simplest approach to the theoretical study of earth resistivity measurements is to consider first the case of a completely homogeneous isotropic path. An equation giving the potential about a single point source of current on the spherical surface can be developed from ohm's law. In homogeneous isotropic ground where there is a point source of current below the ground surface, the current radiates equally in all directions. Hence the equipotential surfaces are spherical with center at source point. For two such equipotential surfaces very near to each other the potential difference would be v_1-v_2= Δv between them.

If the radial distance between them is Δr, then potential gradient E at any point between them is

$$-\Delta v/\Delta r = E$$

The current density 'j' at any point on the equipotential surfaces would be

$$j = I/4\pi r^2$$

By ohms law,

$$J = I/4\pi r^2 = \sigma E = -\sigma\, \Delta v/\Delta r$$

$$\text{Or, } \Delta v/\Delta r = -1/\sigma.\ I/4\pi r^2$$

$$\therefore \Delta v = -1/\sigma.\ I/4\pi r^2.\Delta r \qquad (5)$$

Now, integrating the equation (5) we get,

$$V = 1/\sigma.\ I/4\pi r + C$$

$$V = \rho I/4\pi r \qquad (6)$$

$$\text{When } \ r = \infty \rightarrow C = 0.$$

If the point source of current is at the ground surface, then the current will flow hemispherically, then equation (6) can be expressed as

$$V = \rho I/2\pi r \qquad (7)$$

Potential functions are scalars and so, may be added arithmetically. If there are several sources of current rather than the single source assumed so far, the total potential at an observation point may be calculated by adding the potential contributions from each source independently. Thus,

for n current sources distributed in a uniform medium, the potentials at an observation point, M will be-

$$V_M = \rho/2\pi\ [I_1/a_1 + I_2/a_2 + \text{----------} + I_n/a_n] \qquad (8)$$

Where, I_n is the current from the n^{th} in a series of current electrodes and a_n is the distance from the n^{th} source to the point at which the potential is being observed.

Equation (8) is of practical importance in the determination of earth resistivities. The physical quantities measured in a field determination of resistivity are the current, I, flowing between two current electrodes; the difference in potential ΔV, between two measuring points and the distance between the various electrodes.

When there are two current electrodes (A&B) on ground surface and the distance between two current electrodes is finite (Figure 12), the potential at any nearby surface point will be affected by both current electrodes.

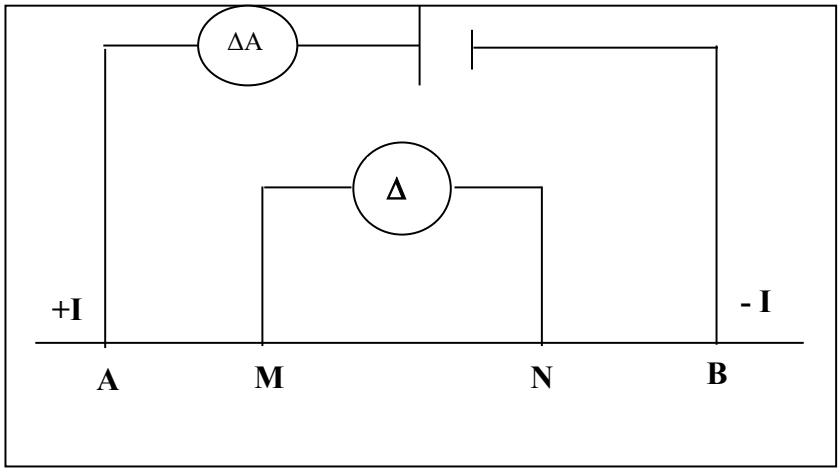


Figure 12 Generalized form of the electrode configuration used in resistivity measurements

The potential V_m at an internal potential electrode M_c is the sum of the potential contributions V_A and V_B from the current source at A and the sink at B.

$$V_M = V_A - V_B$$

From the equation (7) we get,

$$V_M = \rho I/2\pi\ (1/AM - 1/BM) \qquad (9)$$

Similarly,

$$V_N = \rho I/2\pi\ (1/AN - 1/BN) \qquad (10)$$

Absolute potentials are difficult to monitor so the potential difference ΔV between two electrodes 'M' and 'N' is measured:

$$\Delta V = V_M - V_N = \rho I/2\pi \{(1/AM - 1/BM) - (1/AN - 1/BN)\}$$

$$\text{Thus } \rho = 2\pi \Delta V/I \{(1/AM - 1/BM) - (1/AN - 1/BN)\} \qquad (11)$$

The equation (11) is applied for the ordinary four terminal arrays in measuring the earth resistivity in the field. Where the ground is uniform, the resistivity calculated from equation (11) should be constant and independent of both electrode spacing and surface location. When subsurface in homogeneities exist, the resistivity will vary with the relative positions of the electrodes. Any computed value is then known as the apparent resistivity (ρ_a) and will be a function of the form of the in homogeneity. Equation (11) is basic equation for calculating the apparent resistivity for any electrode configuration.

The arrangement of current and potential electrodes on or in the ground for the purpose of making an electrical survey is called electrode configuration. The current electrodes are generally placed on the outside of the potential electrodes.

Based on the position of current or potential electrodes and variation in distance between them, a variety of electrode configurations are possible of which some are mentioned below:

I. Wenner configuration
II. Schlumberger configuration
III. Dipole-dipole configuration

The choice of array and distance between the electrodes is very important for obtaining the best possible information of the subsurface geology of a given area. For ERT, Wenner configuration is preferred.

The Wenner configuration, in which potential difference is measured, is one of the simpler and most commonly used electrode arrays for determining resistivity. This is a symmetrical configuration consisting of four electrodes, the outer two electrodes are current electrodes and the inner two electrodes are potential electrodes. The distance between any two adjacent electrodes is called the array spacing and is equal and usually denoted by 'a' along a straight line (Figure 13).

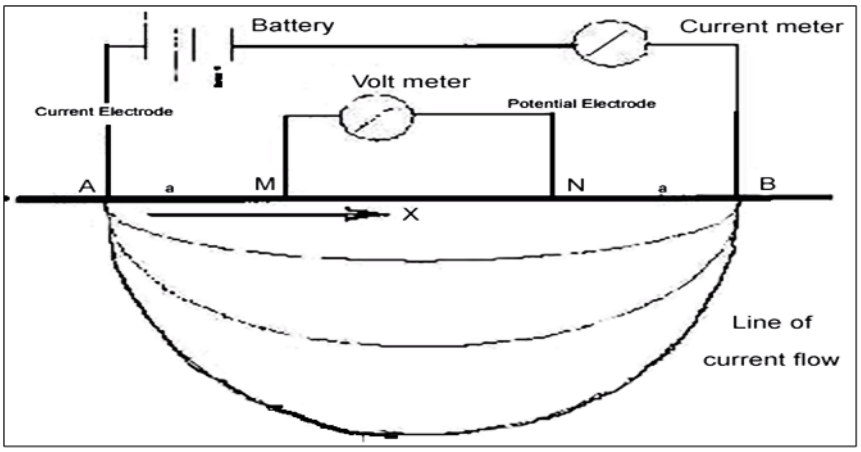


Figure 13 Wenner electrode configuration showing equal spacing

In spite of the simple geometry, this arrangement is quite often inconvenient for fieldwork. This arrangement has some disadvantages from a theoreticalpoint of view. For depth exploration using the Wenner configuration, the electrodes are expanded about a fixed center, increasing the spacing 'a' insteps. In case of lateral exploration of mapping, the spacing remains constant and all four electrodes are moved along the line, then along another line and so on.

The apparent resistivity with the Wenner array is given by-

$$\rho a = 2\pi a \, . \, \Delta V/I$$

Where,

ΔV = Potential difference in volts between V1 and V2;

I = Current in ampere;

a = Array spacing;

ρa = Apparent resistivity;

The geometric factor of Wenner configuration is $2\pi a$;

the resistivity of subsurface rock depends on this factor.

4.4.5 BASIC IDEA AND FUNDAMENTALS OF RESISTIVITY SURVEY

Geo-electrical resistivity survey has long been used for ground water survey and the method is found to be very successful. As a preliminary step for the development of ground water, geo electrical resistivity survey proved to be very effective- (Bugg & Lloyed, 1976; Serres, 1969; Urish & Frohlich, 1990; Woobaidullah et al, 1996). In resistivity method, artificially generated electric currents are introduced into the ground and the resulting potential differences are measured at the surface. Generally actual resistivities are determined from apparent resistivities, which are computed from the measurements of current and potential differences between two pairs of electrodes placed in the ground surface. The procedure involves measuring a potential difference between two potential electrodes (M & N) resulting from an applied current through two other current electrodes (A & B) outside but in line with the potential electrodes. Thus, the measured current and potential differences yield an apparent resistivity over an unspecified depth. If the spacing between the electrodes is increased penetration of the electric field also increases and a different apparent resistivity is obtained. Two main type resistivity surveys are: Vertical Electrical Sounding and Constant Separation Traversing/ Profiling (CST).

Vertical Electrical Sounding sees the current and potential electrodes at the same relative spacing and the whole spread is progressively expanded about a fixed central point. Consequently, readings are taken as the current reaches progressively greater depths. In this case Schlumberger configuration is favored. Constant Separation Traversing is used to determine the lateral variations of resistivity. The current and potential electrodes are maintained at a fixed separation and progressively moved along a profile. In this case Wenner configuration is favored.

Electric Resistivity Tomography (ERT) is a robust and well-consolidated method for near-surface geophysics, with a wide spectrum of applications in the geological, engineering and environmental sciences. Technological advances (e.g., multi-channel arrays, innovative sensors) and novel tomographic algorithms for data inversion have rapidly transformed ERT into one of the most employed geophysical methods. In essence, the survey procedures are similar to CST, but with each increment in electrode spacing, the survey direction is reversed.

As for data processing, an inversion model is conducted. The least-squares method is used to calculate certain physical characteristics of the subsurface, the “model parameters”, from the apparent resistivity measurements. The “model parameters” are set by the way we slice and dice the subsurface into different regions. The method most commonly used in 2-D interpretation is a purely cell-based model where the subsurface is subdivided into rectangular cells. The positions

of the cells are fixed and only the resistivity values of cells are allowed to vary during the inversion process. The model parameter is the resistivity of each cell.

4.4.6 ERT DATA ACQUISITION

To define the subsurface resistivity condition Wenner configuration (WN) has been used. Four equally spaced electrodes are used in WN where two outer electrodes (A & B) acted as current electrodes (source) and two inner electrodes (M & N) acted as potential electrodes (Figure 14). The array spacing expands about the array midpoint while maintaining an equivalent spacing between each electrode (Keller, 1996). The resistivity measured by this configuration can be determined from the readings of current intensity (I) and the potential difference between M and N (ΔV) values as follows:

$$\rho A = k\frac{\Delta V}{I}$$

Where ρA is the apparent resistivity, k is the geometric factor as defined by the following expression:

$$k = \frac{2\pi}{(\frac{1}{AM} - \frac{1}{BN} - \frac{1}{AN} + \frac{1}{BN})}$$

The Wenner array employed in this study is one of the most commonly used arrangements, in the field.

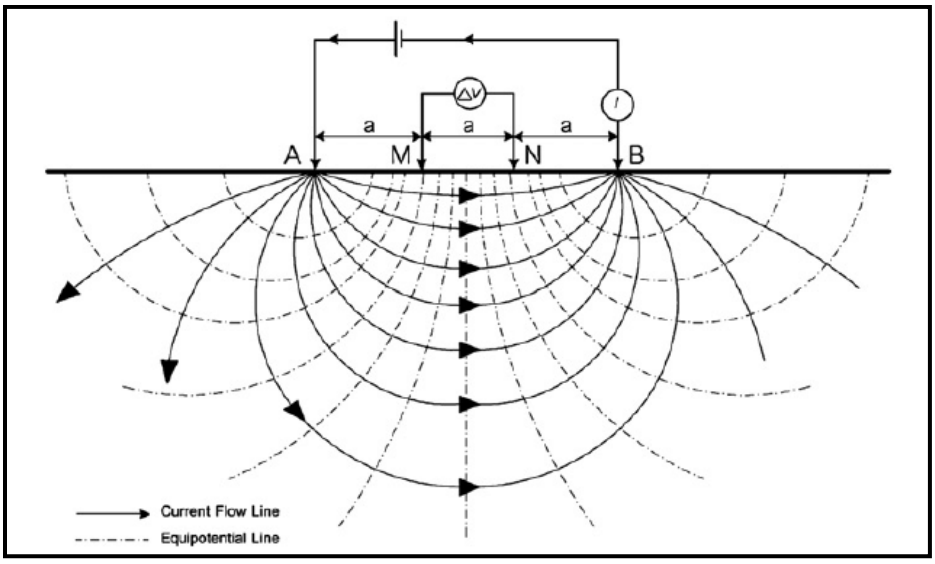


Figure 14 Wenner array ("a" is electrode spacing) and distribution of electric field underneath. (After Todd and Mays, 1980; Source: Wiwattanachang & Giao, 2011)

A spacing "a" separates the four electrodes equally. Wenner array's geometric coefficient is equal to 2a (Wiwattanachang & Giao, 2011). As a result, the apparent resistivity is determined as follows:

$$\rho A = 2\pi a \frac{\Delta V}{I}$$

Wenner configuration with a spread length of 90 m maximum is planned to execute where the electrode spacing was 3, 6, 9, 12 and 15 m respectively in all 20 sites in the investigated area.

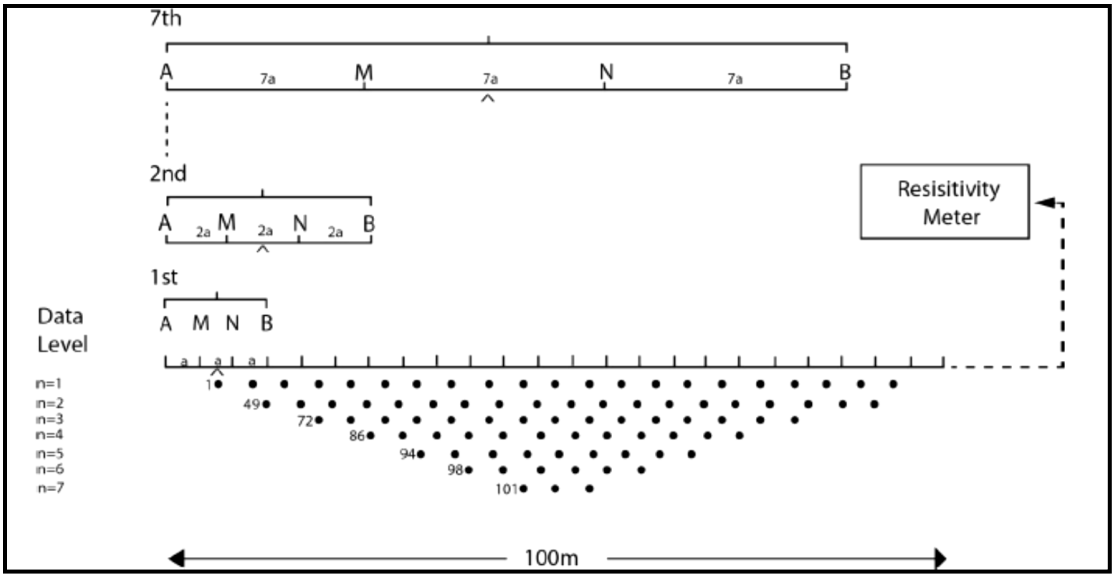


Figure 15 Measurement sequence for constructing a pseudo section.

4.4.7 ERT DATA PROCESSING

The measured data were converted into a suitable (.dat) format and therefore inverted using the smoothness-constrained least-squares inversion method in the Res2Dinv software (Loke and Barker, 1996; Sasaki 1992; deGroot-Hedlin and Constable 1990). The smoothness-constrained least-squares method is based on the following equation:

$$(\mathbf{J}^{\mathrm{T}}\mathbf{J} + u\mathbf{F})\,\mathbf{d} = \mathbf{J}^{\mathrm{T}}\mathbf{g}$$

Where, F = fxfxT + fzfzT; fx = horizontal flatness filter; fz = vertical flatness filter.

J = matrix of partial derivatives; u = damping factor; d = model perturbation vector; g = discrepancy vector.

Total 15 nos. of ERT will be conducted in the project area in the month of June 2025.

5 Discussion

A total of 21 monitoring wells have been drilled and installed at three locations. At each location, three (03) co-located wells (5 to 10 feet apart) have been installed at different depths. The deepest of each set is about 500±100 feet deep, the intermediate one is about 300 feet deep and the shallowest one is about 100 feet deep.

The field investigation on water quality represents for Arsenic concentration the whole project area is free of Arsenic for salinity of shallow to intermediate aquifer low to moderate intense throughout the project area.

The other investigations like grain size analyses have been completed. Major Anion, Cation, Trace element analyses are going on in laboratory and it will take more than a month and will be included in the next phase of reporting. The VES data collection will be completed by 25th June 2025.

6 APPENDICES

APPENDIX: Table 1 Location of Monitoring Wells.

MW No	Lat	Lng	Location	Union	Upazila	Zila
MW-01	23.668205	88.618213	Vobanipur Primary School, Monakhali Union, Mujib Nagar, Meherpur	Monakhali	Mujib Nagar	Meherpur
MW-02	23.620828	88.606308	Anandabas Dakkhin Para Govt Primary School, Bagoan Union, Mujib Nagar, Meherpur	Bagoan	Mujib Nagar	Meherpur
MW-03	23.815262	88.626262	Ujalpur High School, Kutubpur Union, Meherpur Sadar, Meherpur	Kutubpur	Meherpur Sadar	Meherpur
MW-04	23.722818	88.733614	Mominpur Govt Primary School, Pirojpur Union, Meherpur Sadar, Meherpur	Pirojpur	Meherpur Sadar	Meherpur
MW-05	23.811422	88.731416	Bashbaria Govt Primary School, Gangni Paurashava, Gangni, Meherpur	Gangni Paurashava	Gangni	Meherpur
MW-06	23.835775	88.794261	Baniapukur Govt Primary School, Shola Taka Union, Gangni, Meherpur	Shola Taka	Gangni	Meherpur
MW-07	23.898125	88.8346	Motmura Govt Primary School, Matmura Union, Gangni, Meherpur	Matmura	Gangni	Meherpur

APPENDIX: Table 2 Field Parameter of Water Sample

Sample ID	Water Sample ID	District	Upazilla	Union	Latitude	Longitude	pH	EC(uS/cm	TDS(ppt)	Arsenic ppb	Temperature ©	Depth of Tubewell (Feet)	Water Level From Well Head (m)	Paraphate Height From GL (m)	Water Sampling	Slug Test
1	1	Meherpur	Mujibnagar	Bagoan	23.652351	88.592133	6.82	1175	960	10	26.7	160	5.5	0.1	Done	Done
2	2	Meherpur	Mujibnagar	Bagoan	23.62967	88.61218	7.14	671	970	10	21.6	100	5.05	0.1	Done	Done
3	-	Meherpur	Mujibnagar	Bagoan	23.64574	88.6228	-	-	-	-	-	50	6.52	0.25	-	Done
4	3	Meherpur	Mujibnagar	Monakhali	23.65352	88.63687	7.07	802	980	50	26.6	60	6.4	0.09	Done	Done
5	-	Meherpur	Mujibnagar	Monakhali	23.667146	88.612162	-	-	-	-	-	60	6.1	0.13	-	Done
6	4	Meherpur	Mujibnagar	Monakhali	23.71415	88.623	6.98	818	244	0	25.3	50	5.55	0.07	Done	Done
7	-	Meherpur	Mujibnagar	Dariyapur	23.71214	88.60778	-	-	-	-	-	160	5.7	0.2	-	Done
8	5	Meherpur	Mujibnagar	Dariyapur	23.69647	88.60473	6.87	985	237	10	26.3	160	6.8	0.1	Done	Done
9	-	Meherpur	Mujibnagar	Dariyapur	23.679816	88.612313	-	-	-	-	-	120	6.46	0.12	-	Done
10	6	Meherpur	Mujibnagar	Mohajonpur	23.65417	88.67006	6.97	1277	238	0	28.5	70	5.76	0.12	Done	Done
11	-	Meherpur	Mujibnagar	Mohajonpur	23.67485	88.68498	-	-	-	-	-	45	5.78	0.18	-	Done
12	7	Meherpur	Mujibnagar	Mohajonpur	23.69738	88.68331	6.88	1507	255	0	25.1	100	5.8	0.08	Done	Done
13	-	Meherpur	Meherpur Sadar	Amda	23.68206	88.66432	-	-	-	-	-	100	5.97	0.1	-	Done
14	8	Meherpur	Meherpur Sadar	Amda	23.707255	88.651614	6.9	1004	273	0	21.1	70	5.6	0.05	Done	Done
15	9	Meherpur	Meherpur Sadar	Amda	23.73329	88.63288	7.14	877	970	25	21.7	100	6.5	0.04	Done	Done
16	-	Meherpur	Meherpur Sadar	Pourosova	23.762553	88.643177	-	-	-	-	-	45	4	0.25	-	Done
17	10	Meherpur	Meherpur Sadar	Pourosova	23.77949	88.6308	7.76	1425	276	0	19.2	70	6.75	0.08	Done	Done
18	11	Meherpur	Meherpur Sadar	Pourosova	23.79721	88.61638	7.15	2000	980	0	27.6	60	6.64	0.08	Done	Done
19	12	Meherpur	Meherpur Sadar	Buripota	23.74122	88.59048	6.98	809	261	10	21.3	160	5.9	0.06	Done	Done
20	-	Meherpur	Meherpur Sadar	Buripota	23.75507	88.61993	-	-	-	-	-	70	6.3	0.09	-	Done
21	13	Meherpur	Meherpur Sadar	Buripota	23.80002	88.59715	7.25	750	960	0	24.3	60	5.91	0.12	Done	Done
22	14	Meherpur	Meherpur Sadar	Kutubpur	23.81229	88.63041	7.04	1326	970	10	24.1	60	6.33	0.15	Done	Done
23	15	Meherpur	Meherpur Sadar	Kutubpur	23.81957	88.66794	6.76	1255	1010	10	18.6	50	4.7	0.05	Done	Done
24	-	Meherpur	Meherpur Sadar	Kutubpur	23.86417	88.64353	-	-	-	-	-	120	5.9	0.22	-	Done
25	-	Meherpur	Meherpur Sadar	Amjhupi	23.828382	88.686492	-	-	-	-	-	60	4.34	0.4	-	Done
26	16	Meherpur	Meherpur Sadar	Amjhupi	23.79031	88.67689	6.73	1596	930	0	22.6	60	5.21	0.24	Done	Done
27	17	Meherpur	Meherpur Sadar	Amjhupi	23.74912	88.67822	6.65	1430	252	0	23.1	50	6.52	0.08	Done	Done
28	-	Meherpur	Meherpur Sadar	Baradi	23.7358	88.71146	-	-	-	-	-	60	4.82	0.1	-	Done
29	18	Meherpur	Meherpur Sadar	Pirojpur	23.706131	88.71795	6.87	775	244	0	26.7	45	5.8	0.07	Done	Done
30	19	Meherpur	Meherpur Sadar	Baradi	23.711331	88.771158	6.87	1032	243	0	26.6	50	5.03	0.04	Done	Done
31	20	Meherpur	Gangni	Dhankhola	23.75752	88.77465	7.02	937	890	0	27	80	4.91	0.23	Done	Done
32	-	Meherpur	Gangni	Dhankhola	23.774933	88.812794	-	-	-	-	-	130	4.8	0.26	-	Done
33	21	Meherpur	Gangni	Dhankhola	23.78925	88.71352	7.31	854	940	10	23.4	90	4.91	0.3	Done	Done
34	22	Meherpur	Gangni	Raypur	23.798092	88.819782	6.96	1108	900	10	25.3	100	4.75	0.2	Done	Done
35	-	Meherpur	Gangni	Raypur	23.82545	88.83046	-	-	-	-	-	80	5.4	0.26	-	Done
36	23	Meherpur	Gangni	Raypur	23.824077	88.792043	7.1	700	900	0	24	70	3.99	0.12	Done	Done
37	-	Meherpur	Gangni	Pourosova	23.81958	88.76188	-	-	-	-	-	80	4.91	0.1	-	Done
38	24	Meherpur	Gangni	Pourosova	23.82054	88.74669	7.25	648	880	10	24.9	70	3.95	0.08	Done	Done
39	-	Meherpur	Gangni	Pourosova	23.8117	88.73157	-	-	-	-	-	120	3.95	0.28	-	Done
40	25	Meherpur	Gangni	Saharbati	23.83114	88.71097	7.06	928	880	25	26.6	65	4.63	0.24	Done	Done
41	-	Meherpur	Gangni	Saharbati	23.8563	88.7304	-	-	-	-	-	75	4.93	0.22	-	Done
42	26	Meherpur	Gangni	Saharbati	23.87723	88.75855	6.93	1074	910	10	27.2	50	3.63	0.06	Done	Done
43	27	Meherpur	Gangni	Kathuli	23.859341	88.717427	6.87	1002	880	10	27.7	80	2.91	0.24	Done	Done
44	28	Meherpur	Gangni	Kathuli	23.86018	88.66147	6.92	941	970	0	24.1	65	5.1	0.1	Done	Done
45	-	Meherpur	Gangni	Kathuli	23.898735	88.70391	-	-	-	-	-	50	3.66	0.27	-	Done
46	29	Meherpur	Gangni	Tetulbaria	23.90084	88.72276	7.21	684	960	25	21.9	100	4.31	0.22	Done	Done
47	30	Meherpur	Gangni	Tetulbaria	23.90475	88.74831	7.07	742	910	10	23.9	100	5	0.17	Done	Done
48	-	Meherpur	Gangni	Tetulbaria	23.91747	88.74047	-	-	-	-	-	100	4.5	0.3	-	Done
49	-	Meherpur	Gangni	Kazipur	23.95938	88.74332	-	-	-	-	-	120	5.46	0.4	-	Done
50	31	Meherpur	Gangni	Kazipur	23.945	88.77371	6.96	869	900	25	27.2	100	5.83	0.25	Done	Done
51	-	Meherpur	Gangni	Kazipur	23.94422	88.80604	-	-	-	-	-	80	5.46	0.08	-	Done
52	-	Meherpur	Gangni	Bamandi	23.92876	88.80818	-	-	-	-	-	80	6.27	0.27	-	Done
53	32	Meherpur	Gangni	Bamandi	23.890789	88.804779	7.08	942	930	25	25.1	220	5.45	0.35	Done	Done
54	-	Meherpur	Gangni	Bamandi	23.87088	88.81242	-	-	-	-	-	70	4.3	0.24	-	Done
55	33	Meherpur	Gangni	Sholotaka	23.8526	88.7959	7.07	817	920	10	26.2	180	5.07	0.1	Done	Done
56	-	Meherpur	Gangni	Sholotaka	23.845624	88.825534	-	-	-	-	-	150	5.41	0.28	-	Done
57	34	Meherpur	Gangni	Sholotaka	23.83431	88.8552	7.2	650	990	0	20.7	120	5.77	0.05	Done	Done
58	-	Meherpur	Gangni	Matmora	23.866079	88.85651	-	-	-	-	-	50	6.85	0.15	-	Done
59	-	Meherpur	Gangni	Matmora	23.88491	88.82476	-	-	-	-	-	270	5.78	0.26	-	Done
60	35	Meherpur	Gangni	Matmora	23.90991	88.85463	7.2	860	880	24.6	0	70	5.8	0.28	Done	Done

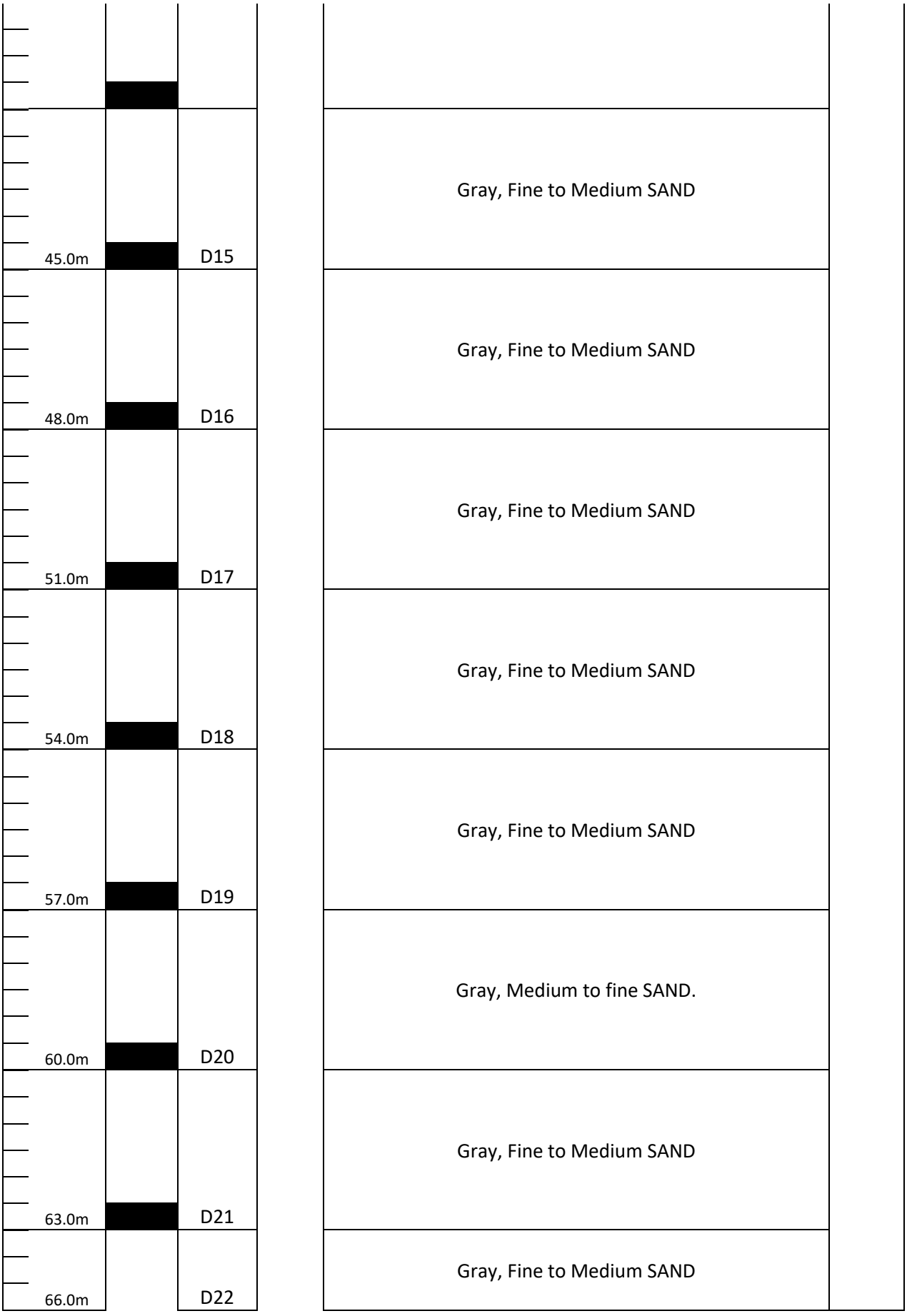
APPENDIX: Table 3 Bore holes logs

Project: Hydrogeological Surveys and Studies under Development Plan for Meherpur Zilla
Client: Urban Development Directorate (UDD)

Bore Hole ID: MW-01D
Location: Bhabanipur Govt. Primary School, Mujibnagar
Co-ordinate:23.668205, 88.618214
Depth of Boring:150 Meter
Ground Water Level: Meter
Method of Boring: Rotary Wash Boring
Boring Diameter: 1.5"
Date: 20/02/2025

Depth Bellow GL (m)	Type of Sample	Sample No	Thickness (m)	Lithologic Description	Layer Change
3.0m		D1		Brownish Gray, Silty CLAY	
6.0m		D2		Brownish Gray, Silty CLAY	
9.0m		D3		Brownish Gray, Silty CLAY	
12.0m		D4		Gray, Very Fine to Fine SAND.	
15.0m		D5		Gray, Very Fine to Fine SAND.	
18.0m		D6		Gray, Very Fine to Fine SAND.	

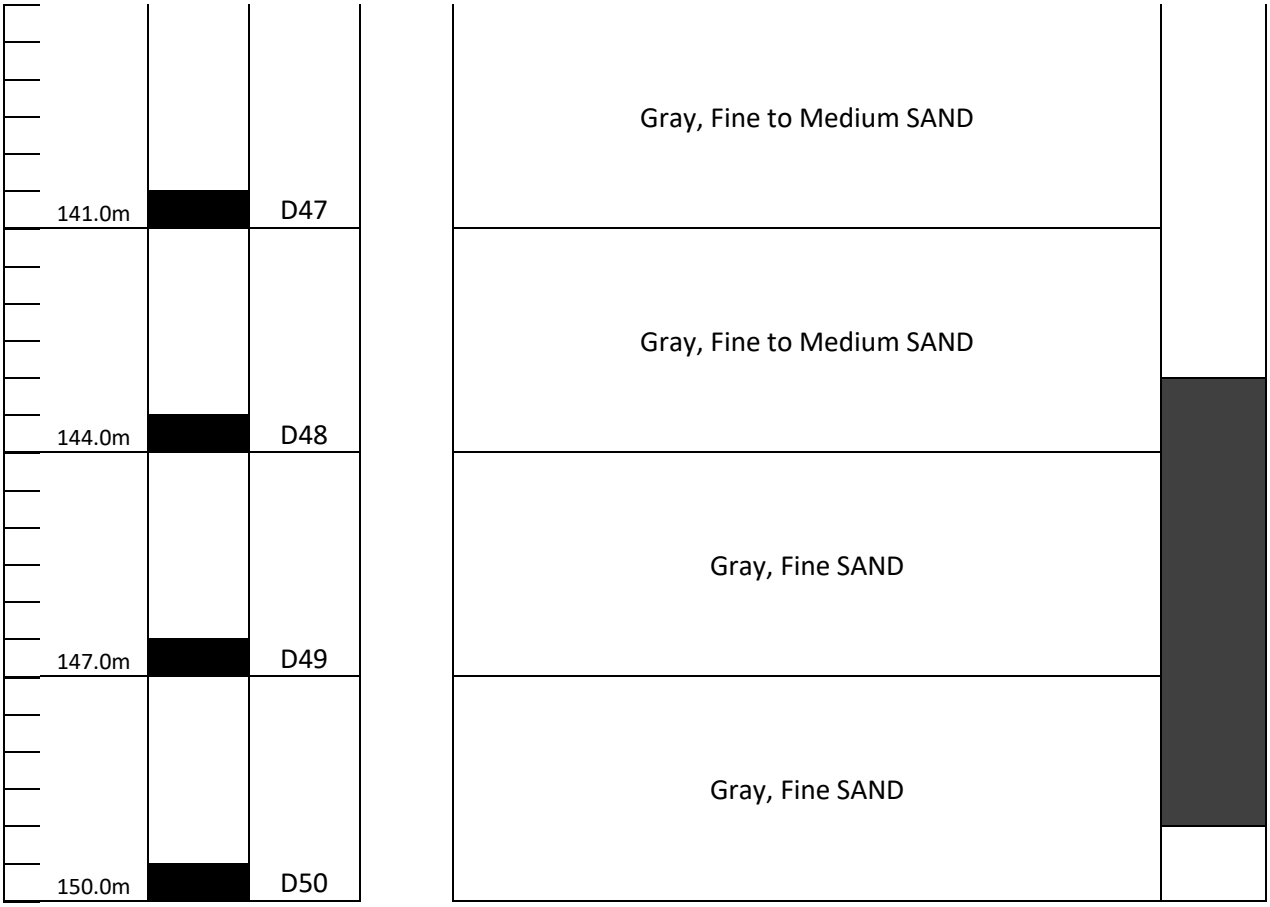
21.0m		D7		Gray, Very Fine to Fine SAND.
24.0m		D8		Gray, Very Fine to Fine SAND.
27.0m		D9		Gray, Fine SAND.
30.0m		D10		Gray, Fine SAND.
33.0m		D11		Gray, Fine SAND.
36.0m		D12		Gray, Fine SAND.
39.0m		D13		Gray, Fine to Medium SAND
42.0m		D14		Gray, Fine to Medium SAND


45.0m
D15
Gray, Fine to Medium SAND
48.0m
D16
Gray, Fine to Medium SAND
51.0m
D17
Gray, Fine to Medium SAND
54.0m
D18
Gray, Fine to Medium SAND
57.0m
D19
Gray, Fine to Medium SAND
60.0m
D20
Gray, Medium to fine SAND.
63.0m
D21
Gray, Fine to Medium SAND
66.0m
D22
Gray, Fine to Medium SAND

69.0m		D23	Gray, Fine to Medium SAND
72.0m		D24	Gray, Medium to fine SAND.
75.0m		D25	Gray, Medium to fine SAND.
78.0m		D26	Gray, Medium to fine SAND.
81.0m		D27	Gray, Medium to fine SAND.
84.0m		D28	Gray, Fine SAND
87.0m		D29	Gray, Fine SAND
90.0m		D30	Gray, Fine SAND

93.0m		D31	Gray, Fine to Medium SAND
96.0m		D32	Gray, Fine to Medium SAND
99.0m		D33	Gray, Fine to Medium SAND
102.0m		D34	Gray, Medium to fine SAND.
105.0m		D35	Gray, Medium to fine SAND.
108.0m		D36	Gray, Medium to fine SAND.
111.0m		D37	Gray, Medium to fine SAND.
114.0m		D38	Gray, Medium to fine SAND.

117.0m		D39	Gray, Medium to fine SAND.
120.0m		D40	Gray, Fine to Medium SAND
123.0m		D41	Gray, Fine to Medium SAND
126.0m		D42	Gray, Fine to Medium SAND
129.0m		D43	Gray, Fine to Medium SAND
132.0m		D44	Gray, Fine to Medium SAND
135.0m		D45	Gray, Fine to Medium SAND
138.0m		D46	Gray, Fine to Medium SAND


141.0m
D47
144.0m
D48
147.0m
D49
150.0m
D50
Gray, Fine to Medium SAND
Gray, Fine to Medium SAND
Gray, Fine SAND
Gray, Fine SAND

Project: Hydrogeological Surveys and Studies under Development Plan for Meherpur Zilla

Client: Urban Development Directorate (UDD)

Bore Hole ID: MW-01I

Location: Bhabanipur Govt. Primary School, Mujibnagar

Co-ordinate:23.668205, 88.618214

Depth of Boring: 90 Meter

Ground Water Level: Meter

Method of Boring: Rotary Wash Boring

Boring Diameter: 1.5"

Date: 23/02/2025

Depth Bellow GL (m)	Type of Sample	Sample No	Thickness (m)	Lithologic Description	Layer Change
3.0m	■	D1		Brownish Gray, Silty CLAY	
6.0m	■	D2		Brownish Gray, Silty CLAY	
9.0m	■	D3		Brownish Gray, Silty CLAY	
12.0m	■	D4		Gray, Very Fine to Fine SAND	
15.0m	■	D5		Gray, Very Fine to Fine SAND	
18.0m		D6		Gray, Very Fine to Fine SAND	

21.0m	D7		Gray, Very Fine to Fine SAND
24.0m	D8		Gray, Fine SAND
27.0m	D9		Gray, Fine SAND
30.0m	D10		Gray, Fine SAND
33.0m	D11		Gray, Fine to Medium SAND
36.0m	D12		Gray, Fine to Medium SAND
39.0m	D13		Gray, Fine to Medium SAND
42.0m	D14		Gray, Fine to Medium SAND

45.0m		D15	Gray, Fine to Medium SAND
48.0m		D16	Gray, Fine to Medium SAND
51.0m		D17	Gray, Fine to Medium SAND
54.0m		D18	Gray, Medium to Fine SAND
57.0m		D19	Gray, Medium to Fine SAND
60.0m		D20	Gray, Medium to Fine SAND
63.0m		D21	Gray, Medium to Fine SAND
66.0m		D22	Gray, Fine to medium SAND.

69.0m	D23	Gray, Fine to medium SAND.
72.0m	D24	Gray, Fine to medium SAND.
75.0m	D25	Gray, Fine to medium SAND.
78.0m	D26	Gray, Fine to medium SAND.
81.0m	D27	Gray, Fine to medium SAND.
84.0m	D28	Gray, Fine SAND
87.0m	D29	Gray, Fine SAND
90.0m	D30	Gray, Fine SAND

Project: Hydrogeological Surveys and Studies under Development Plan for Meherpur Zilla

Client: Urban Development Directorate (UDD)

Bore Hole ID: MW-01S

Location: Bhabanipur Govt. Primary School, Mujibnagar

Co-ordinate:23.668205, 88.618214

Depth of Boring: 30 Meter

Ground Water Level: Meter

Method of Boring: Rotary Wash Boring

Boring Diameter: 1.5"

Date: 25/02/2025

Depth Bellow GL (m)	Type of Sample	Sample No	Thickness (m)	Lithologic Description	Layer Change
3.0m		D1		Brownish Gray, Silty CLAY	
6.0m		D2		Brownish Gray, Silty CLAY	
9.0m		D3		Brownish Gray, Silty CLAY	
12.0m		D4		Gray, Very Fine to Fine SAND.	
15.0m		D5		Gray, Very Fine to Fine SAND.	
18.0m		D6		Gray, Very Fine to Fine SAND.	

21.0m		D7		Gray, Very Fine to Fine SAND.	
24.0m		D8		Gray, Fine SAND	
27.0m		D9		Gray, Fine SAND	
30.0m		D10		Gray, Fine SAND	

Project: Hydrogeological Surveys and Studies under Development Plan for Meherpur Zilla
Client: Urban Development Directorate (UDD)

Bore Hole ID: MW-02D
Location: Anondobas Dokhinpara Govt. Primary School, Meherp
Co-ordinate: 23.620828, 88.606309
Depth of Boring:132 Meter
Ground Water Level: Meter
Method of Boring: Rotary Wash Boring
Boring Diameter: 1.5"
Date: 25/02/2025

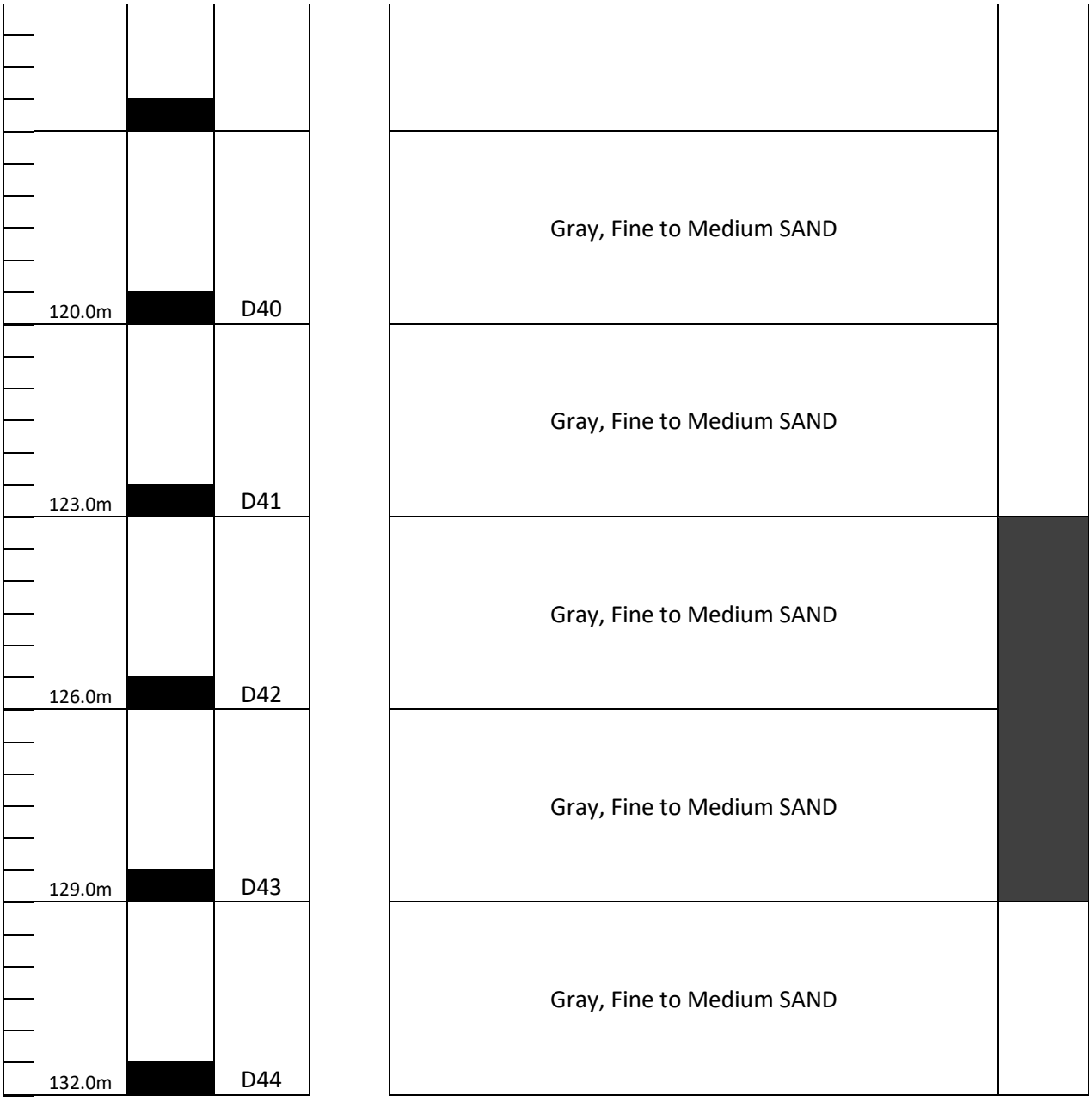
Depth Bellow GL (m)	Type of Sample	Sample No	Thickness (m)	Lithologic Description	Layer Change
3.0m		D1		Brownish Gray, Silty CLAY	
6.0m		D2		Brownish Gray, Silty CLAY	
9.0m		D3		Brownish Gray, Very Fine SAND	
12.0m		D4		Gray, Very Fine to Fine SAND.	
15.0m		D5		Gray, Very Fine to Fine SAND.	
18.0m		D6		Gray, Very Fine to Fine SAND.	

21.0m		D7	Gray, Very Fine to Fine SAND.	
24.0m		D8	Gray, Fine SAND.	
27.0m		D9	Gray, Fine SAND.	
30.0m		D10	Gray, Fine SAND.	
33.0m		D11	Gray, Fine SAND.	
36.0m		D12	Gray, Fine SAND.	
39.0m		D13	Gray, Fine SAND.	
42.0m		D14	Gray, Fine SAND.	

45.0m		D15	Gray, Fine SAND.
48.0m		D16	Gray, Fine SAND Trace Clay
51.0m		D17	Gray, Fine SAND Trace Clay
54.0m		D18	Gray, Fine SAND Trace Clay
57.0m		D19	Gray, Fine to Medium SAND
60.0m		D20	Gray, Fine to Medium SAND
63.0m		D21	Gray, Fine to Medium SAND
66.0m		D22	Gray, Medium to Fine SAND.

69.0m		D23	Gray, Fine to Medium SAND
72.0m		D24	Gray, Fine to Medium SAND
75.0m		D25	Gray, Fine to Medium SAND
78.0m		D26	Gray, Fine to Medium SAND
81.0m		D27	Gray, Fine to Medium SAND
84.0m		D28	Gray, Fine to Medium SAND
87.0m		D29	Gray, Fine to Medium SAND
90.0m		D30	Gray, Fine to Medium SAND
93.0m		D31	Gray, Fine to Medium SAND

96.0m		D32	Gray, Fine to Medium SAND
99.0m		D33	Gray, Fine to Medium SAND with Pebbles
102.0m		D34	Gray, Medium to Fine SAND with Pebbles
105.0m		D35	Gray, Medium to Fine SAND with Pebbles
108.0m		D36	Gray, Medium to Fine SAND with Pebbles
111.0m		D37	Gray, Fine SAND
114.0m		D38	Gray, Fine to Medium SAND
117.0m		D39	Gray, Fine to Medium SAND


120.0m
D40
Gray, Fine to Medium SAND
123.0m
D41
Gray, Fine to Medium SAND
126.0m
D42
Gray, Fine to Medium SAND
129.0m
D43
Gray, Fine to Medium SAND
132.0m
D44
Gray, Fine to Medium SAND

Project: Hydrogeological Surveys and Studies under Development Plan for Meherpur Zilla

Client: Urban Development Directorate (UDD)

Bore Hole ID: MW-01I

Location: Anondobas Dokhinpara Govt. Primary School, Meh

Co-ordinate: 23.620828, 88.606309

Depth of Boring: 108 Meter

Ground Water Level: Meter

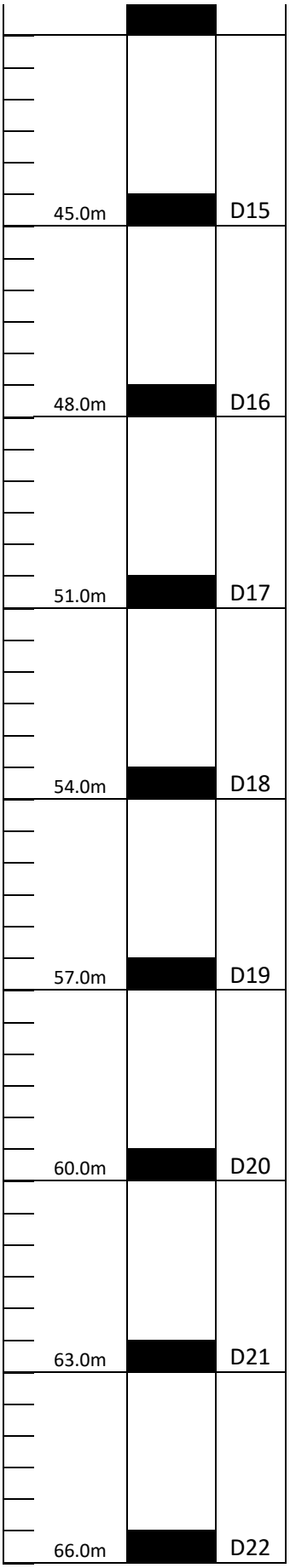
Method of Boring: Rotary Wash Boring

Boring Diameter: 1.5"

Date: 28/02/2025

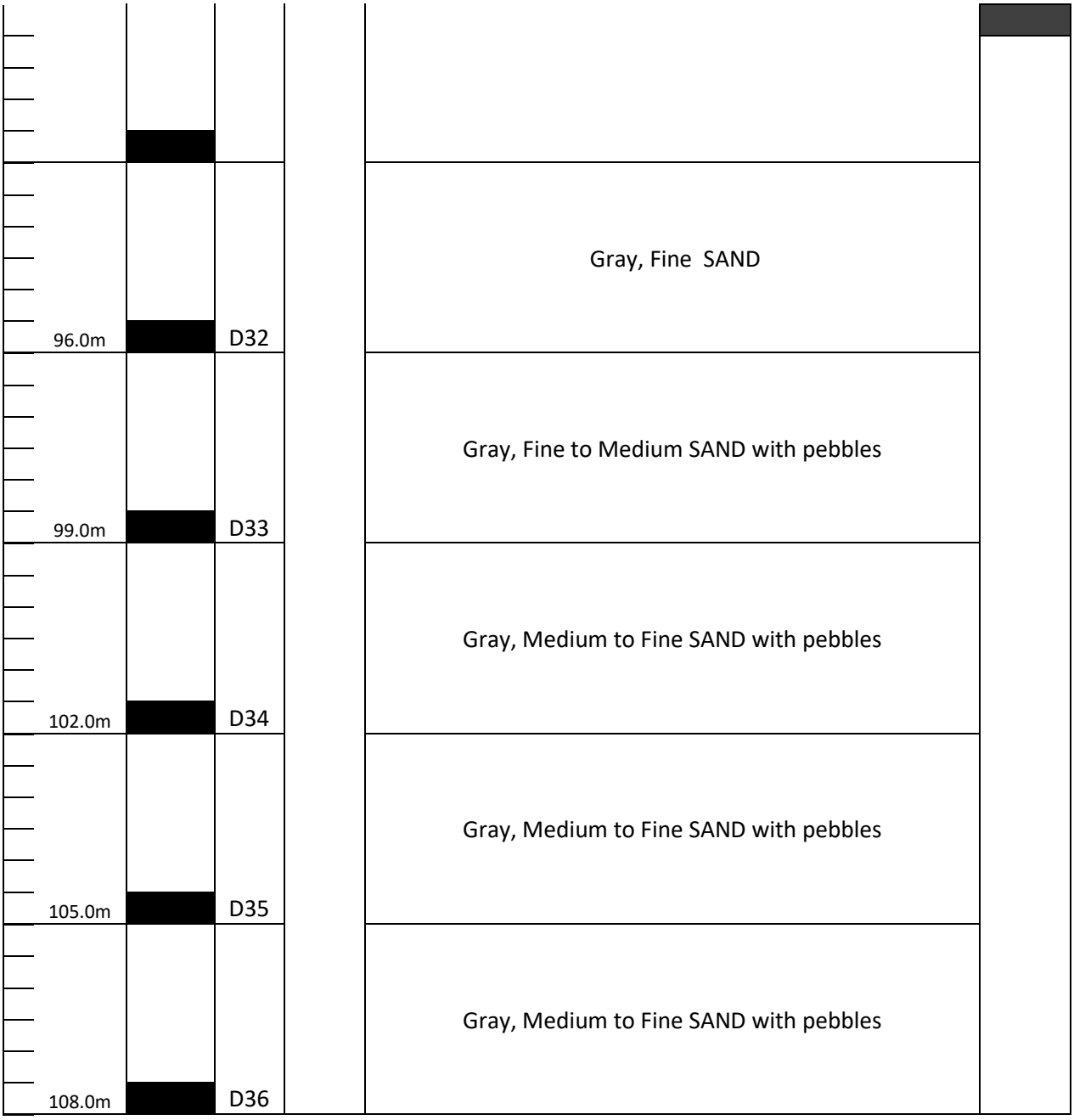
Depth Bellow GL (m)	Type of Sample	Sample No	Thickness (m)	Lithologic Description	Layer Change
3.0m		D1		Brownish Gray, Silty CLAY	
6.0m		D2		Brownish Gray, Silty CLAY	
9.0m		D3		Brownish Gray, Silty CLAY	
12.0m		D4		Gray, Very Fine to Fine SAND	
15.0m		D5		Gray, Very Fine to Fine SAND	
18.0m		D6		Gray, Very Fine to Fine SAND	

21.0m		D7	Gray, Very Fine to Fine SAND
24.0m		D8	Gray, Fine SAND
27.0m		D9	Gray, Fine SAND
30.0m		D10	Gray, Fine SAND
33.0m		D11	Gray, Fine to Medium SAND
36.0m		D12	Gray, Fine to Medium SAND
39.0m		D13	Gray, Fine to Medium SAND
42.0m		D14	Gray, Fine to Medium SAND



Gray, Fine to Medium SAND	
Gray, Fine to Medium SAND	
Gray, Fine to Medium SAND	
Gray, Medium to Fine SAND	
Gray, Medium to Fine SAND	
Gray, Medium to Fine SAND	
Gray, Medium to Fine SAND	
Gray, Fine to medium SAND.	

69.0m	D23	Gray, Fine to medium SAND.	
72.0m	D24	Gray, Fine to medium SAND.	
75.0m	D25	Gray, Fine to medium SAND.	
78.0m	D26	Gray, Fine to medium SAND.	
81.0m	D27	Gray, Fine to medium SAND.	
84.0m	D28	Gray, Fine SAND	
87.0m	D29	Gray, Fine SAND	
90.0m	D30	Gray, Fine SAND	
93.0m	D31	Gray, Fine SAND	


Gray, Fine SAND
96.0m
D32
Gray, Fine to Medium SAND with pebbles
99.0m
D33
Gray, Medium to Fine SAND with pebbles
102.0m
D34
Gray, Medium to Fine SAND with pebbles
105.0m
D35
Gray, Medium to Fine SAND with pebbles
108.0m
D36

Project: Hydrogeological Surveys and Studies under Development Plan for Meherpur Zilla

Client: Urban Development Directorate (UDD)

Bore Hole ID: MW-02S

Location: Anondobas Dokhinpara Govt. Primary School, Meh

Co-ordinate: 23.620828, 88.606309

Depth of Boring: 30 Meter

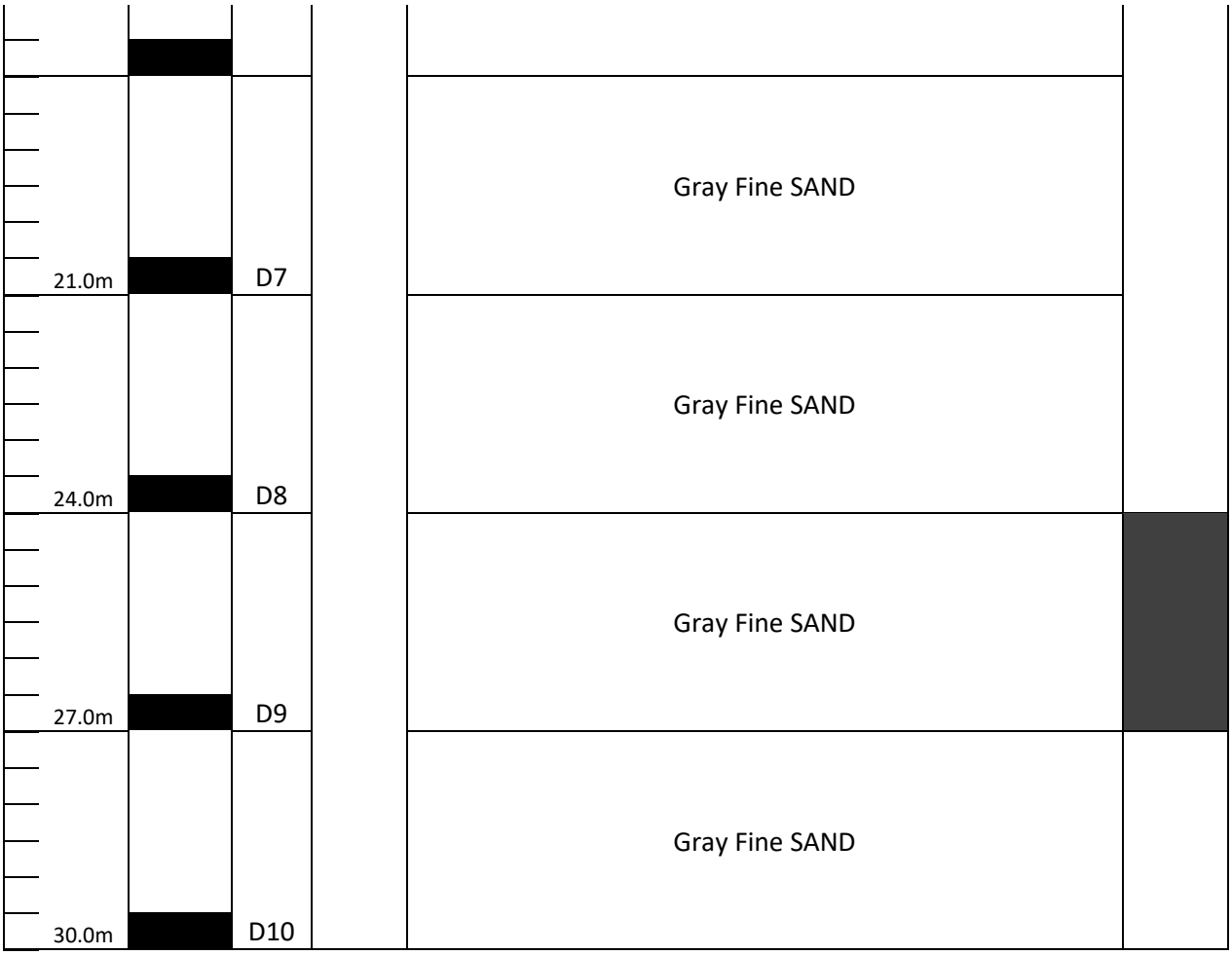
Ground Water Level: Meter

Method of Boring: Rotary Wash Boring

Boring Diameter: 1.5"

Date: 02/03/2025

Depth Bellow GL (m)	Type of Sample	Sample No	Thickness (m)	Lithologic Description	Layer Change
3.0m	■	D1		Brownish Gray, Silty CLAY	
6.0m	■	D2		Brownish Gray, Silty CLAY	
9.0m	■	D3		Gray, Very Fine to Fine SAND.	
12.0m	■	D4		Gray, Very Fine to Fine SAND.	
15.0m	■	D5		Gray, Very Fine to Fine SAND.	
18.0m		D6		Gray Fine SAND	


21.0m
D7
Gray Fine SAND
24.0m
D8
Gray Fine SAND
27.0m
D9
Gray Fine SAND
30.0m
D10
Gray Fine SAND

Project: Hydrogeological Surveys and Studies under Development Plan for Meherpur Zilla

Client: Urban Development Directorate (UDD)

Bore Hole ID: MW-03D

Location: Ujalpur High School, Meherpur

Co-ordinate: 23.815279, 88.625642

Depth of Boring: 117 Meter

Ground Water Level: Meter

Method of Boring: Rotary Wash Boring

Boring Diameter: 1.5"

Date: 06/03/2025

Depth Bellow GL (m)	Type of Sample	Sample No	Thickness (m)	Lithologic Description	Layer Change
3.0m		D1		Brownish Gray, Silty CLAY	
6.0m		D2		Brownish Gray, Silty CLAY	
9.0m		D3		Brownish Gray, Silty CLAY	
12.0m		D4		Brownish Gray, Very Fine to Fine SAND.	
15.0m		D5		Brownish Gray, Very Fine to Fine SAND.	
18.0m		D6		Gray, Very Fine to Fine SAND.	

21.0m		D7	Gray, Very Fine to Fine SAND.	
24.0m		D8	Gray, Very Fine to Fine SAND.	
27.0m		D9	Gray, Fine SAND.	
30.0m		D10	Gray, Fine SAND.	
33.0m		D11	Gray, Fine SAND.	
36.0m		D12	Gray, Fine SAND.	
39.0m		D13	Gray, Fine SAND.	
42.0m		D14	Gray, Fine SAND.	

45.0m		D15	Gray, Fine SAND.
48.0m		D16	Gray, Fine SAND.
51.0m		D17	Gray, Fine SAND.
54.0m		D18	Gray, Fine SAND.
57.0m		D19	Gray, Fine SAND.
60.0m		D20	Gray, Fine to Medium SAND
63.0m		D21	Gray, Fine to Medium SAND
66.0m		D22	Gray, Fine to Medium SAND

69.0m		D23	Gray, Fine to Medium SAND
72.0m		D24	Gray, Medium to Fine SAND
75.0m		D25	Gray, Medium to Fine SAND
78.0m		D26	Gray, Medium to Fine SAND
81.0m		D27	Gray, Medium to Fine SAND
84.0m		D28	Gray, Medium to Fine SAND
87.0m		D29	Gray, Medium to Fine SAND
90.0m		D30	Gray, Medium to Fine SAND
93.0m		D31	Gray, Medium to Fine SAND

96.0m		D32	Gray, Medium to Fine SAND
99.0m		D33	Gray, Fine to Medium SAND
102.0m		D34	Gray, Fine to Medium SAND
105.0m		D35	Gray, Fine to Medium SAND
108.0m		D36	Gray, Fine to Medium SAND
111.0m		D37	Do
114.0m		D38	Do
117.0m		D39	Do

Project: Hydrogeological Surveys and Studies under Development Plan for Meherpur Zilla

Client: Urban Development Directorate (UDD)

Bore Hole ID: MW-01I

Location: Ujalpur High School, Meherpur

Co-ordinate: 23.815279, 88.625642

Depth of Boring: 90 Meter

Ground Water Level: Meter

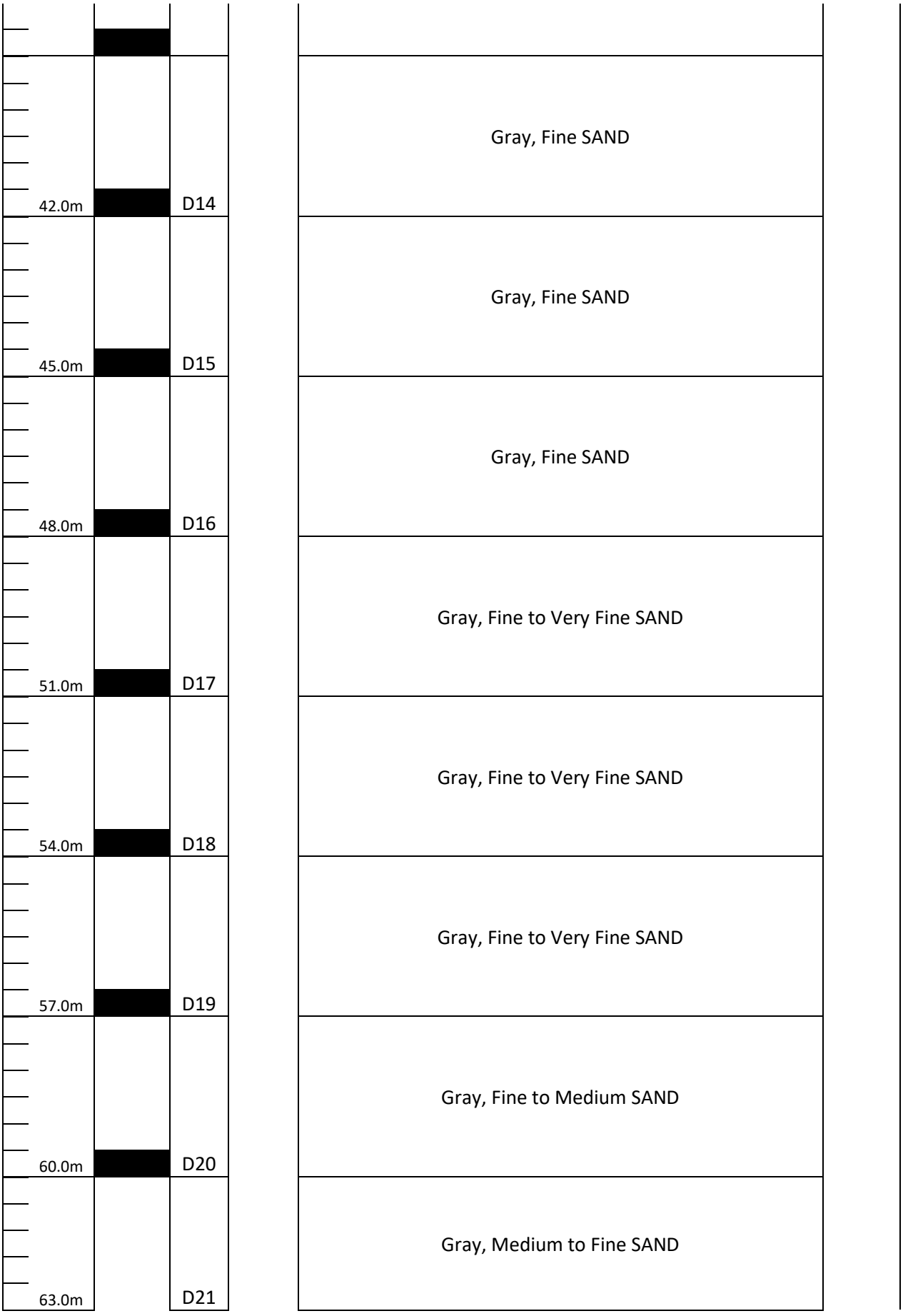
Method of Boring: Rotary Wash Boring

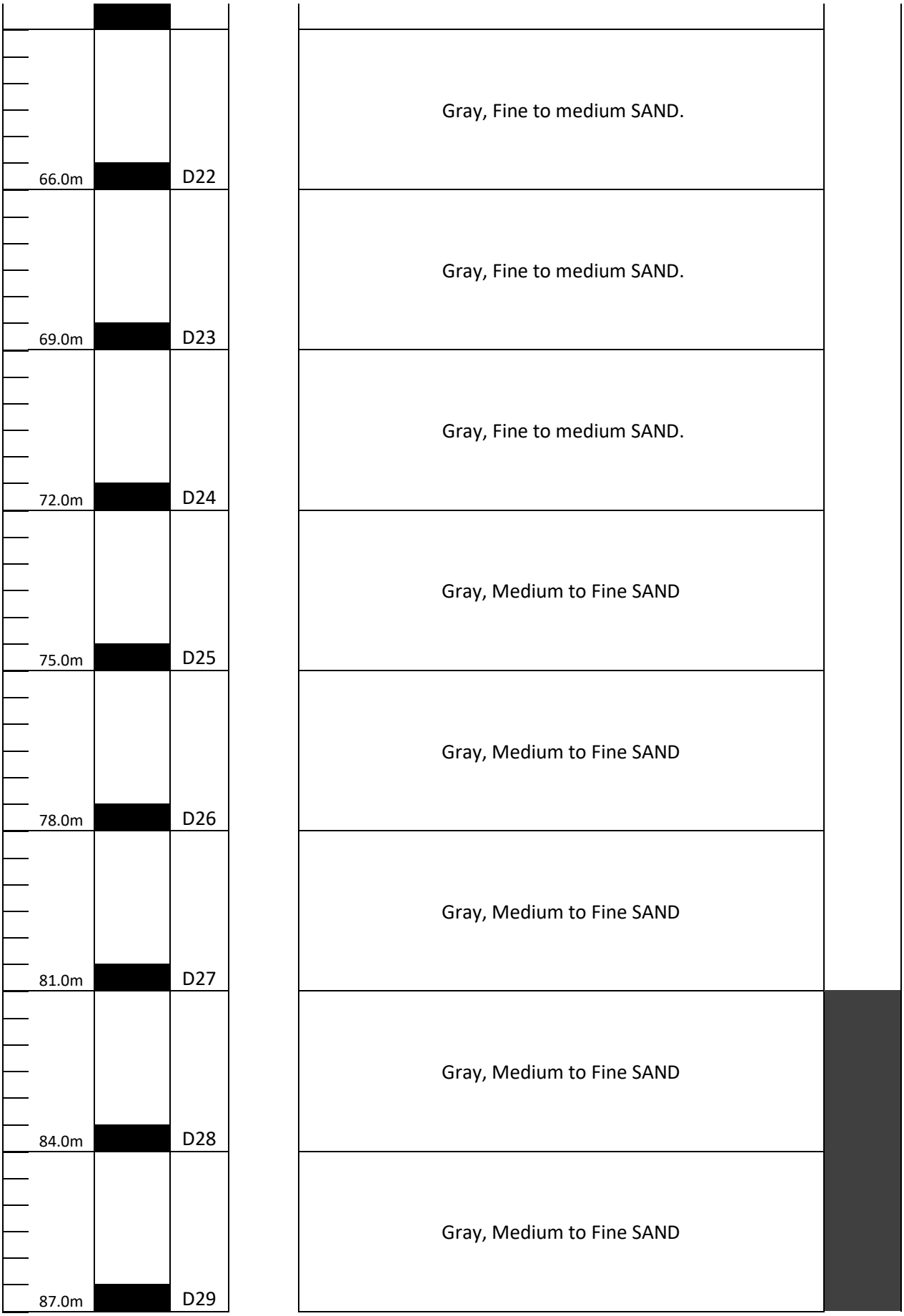
Boring Diameter: 1.5"

Date: 08//03/2025

Depth Bellow GL (m)	Type of Sample	Sample No	Thickness (m)	Lithologic Description	Layer Change
3.0m		D1		Brownish Gray, Silty CLAY	
6.0m		D2		Brownish Gray, Silty CLAY	
9.0m		D3		Brownish Gray, Very Fine to Fine SAND	
12.0m		D4		Gray, Very Fine to Fine SAND	
15.0m		D5		Gray, Very Fine to Fine SAND	

18.0m		D6	Gray, Very Fine to Fine SAND
21.0m		D7	Gray, Very Fine to Fine SAND
24.0m		D8	Gray, Fine SAND
27.0m		D9	Gray, Fine SAND
30.0m		D10	Gray, Fine SAND
33.0m		D11	Gray, Fine SAND
36.0m		D12	Gray, Fine SAND
39.0m		D13	Gray, Fine SAND


42.0m
D14
Gray, Fine SAND
45.0m
D15
Gray, Fine SAND
48.0m
D16
Gray, Fine SAND
51.0m
D17
Gray, Fine to Very Fine SAND
54.0m
D18
Gray, Fine to Very Fine SAND
57.0m
D19
Gray, Fine to Very Fine SAND
60.0m
D20
Gray, Fine to Medium SAND
63.0m
D21
Gray, Medium to Fine SAND


66.0m
D22
Gray, Fine to medium SAND.
69.0m
D23
Gray, Fine to medium SAND.
72.0m
D24
Gray, Fine to medium SAND.
75.0m
D25
Gray, Medium to Fine SAND
78.0m
D26
Gray, Medium to Fine SAND
81.0m
D27
Gray, Medium to Fine SAND
84.0m
D28
Gray, Medium to Fine SAND
87.0m
D29
Gray, Medium to Fine SAND

90.0m		D30		Gray, Medium to Fine SAND	

Project: Hydrogeological Surveys and Studies under Development Plan for Meherpur Zilla

Client: Urban Development Directorate (UDD)

Bore Hole ID: MW-03S

Location: Ujalpur High School, Meherpur

Co-ordinate: 23.815279, 88.625642

Depth of Boring: 30 Meter

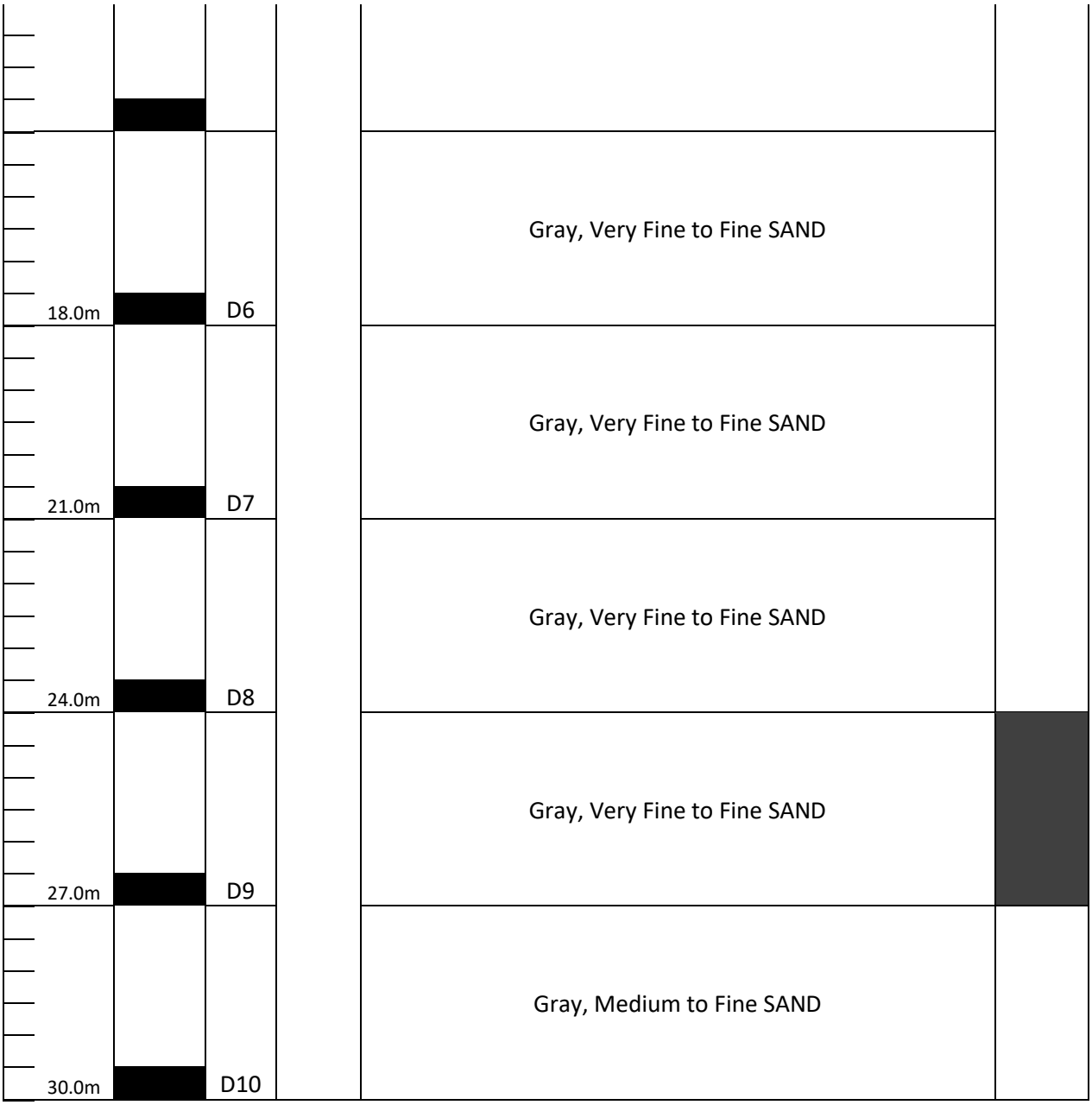
Ground Water Level: Meter

Method of Boring: Rotary Wash Boring

Boring Diameter: 1.5"

Date: 09/03/2025

Depth Bellow GL (m)	Type of Sample	Sample No	Thickness (m)	Lithologic Description	Layer Change
3.0m		D1		Brownish Gray, Silty CLAY	
6.0m		D2		Brownish Gray, Silty CLAY	
9.0m		D3		Brownish Gray, Silty CLAY	
12.0m		D4		Brownish Gray, Silty CLAY	
15.0m		D5		Brownish Gray, Silty CLAY	


18.0m
D6
Gray, Very Fine to Fine SAND
21.0m
D7
Gray, Very Fine to Fine SAND
24.0m
D8
Gray, Very Fine to Fine SAND
27.0m
D9
Gray, Very Fine to Fine SAND
30.0m
D10
Gray, Medium to Fine SAND

Project: Hydrogeological Surveys and Studies under Development Plan for Meherpur Zilla

Client: Urban Development Directorate (UDD)

Bore Hole ID: MW-04D

Location: Mominpur Govt. Primary School, Meherpur

Co-ordinate: 23.722818,88.733614

Depth of Boring: 150 Meter

Ground Water Level: Meter

Method of Boring: Rotary Wash Boring

Boring Diameter: 1.5"

Date: 02/03/2025

Depth Bellow GL (m)	Type of Sample	Sample No	Thickness (m)	Lithologic Description	Layer Change
3.0m		D1		Brownish Gray, Very Fine to Fine SAND	
6.0m		D2		Brownish Gray, Very Fine to Fine SAND	
9.0m		D3		Brownish Gray, Very Fine to Fine SAND	
12.0m		D4		Gray, Very Fine to Fine SAND	
15.0m		D5		Gray, Very Fine to Fine SAND	
18.0m		D6		Gray, Fine to Very Fine SAND	

21.0m		D7	Gray, Fine to Very Fine SAND	
24.0m		D8	Gray, Fine to Very Fine SAND	
27.0m		D9	Gray, Fine to Very Fine SAND	
30.0m		D10	Gray, Fine SAND	
33.0m		D11	Gray, Fine SAND	
36.0m		D12	Gray, Fine SAND	
39.0m		D13	Gray, Fine SAND	
42.0m		D14	Gray, Fine SAND	

45.0m		D15	Gray, Fine SAND
48.0m		D16	Gray, Fine SAND
51.0m		D17	Gray, Fine SAND
54.0m		D18	Gray, Fine SAND
57.0m		D19	Gray, Fine SAND
60.0m		D20	Gray, Fine to Medium SAND.
63.0m		D21	Gray, Fine to Medium SAND.
66.0m		D22	Gray, Fine to Medium SAND.

69.0m		D23	Gray, Fine to Medium SAND.
72.0m		D24	Gray, Fine to Medium SAND.
75.0m		D25	Gray, Fine to Medium SAND.
78.0m		D26	Gray, Fine to Medium SAND.
81.0m		D27	Gray, Fine to Medium SAND.
84.0m		D28	Gray, Fine to Medium SAND.
87.0m		D29	Gray, Fine to Medium SAND.
90.0m		D30	Gray, Fine to Medium SAND.
93.0m		D31	Gray, Fine to Medium SAND.

96.0m		D32	Gray, Fine to Medium SAND.
99.0m		D33	Gray, Fine to Medium SAND.
102.0m		D34	Gray, Fine to Medium SAND.
105.0m		D35	Gray, Fine to Medium SAND.
108.0m		D36	Gray, Fine to Medium SAND.
111.0m		D37	Gray, Medium to Fine SAND.
114.0m		D38	Gray, Medium to Fine SAND.
117.0m		D39	Gray, Medium to Fine SAND.

120.0m		D40	Gray, Medium to Fine SAND.
123.0m		D41	Gray, Medium to Fine SAND.
126.0m		D42	Gray, Medium to Fine SAND.
129.0m		D43	Gray, Medium to Fine SAND.
132.0m		D44	Gray, Medium to Fine SAND.
135.0m		D45	Gray, Medium to Fine SAND.
138.0m		D46	Gray, Medium to Fine SAND.
141.0m		D47	Gray, Medium to Fine SAND with Pebbles

144.0m		D48	Gray, Medium to Fine SAND with Pebbles	
147.0m		D49	Gray, Fine to Medium SAND	
150.0m		D50	Gray, Fine to Medium SAND	

Project: Hydrogeological Surveys and Studies under Development Plan for Meherpur Zilla
Client: Urban Development Directorate (UDD)

Bore Hole ID: MW-04I
Location: Mominpur Govt. Primary School, Meherpur
Co-ordinate: 23.722818,88.733614
Depth of Boring: 90 Meter
Ground Water Level: Meter
Method of Boring: Rotary Wash Boring
Boring Diameter: 1.5"
Date: 04/03/2025

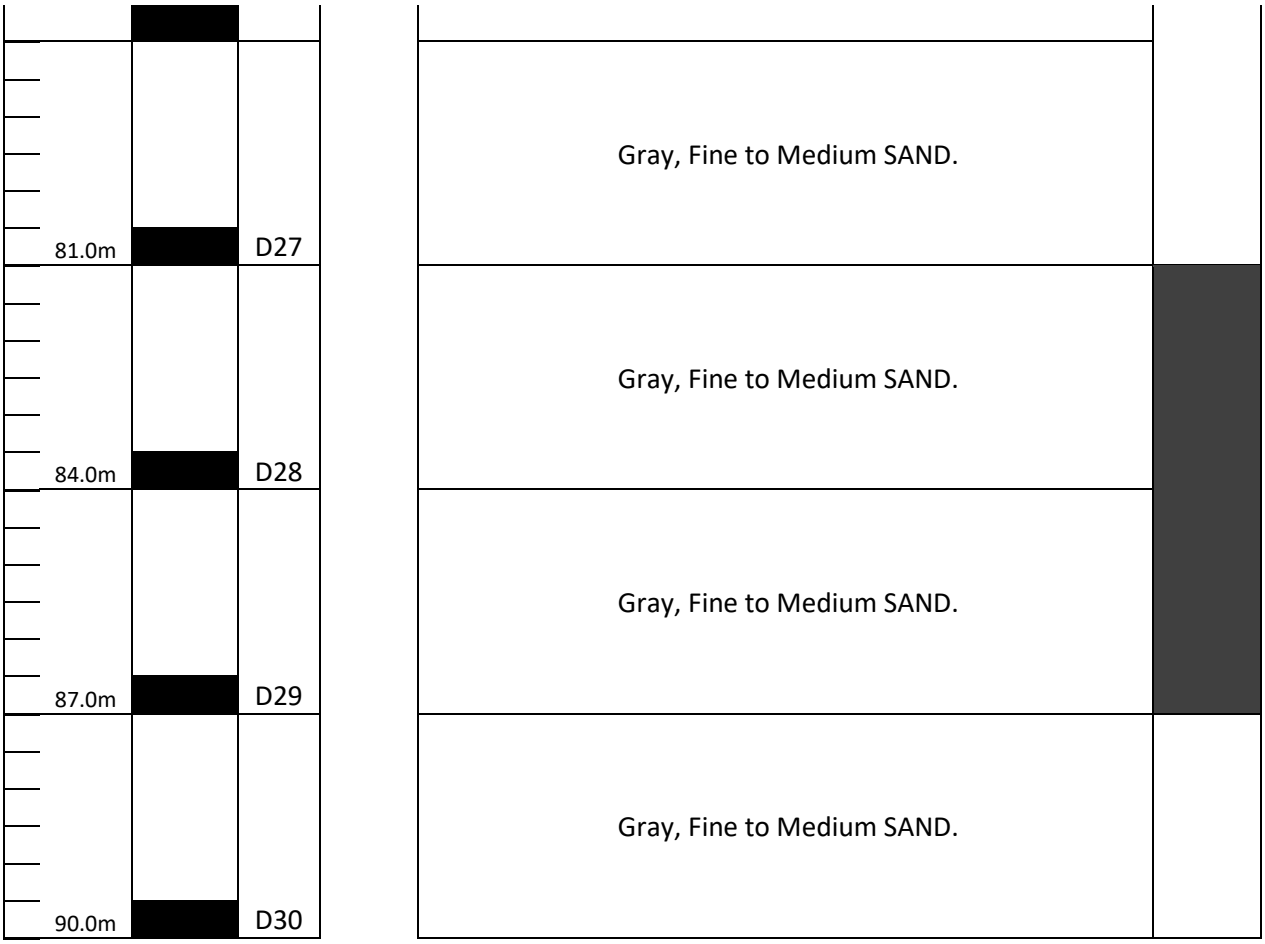
CENTER FOR GEOSERVICES & RESEARCH

Depth Bellow GL (m)	Type of Sample	Sample No	Thickness (m)	Lithologic Description	Layer Change
3.0m		D1		Brownish Gray, Very Fine to Fine SAND	
6.0m		D2		Brownish Gray, Very Fine to Fine SAND	

9.0m		D3	Gray, Very Fine to Fine SAND
12.0m		D4	Gray, Very Fine to Fine SAND
15.0m		D5	Gray, Very Fine to Fine SAND
18.0m		D6	Gray, Fine to Very Fine SAND
21.0m		D7	Gray, Fine to Very Fine SAND
24.0m		D8	Gray, Fine to Very Fine SAND
27.0m		D9	Gray, Fine to Very Fine SAND
30.0m		D10	Gray, Fine SAND

33.0m		D11		Gray, Fine SAND
36.0m		D12		Gray, Fine SAND
39.0m		D13		Gray, Fine SAND
42.0m		D14		Gray, Fine SAND
45.0m		D15		Gray, Fine SAND
48.0m		D16		Gray, Fine SAND
51.0m		D17		Gray, Fine SAND
54.0m		D18		Gray, Fine SAND

57.0m		D19	Gray, Fine SAND
60.0m		D20	Gray, Fine to Medium SAND.
63.0m		D21	Gray, Fine to Medium SAND.
66.0m		D22	Gray, Fine to Medium SAND.
69.0m		D23	Gray, Fine to Medium SAND.
72.0m		D24	Gray, Fine to Medium SAND.
75.0m		D25	Gray, Fine to Medium SAND.
78.0m		D26	Gray, Fine to Medium SAND.


81.0m
D27
84.0m
D28
87.0m
D29
90.0m
D30
Gray, Fine to Medium SAND.
Gray, Fine to Medium SAND.
Gray, Fine to Medium SAND.
Gray, Fine to Medium SAND.

Project: Hydrogeological Surveys and Studies under Development Plan for Meherpur Zilla

Client: Urban Development Directorate (UDD)

Bore Hole ID: MW-04S

Location: Mominpur Govt. Primary School, Meherpur

Co-ordinate: 23.722818,88.733614

Depth of Boring: 30 Meter

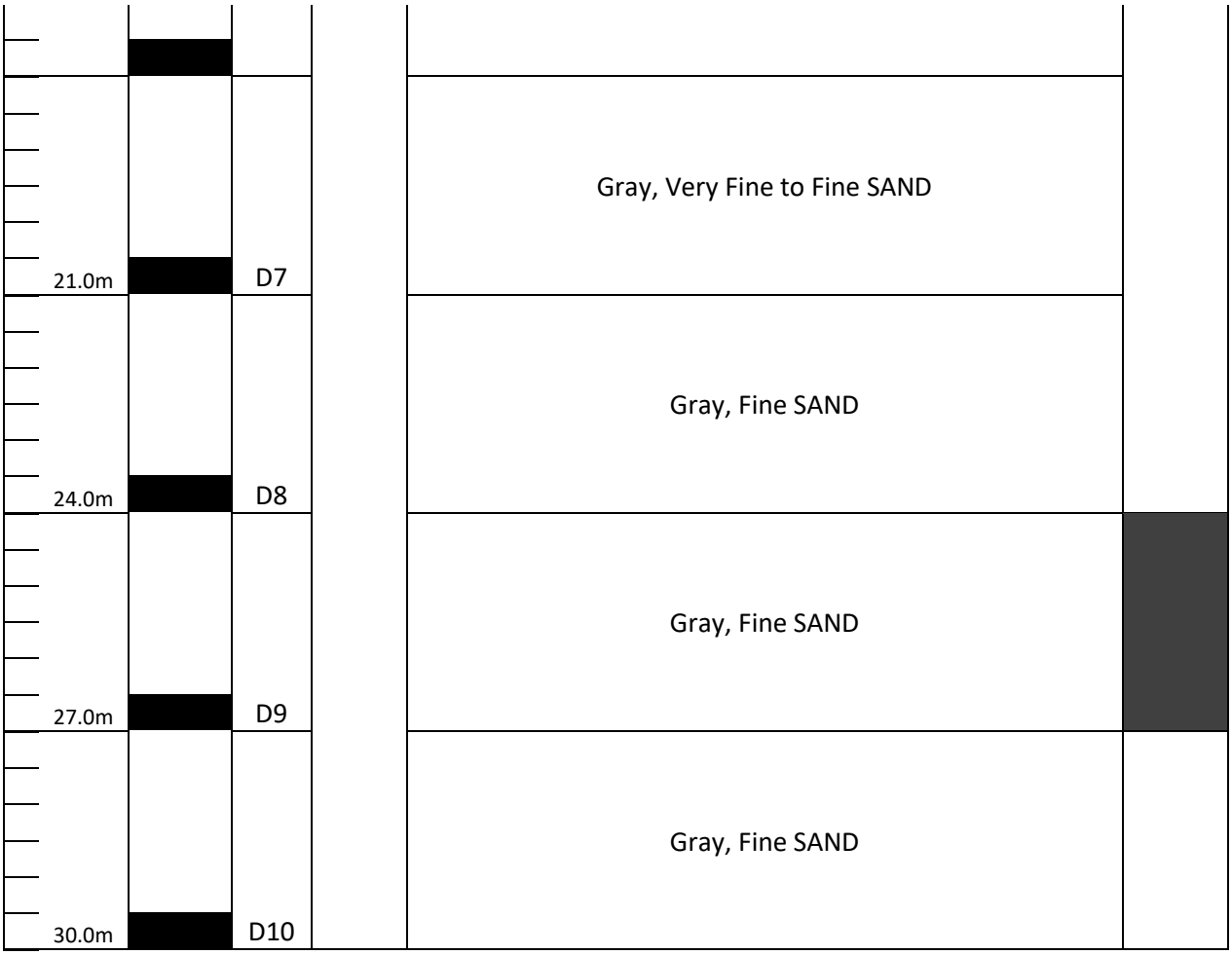
Ground Water Level: Meter

Method of Boring: Rotary Wash Boring

Boring Diameter: 1.5"

Date: 05/03/2025

Depth Bellow GL (m)	Type of Sample	Sample No	Thickness (m)	Lithologic Description	Layer Change
3.0m		D1		Brownish Gray, Very Fine to Fine SAND	
6.0m		D2		Brownish Gray, Very Fine to Fine SAND	
9.0m		D3		Brownish Gray, Very Fine to Fine SAND	
12.0m		D4		Brownish Gray, Very Fine to Fine SAND	
15.0m		D5		Gray, Very Fine to Fine SAND	
18.0m		D6		Gray, Very Fine to Fine SAND	


21.0m
D7
Gray, Very Fine to Fine SAND
24.0m
D8
Gray, Fine SAND
27.0m
D9
Gray, Fine SAND
30.0m
D10
Gray, Fine SAND

Project: Hydrogeological Surveys and Studies under Development Plan for Meherpur Zilla

Client: Urban Development Directorate (UDD)

Bore Hole ID: MW-05D

Location: Bashbaria High School, Gangni, Meherpur

Co-ordinate: 23.810792,88.732036

Depth of Boring: 135 Meter

Ground Water Level: Meter

Method of Boring: Rotary Wash Boring

Boring Diameter: 1.5"

Date: 10/03/2025

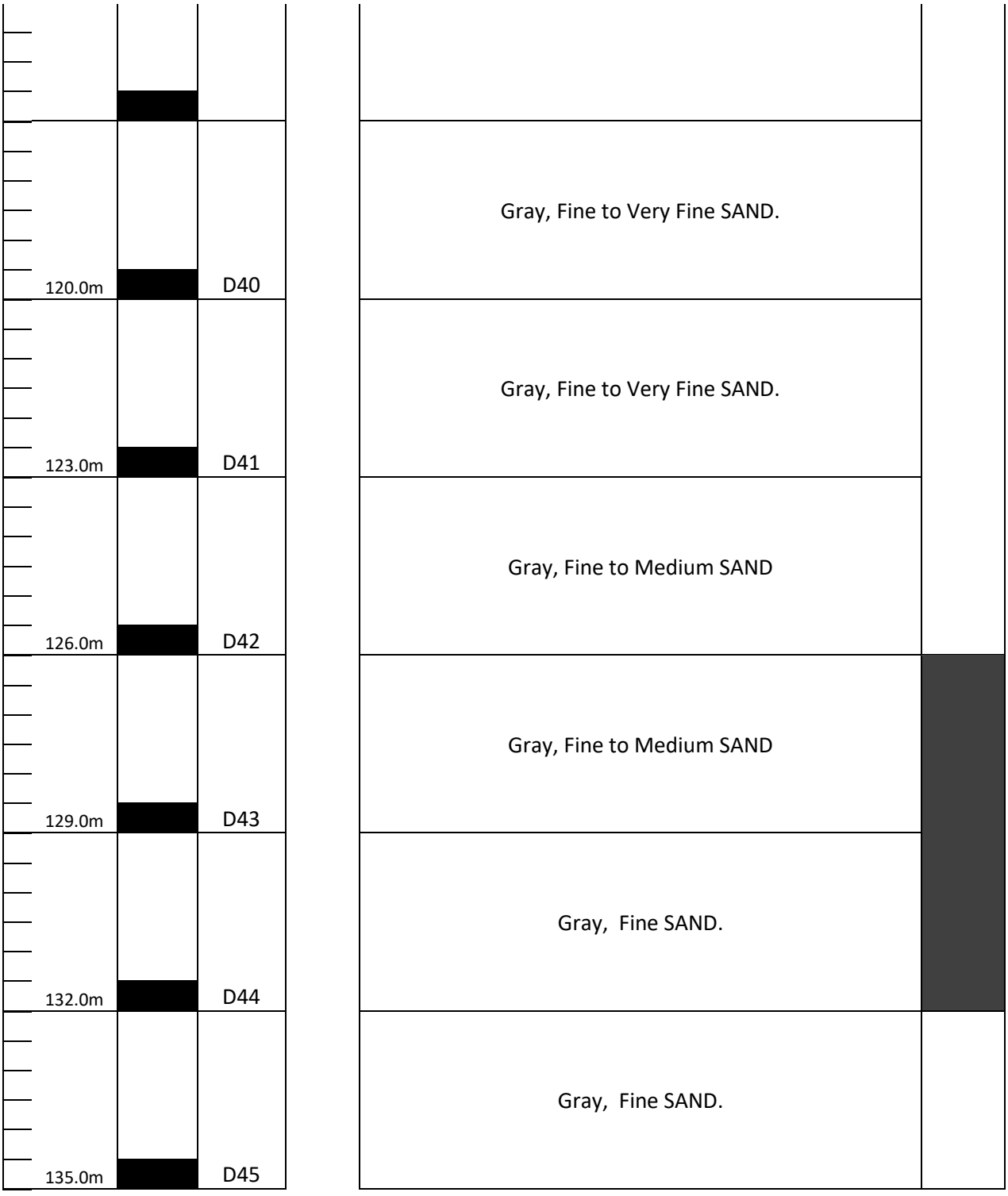
Depth Bellow GL (m)	Type of Sample	Sample No	Thickness (m)	Lithologic Description	Layer Change
3.0m		D1		Brownish Gray, Silty CLAY	
6.0m		D2		Brownish Gray, Silty CLAY	
9.0m		D3		Brownish Gray, Very Fine to Fine SAND	
12.0m		D4		Brownish Gray, Very Fine to Fine SAND	
15.0m		D5		Gray, Very Fine to Fine SAND	
18.0m		D6		Gray, Very Fine to Fine SAND	

21.0m		D7		Gray, Very Fine to Fine SAND
24.0m		D8		Gray, Very Fine to Fine SAND
27.0m		D9		Gray, Fine SAND
30.0m		D10		Gray, Fine SAND
33.0m		D11		Gray, Fine SAND
36.0m		D12		Gray, Fine to Medium SAND
39.0m		D13		Gray, Fine to Medium SAND
42.0m		D14		Gray, Fine SAND

45.0m		D15	Gray, Fine SAND
48.0m		D16	Gray, Fine SAND
51.0m		D17	Gray, Fine SAND
54.0m		D18	Gray, Fine SAND
57.0m		D19	Gray, Fine SAND
60.0m		D20	Gray, Fine SAND
63.0m		D21	Gray, Fine SAND
66.0m		D22	Gray, Fine SAND

69.0m		D23	Gray, Fine to Medium SAND.
72.0m		D24	Gray, Fine to Medium SAND.
75.0m		D25	Gray, Fine to Medium SAND.
78.0m		D26	Gray, Fine to Medium SAND.
81.0m		D27	Gray, Fine to Medium SAND.
84.0m		D28	Gray, Fine to Medium SAND.
87.0m		D29	Gray, Fine to Medium SAND.
90.0m		D30	Gray, Fine to Medium SAND.
93.0m		D31	Gray, Medium to Fine SAND.

96.0m		D32	Gray, Medium to Fine SAND.
99.0m		D33	Gray, Medium to Fine SAND.
102.0m		D34	Gray, Medium to Fine SAND.
105.0m		D35	Gray, Medium to Fine SAND.
108.0m		D36	Gray, Medium to Fine SAND.
111.0m		D37	Gray, Fine to Very Fine SAND.
114.0m		D38	Gray, Fine to Very Fine SAND.
117.0m		D39	Gray, Fine to Very Fine SAND.


120.0m
D40
Gray, Fine to Very Fine SAND.
123.0m
D41
Gray, Fine to Very Fine SAND.
126.0m
D42
Gray, Fine to Medium SAND
129.0m
D43
Gray, Fine to Medium SAND
132.0m
D44
Gray, Fine SAND.
135.0m
D45
Gray, Fine SAND.

Project: Hydrogeological Surveys and Studies under Development Plan for Meherpur Zilla

Client: Urban Development Directorate (UDD)

Bore Hole ID: MW-05I

Location: Bashbaria High School, Gangni, Meherpur

Co-ordinate: 23.810792,88.732036

Depth of Boring: 90 Meter

Ground Water Level: Meter

Method of Boring: Rotary Wash Boring

Boring Diameter: 1.5"

Date: 12/03/2025

Depth Bellow GL (m)	Type of Sample	Sample No	Thickness (m)	Lithologic Description	Layer Change
3.0m		D1		Brownish Gray, Silty CLAY	
6.0m		D2		Brownish Gray, Very Fine to Fine SAND	
9.0m		D3		Brownish Gray, Very Fine to Fine SAND	
12.0m		D4		Gray, Very Fine to Fine SAND	
15.0m		D5		Gray, Very Fine to Fine SAND	
18.0m		D6		Gray, Very Fine to Fine SAND	

21.0m		D7	Gray, Very Fine to Fine SAND
24.0m		D8	Gray, Fine SAND
27.0m		D9	Gray, Fine SAND
30.0m		D10	Gray, Fine SAND
33.0m		D11	Gray, Fine SAND
36.0m		D12	Gray, Fine SAND
39.0m		D13	Gray, Fine SAND
42.0m		D14	Gray, Fine SAND

45.0m		D15	Gray, Fine to Medium SAND.
48.0m		D16	Gray, Fine to Medium SAND.
51.0m		D17	Gray, Fine to Medium SAND.
54.0m		D18	Gray, Fine to Medium SAND.
57.0m		D19	Gray, Fine to Medium SAND.
60.0m		D20	Gray, Fine to Medium SAND.
63.0m		D21	Gray, Fine to Medium SAND.
66.0m		D22	Gray, Fine to Medium SAND.

69.0m	D23	Gray, Fine to Medium SAND.	
72.0m	D24	Gray, Fine to Medium SAND.	
75.0m	D25	Gray, Fine to Medium SAND.	
78.0m	D26	Gray, Fine to Medium SAND.	
81.0m	D27	Gray, Fine to Medium SAND.	
84.0m	D28	Gray, Fine to Medium SAND.	
87.0m	D29	Gray, Fine to Medium SAND.	
90.0m	D30	Gray, Fine to Medium SAND.	

Project: Hydrogeological Surveys and Studies under Development Plan for Meherpur Zilla

Client: Urban Development Directorate (UDD)

Bore Hole ID: MW-05S

Location: Bashbaria High School, Gangni, Meherpur

Co-ordinate: 23.810792,88.732036

Depth of Boring: 30 Meter

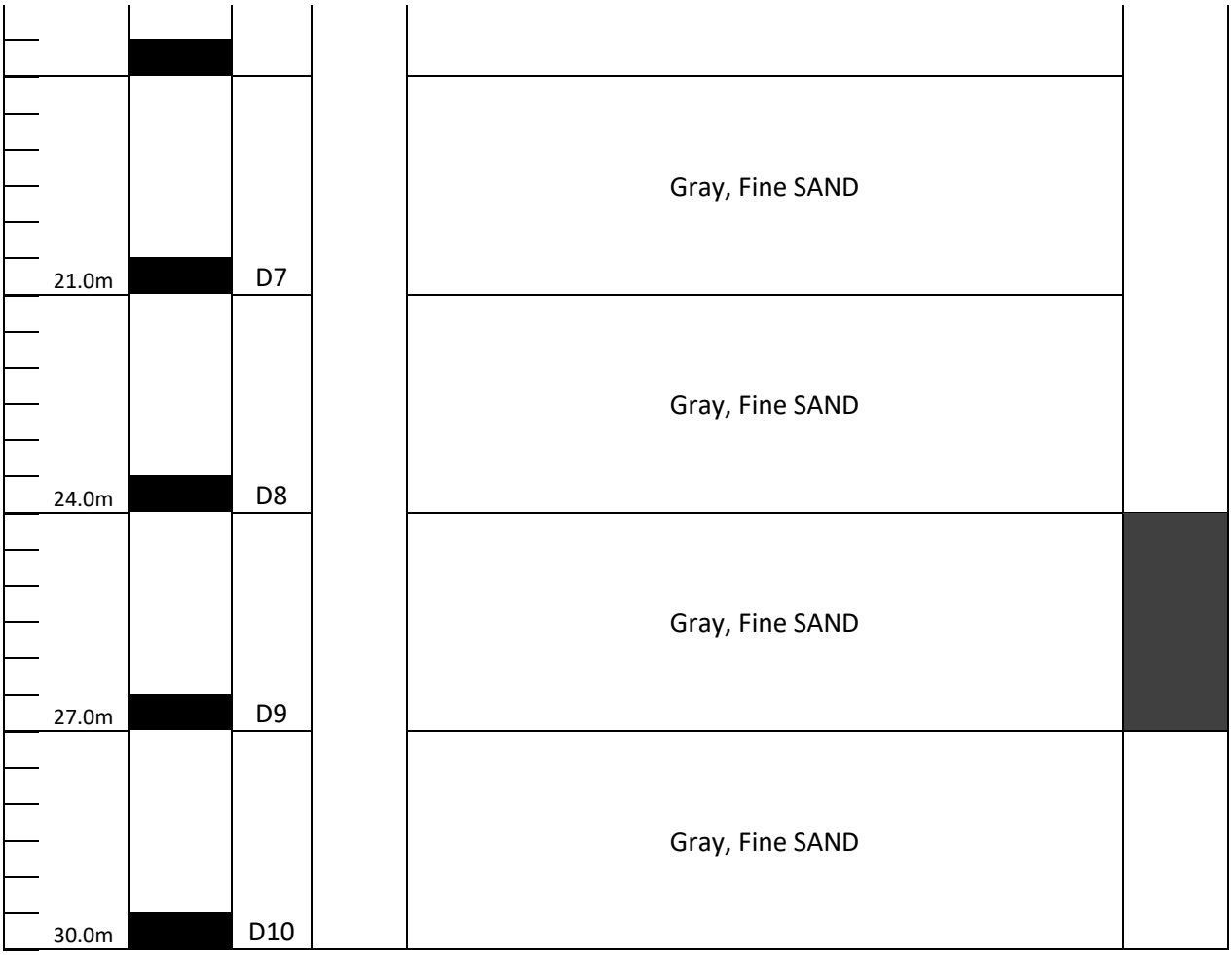
Ground Water Level: Meter

Method of Boring: Rotary Wash Boring

Boring Diameter: 1.5"

Date: 13/03/2025

Depth Bellow GL (m)	Type of Sample	Sample No	Thickness (m)	Lithologic Description	Layer Change
3.0m		D1		Brownish Gray, Silty CLAY	
6.0m		D2		Gray, Very Fine to Fine SAND	
9.0m		D3		Gray, Very Fine to Fine SAND	
12.0m		D4		Gray, Very Fine to Fine SAND	
15.0m		D5		Gray, Very Fine to Fine SAND	
18.0m		D6		Gray, Very Fine to Fine SAND	


21.0m
D7
Gray, Fine SAND
24.0m
D8
Gray, Fine SAND
27.0m
D9
Gray, Fine SAND
30.0m
D10
Gray, Fine SAND

Project: Hydrogeological Surveys and Studies under Development Plan for Meherpur Zilla

Client: Urban Development Directorate (UDD)

Bore Hole ID: MW-06D

Location: Baniapukur Govt. Primary School, Gangni, Meherpur

Co-ordinate: 23.835775,88.794261

Depth of Boring: 117 Meter

Ground Water Level: Meter

Method of Boring: Rotary Wash Boring

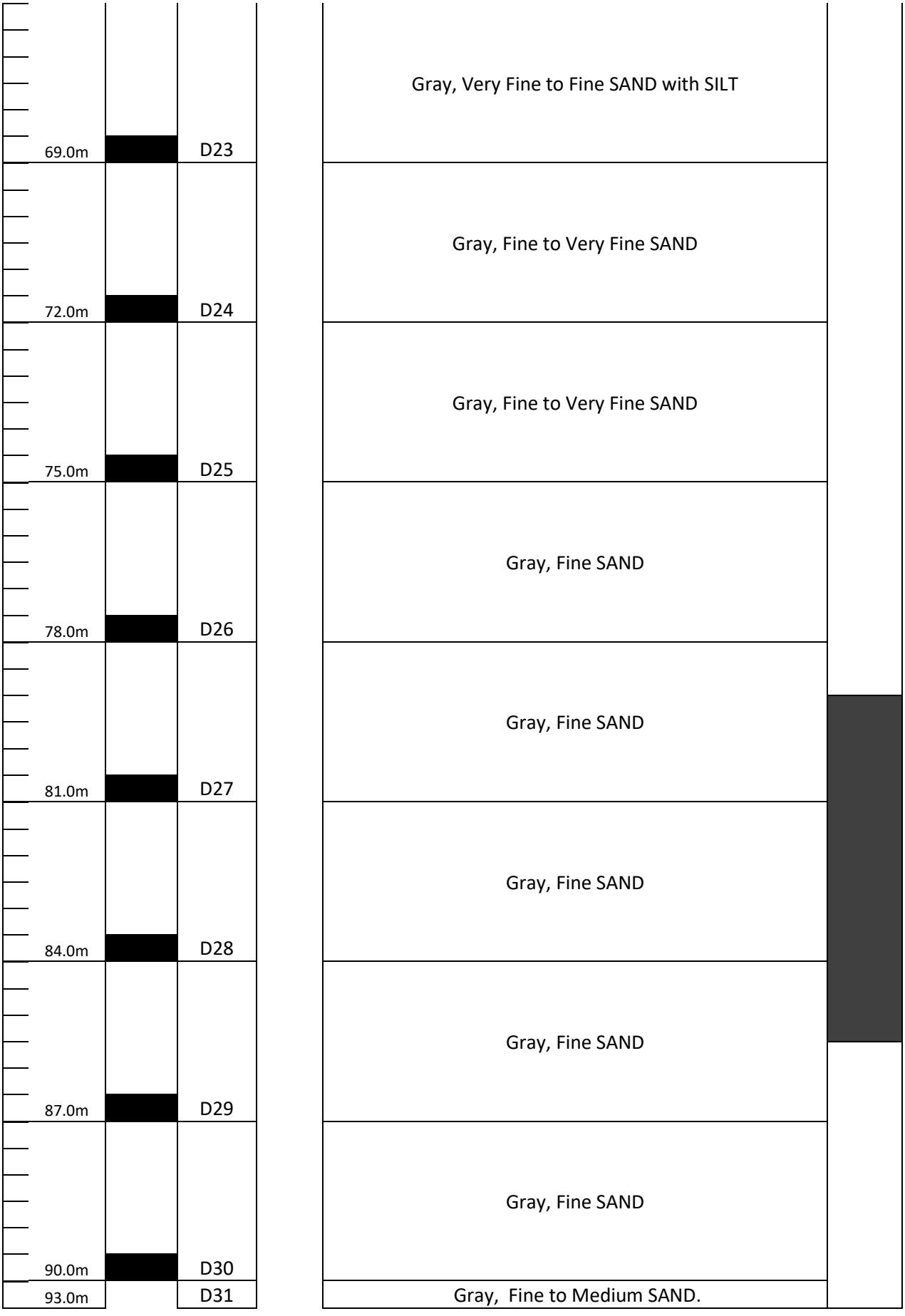
Boring Diameter: 1.5"

Date: 14/03/2025

Depth Bellow GL (m)	Type of Sample	Sample No	Thickness (m)	Lithologic Description	Layer Change
3.0m		D1		Brownish Gray, Silty CLAY	
6.0m		D2		Brownish Gray, Silty CLAY	
9.0m		D3		Gray, Silty CLAY	
12.0m		D4		Gray, Silty CLAY	
15.0m		D5		Gray, Very Fine to Fine SAND with SILT	
18.0m		D6		Gray, Very Fine to Fine SAND with SILT	

21.0m		D7	Gray, Silty CLAY	
24.0m		D8	Gray, Silty CLAY	
27.0m		D9	Gray, Very Fine to Fine SAND with SILT	
30.0m		D10	Yellowish Gray, Very Fine to Fine SAND	
33.0m		D11	Yellowish Gray, Fine SAND	
36.0m		D12	Yellowish Gray, Fine SAND	
39.0m		D13	Yellowish Gray, Fine SAND	
42.0m		D14	Yellowish Gray, Fine SAND	

45.0m		D15	Yellowish Gray, Fine SAND
48.0m		D16	Yellowish Gray, Fine SAND
51.0m		D17	Yellowish Gray, Fine to Medium SAND
54.0m		D18	Yellowish Gray, Fine to Medium SAND
57.0m		D19	Yellowish Gray, Fine SAND
60.0m		D20	Yellowish Gray, Fine SAND
63.0m		D21	Gray, Fine SAND
66.0m		D22	Gray, Fine SAND


Gray, Very Fine to Fine SAND with SILT
69.0m
D23
Gray, Fine to Very Fine SAND
72.0m
D24
Gray, Fine to Very Fine SAND
75.0m
D25
Gray, Fine SAND
78.0m
D26
Gray, Fine SAND
81.0m
D27
Gray, Fine SAND
84.0m
D28
Gray, Fine SAND
87.0m
D29
Gray, Fine SAND
90.0m
D30
93.0m
D31
Gray, Fine to Medium SAND.

96.0m		D32	Gray, Fine to Medium SAND.
99.0m		D33	Gray, Fine to Medium SAND.
102.0m		D34	Gray, Fine to Medium SAND.
105.0m		D35	Gray, Fine to Medium SAND.
108.0m		D36	Gray, Fine to Medium SAND.
111.0m		D37	Gray, Fine to Medium SAND.
114.0m		D38	Gray, Fine to Medium SAND.
117.0m		D39	Gray, Fine to Medium SAND.

Project: Hydrogeological Surveys and Studies under Development Plan for Meherpur Zilla

Client: Urban Development Directorate (UDD)

Bore Hole ID: MW-06I

Location: Baniapukur Govt. Primary School, Gangni, Meherpu

Co-ordinate: 23.835775,88.794261

Depth of Boring: 90 Meter

Ground Water Level: Meter

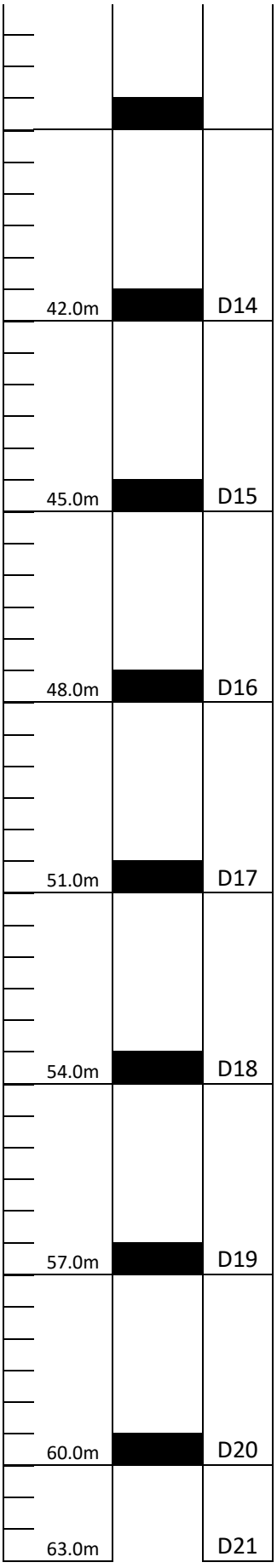
Method of Boring: Rotary Wash Boring

Boring Diameter: 1.5"

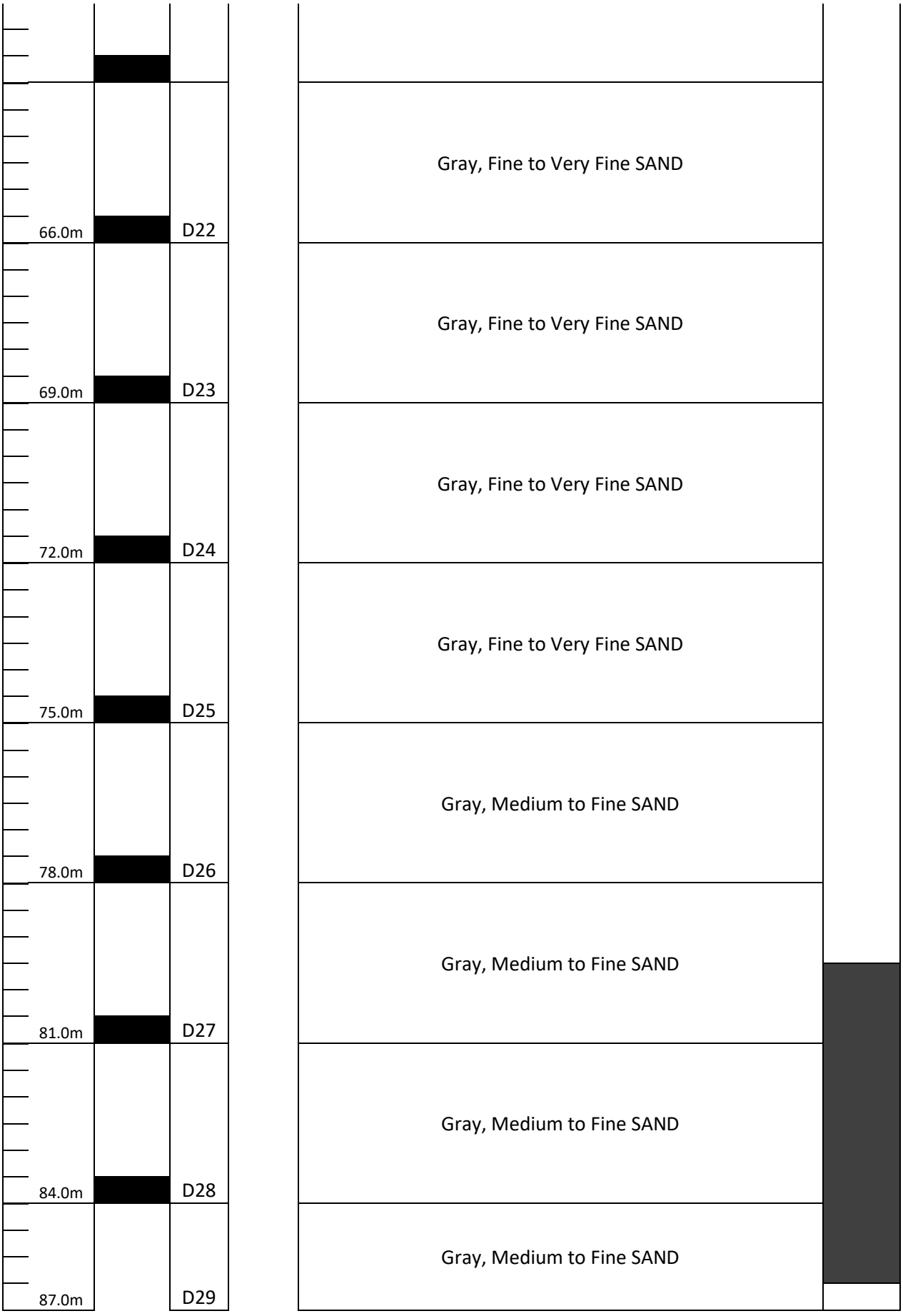
Date: 17/03/2025

Depth Bellow GL (m)	Type of Sample	Sample No	Thickness (m)	Lithologic Description	Layer Change
3.0m		D1		Brownish Gray, Silty CLAY	
6.0m		D2		Brownish Gray, Silty CLAY	
9.0m		D3		Gray, Silty CLAY	
12.0m		D4		Gray, Silty CLAY	
15.0m		D5		Gray, Silty CLAY	

18.0m	D6	Gray, Silty CLAY	
21.0m	D7	Gray, Silty CLAY	
24.0m	D8	Gray, Silty CLAY	
27.0m	D9	Gray, Very Fine SAND	
30.0m	D10	Gray, Very Fine SAND	
33.0m	D11	Gray, Very Fine SAND	
36.0m	D12	Yellowish Gray, Very Fine SAND	
39.0m	D13	Yellowish Gray, Very Fine SAND	



		Yellowish Gray, Very Fine SAND
42.0m	D14	
		Yellowish Gray, Medium to Fine SAND.
45.0m	D15	
		Yellowish Gray, Medium to Fine SAND.
48.0m	D16	
		Yellowish Gray, Medium to Fine SAND.
51.0m	D17	
		Yellowish Gray, Medium to Fine SAND.
54.0m	D18	
		Yellowish Gray, Medium to Fine SAND.
57.0m	D19	
		Yellowish Gray, Medium to Fine SAND.
60.0m	D20	
		Gray, Fine to Very Fine SAND
63.0m	D21	


66.0m
D22
Gray, Fine to Very Fine SAND
69.0m
D23
Gray, Fine to Very Fine SAND
72.0m
D24
Gray, Fine to Very Fine SAND
75.0m
D25
Gray, Fine to Very Fine SAND
78.0m
D26
Gray, Medium to Fine SAND
81.0m
D27
Gray, Medium to Fine SAND
84.0m
D28
Gray, Medium to Fine SAND
87.0m
D29
Gray, Medium to Fine SAND

90.0m		D30		Gray, Fine to Medium SAND.	

Project: Hydrogeological Surveys and Studies under Development Plan for Meherpur Zilla

Client: Urban Development Directorate (UDD)

Bore Hole ID: MW-06S

Location: Baniapukur Govt. Primary School, Gangni, Meherpu

Co-ordinate: 23.835775,88.794261

Depth of Boring: 30 Meter

Ground Water Level: Meter

Method of Boring: Rotary Wash Boring

Boring Diameter: 1.5"

Date: 18/03/2025

Depth Bellow GL (m)	Type of Sample	Sample No	Thickness (m)	Lithologic Description	Layer Change
3.0m		D1		Brownish Gray, Silty CLAY	
6.0m		D2		Brownish Gray, Silty CLAY	
9.0m		D3		Brownish Gray, Silty CLAY	
12.0m		D4		Gray, Silty CLAY	

15.0m		D5		Gray, Silty CLAY	
18.0m		D6		Gray, Silty CLAY	
21.0m		D7		Gray, Silty CLAY	
24.0m		D8		Gray, Silty CLAY	
27.0m		D9		Gray, Medium to Fine SAND	
30.0m		D10		Gray, Medium to Fine SAND	

Project: Hydrogeological Surveys and Studies under Development Plan for Meherpur Zilla
Client: Urban Development Directorate (UDD)
Bore Hole ID: MW-07D

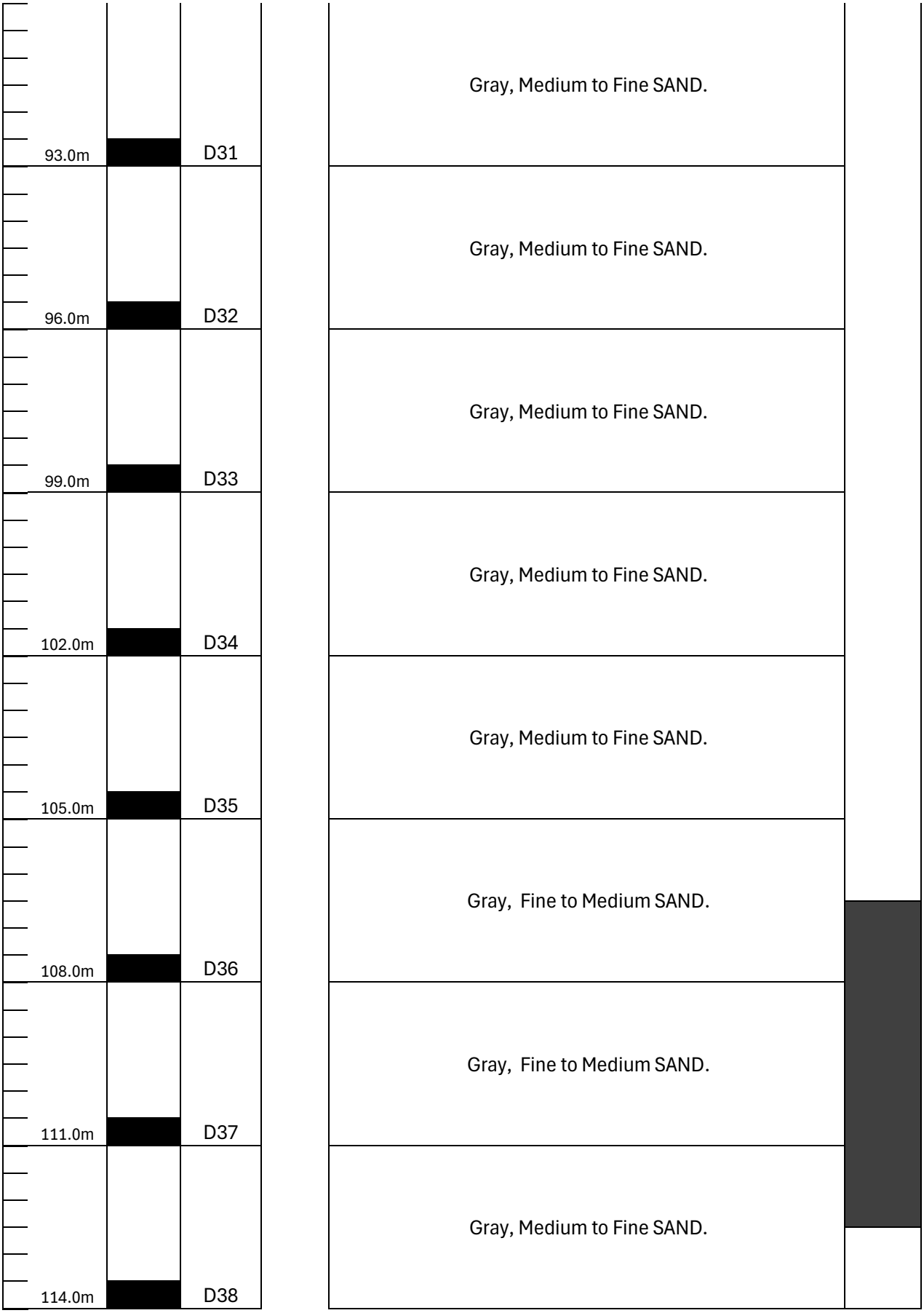
Location: Motmura Govt. Primary School, Gangni, M
Co-ordinate: 23.898126, 88.834600
Depth of Boring: 114 Meter
Ground Water Level: Meter
Method of Boring: Rotary Wash Boring
Boring Diameter: 1.5"
Date: 19/03/2025

Depth Bellow GL (m)	Type of Sample	Sample No	Thickness (m)	Lithologic Description	Layer Change
3.0m		D1		Brownish Gray, Silty CLAY	
6.0m		D2		Brownish Gray, Silty CLAY	
9.0m		D3		Gray, Very Fine to Fine SAND with SILT	
12.0m		D4		Gray, Very Fine to Fine SAND with SILT	
15.0m		D5		Gray, Very Fine to Fine SAND with SILT	
18.0m		D6		Gray, Very Fine to Fine SAND with SILT	

21.0m		D7		Gray, Very Fine to Fine SAND
24.0m		D8		Gray, Very Fine to Fine SAND
27.0m		D9		Gray, Very Fine to Fine SAND
30.0m		D10		Gray, Fine to Very Fine SAND
33.0m		D11		Gray, Fine to Very Fine SAND
36.0m		D12		Gray, Fine to Very Fine SAND
39.0m		D13		Gray, Fine to Very Fine SAND
42.0m		D14		Brownish Gray, Fine to Medium SAND

45.0m		D15	Yellowish Gray, Fine to Very Fine SAND
48.0m		D16	Yellowish Gray, Medium to Fine SAND
51.0m		D17	Yellowish Gray, Medium to Fine SAND
54.0m		D18	Yellowish Gray, Medium to Fine SAND
57.0m		D19	Yellowish Gray, Medium to Fine SAND
60.0m		D20	Yellowish Gray, Medium to Fine SAND
63.0m		D21	Brownish Gray, Fine to Medium SAND
66.0m		D22	Brownish Gray, Fine to Medium SAND

69.0m		D23	Gray, Fine to Medium SAND
72.0m		D24	Gray, Fine to Medium SAND
75.0m		D25	Gray, Fine to Medium SAND
78.0m		D26	Gray, Fine to Medium SAND
81.0m		D27	Gray, Fine to Medium SAND
84.0m		D28	Gray, Fine to Medium SAND
87.0m		D29	Gray, Fine to Medium SAND
90.0m		D30	Gray, Fine to Medium SAND


93.0m
D31
Gray, Medium to Fine SAND.
96.0m
D32
Gray, Medium to Fine SAND.
99.0m
D33
Gray, Medium to Fine SAND.
102.0m
D34
Gray, Medium to Fine SAND.
105.0m
D35
Gray, Medium to Fine SAND.
108.0m
D36
Gray, Fine to Medium SAND.
111.0m
D37
Gray, Fine to Medium SAND.
114.0m
D38
Gray, Medium to Fine SAND.

Project: Hydrogeological Surveys and Studies under Development Plan for Meherpur Zilla

Client: Urban Development Directorate (UDD)

Bore Hole ID: MW-07I

Location: Motmura Govt. Primary School, Gangni, M

Co-ordinate: 23.898126, 88.834600

Depth of Boring: 84 Meter

Ground Water Level: Meter

Method of Boring: Rotary Wash Boring

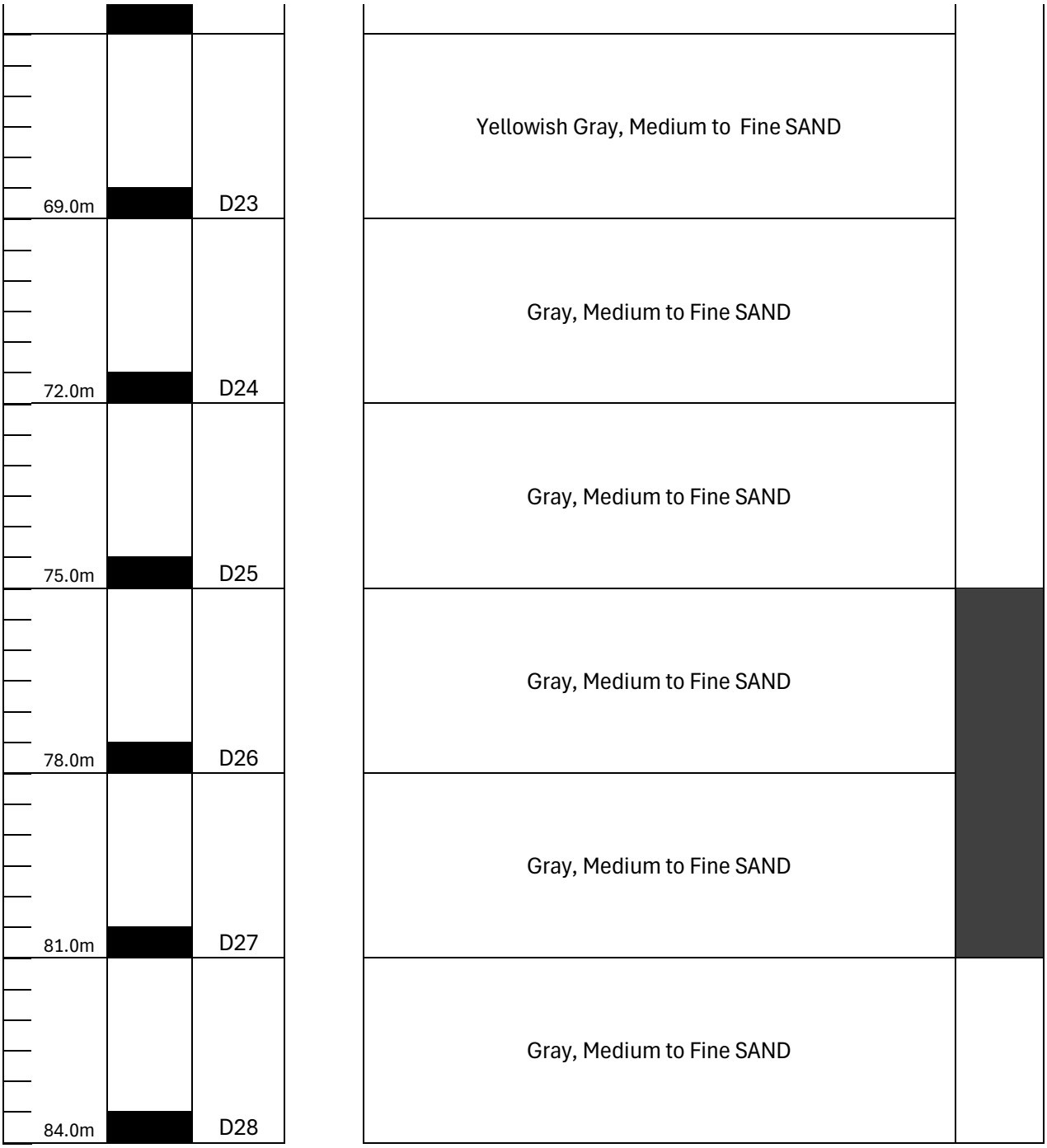
Boring Diameter: 1.5"

Date: 21/03/2025

Depth Bellow GL (m)	Type of Sample	Sample No	Thickness (m)	Lithologic Description	Layer Change
3.0m		D1		Brownish Gray, Silty CLAY	
6.0m		D2		Brownish Gray, Silty CLAY	
9.0m		D3		Gray, Fine to Very Fine SAND	
12.0m		D4		Gray, Very Fine to Fine SAND with SILT	
15.0m		D5		Gray, Very Fine to Fine SAND with SILT	
18.0m		D6		Gray, Very Fine to Fine SAND with SILT	

21.0m		D7		Gray, Fine to Very Fine SAND
24.0m		D8		Gray, Fine to Very Fine SAND
27.0m		D9		Gray, Fine to Very Fine SAND
30.0m		D10		Gray, Fine to Very Fine SAND
33.0m		D11		Gray, Very Fine SAND
36.0m		D12		Gray, Very Fine SAND
39.0m		D13		Gray, Medium to Fine SAND
42.0m		D14		Gray, Medium to Fine SAND

45.0m		D15	Yellowish Gray, Fine to Medium SAND
48.0m		D16	Yellowish Gray, Fine to Medium SAND
51.0m		D17	Yellowish Gray, Fine to Medium SAND
54.0m		D18	Yellowish Gray, Fine to Medium SAND
57.0m		D19	Yellowish Gray, Fine to Medium SAND
60.0m		D20	Yellowish Gray, Medium to Fine SAND
63.0m		D21	Yellowish Gray, Medium to Fine SAND
66.0m		D22	Yellowish Gray, Medium to Fine SAND


69.0m
D23
Yellowish Gray, Medium to Fine SAND
72.0m
D24
Gray, Medium to Fine SAND
75.0m
D25
Gray, Medium to Fine SAND
78.0m
D26
Gray, Medium to Fine SAND
81.0m
D27
Gray, Medium to Fine SAND
84.0m
D28
Gray, Medium to Fine SAND

Project: Hydrogeological Surveys and Studies under Development Plan for Meherpur Zilla

Client: Urban Development Directorate (UDD)

Bore Hole ID: MW-07S

Location: Motmura Govt. Primary School, Gangni, M

Co-ordinate: 23.898126, 88.834600

Depth of Boring: 30 Meter

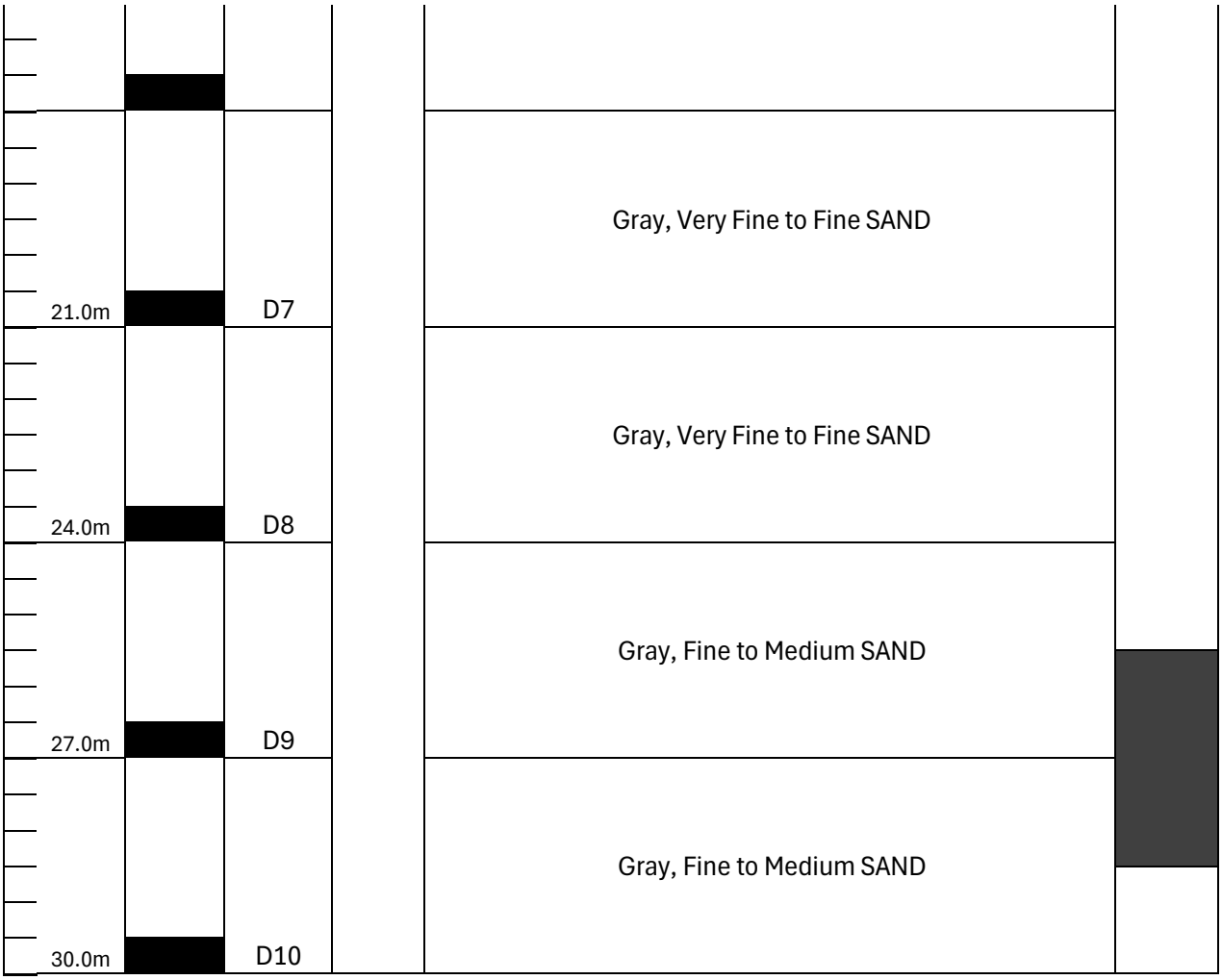
Ground Water Level: Meter

Method of Boring: Rotary Wash Boring

Boring Diameter: 1.5"

Date: 23/03/2025

Depth Bellow GL (m)	Type of Sample	Sample No	Thickness (m)	Lithologic Description	Layer Change
3.0m		D1		Brownish Gray, Silty CLAY	
6.0m		D2		Brownish Gray, Silty CLAY	
9.0m		D3		Gray, Fine to Very Fine SAND	
12.0m		D4		Gray, Silty CLAY	
15.0m		D5		Gray, Silty CLAY	
18.0m		D6		Gray, Very Fine to Fine SAND	


21.0m
D7
Gray, Very Fine to Fine SAND
24.0m
D8
Gray, Very Fine to Fine SAND
27.0m
D9
Gray, Fine to Medium SAND
30.0m
D10
Gray, Fine to Medium SAND