



FARM STEW SOUTH SUAN
C/O P.O Box 247 Juba, South Sudan, Hai Kuwait Residential Area, plot 259, near the Ministry of
Environment, Bilpam Road. Central Equatoria State, Juba

DATE: Jul 17, 2023

***Tender Notice FS-SS 001-2023: Drilling 7 boreholes for communities in Yei, Maridi, Jur-River,
Tonj South, Ikwotos and Bor.***

**RE: Invitation to tender for Drilling 7 boreholes(One @location) in Yei, Maridi, Jur-River, Tonj
South, Ikwotos and Bor.**

FARMSTEW South Sudan, a National Organization operating in South Sudan, seeks to contract a legally registered and competent company to drill and install 7 boreholes (Indian Mark II) to provide clean and safe drinking water for the communities of **Yei, Maridi, Jur-River, Tonj South, Ikwotos and Bor** for strengthening their resilience for abundant living.


The Bid shall be delivered to FARMSTEW Office near the Ministry of Environment at Hai Kuwait, Munuki Road.

This notice in itself is not an offer or contract but an invitation to Bid.

FARM STEW SS looks forward to receiving your sealed bids before 24/7/2023, 2:00 pm; bids submitted after the deadline shall be rejected. For more information, email: okumu@farmstew.org

We thank you in advance for participating in our tender for Boreholes drilling,

Regards,


Lasu Charles Denese





TERMS OF REFERENCE.

"CLIENTS TO DRILL BOREHOLES 1@locations IN YEI- CES IN MARIDI-WES, TONJ SOUTH-WARRAP STATE, IKWOTOS –EES, BOR- JONGLE STATE AND 2 IN JUR-RIVER"

Background.

With funding from FARMSTEW International (FSI), FARMSTEW South Sudan is implementing Water, Sanitation and Hygiene (WASH) Response Program in Yei – River County of Central Equatoria and Tonj South of Warrap and Maridi- Western Equatoria States and Jongole. Seven (7) locations will be identified in Yei, Maridi, Jur-river, Ikwotos, Bor and Tonj South Counties for drilling boreholes to be fitted with hand pumps.

The client will carry out the works of mobilizing machinery, drilling boreholes, and providing all the required equipment, materials, and labour and ensure that all the requirements of borehole development are up to the required standards as clearly specified on the technical specifications in the Bill of Quantity.

Scope of Work (SOW)

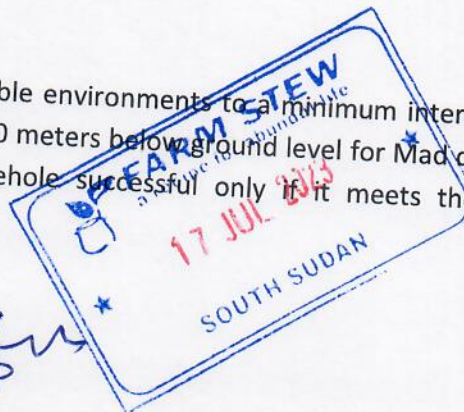
Under the guidance of the Client WASH team in Yei-River Tonj South, Jongle, Ikwotos, Jur-river, and Maridi must perform in a satisfactory manner, the drilling of eight (7) boreholes to be installed with hand pumps at locations determined and/or to be determined in different locations by the client.

Groundwater Investigation.

The Client should perform geophysical analysis (hydrogeological survey) in the FS-SS pre-identified locations using geo-electrical techniques or the use of terameter to find the best location for borehole sitting in coordination with FS-SS coordinators in Yei, Tonj, Maridi, Ikwotos, Jur river and Bor Counties. For each of the seven boreholes, the hydrogeologist shall recommend two suitable sites with the view that the proposed drilling will take place where the demanded yield shall be attained as described in the TOR. Upon submission of the hydrogeological survey report that is acceptable to FS-SS, then FS-S will validate the start of the drilling works.

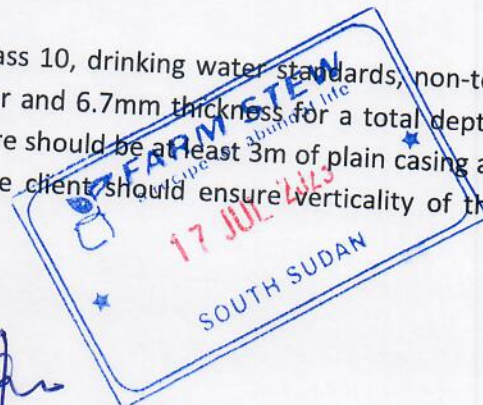
Drilling Stipulations

A. Drilling boreholes in all geologic possible environments to a minimum internal diameter of 200 mm (8") to an average depth of 40-90 meters below ground level for Mad drilling and hard rock drilling. FS-SS will consider a borehole successful only if it meets the above-stated



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- conditions of depth and a minimum critical yield of 3m³/hr confirmed through a critical yield analysis obtained after 8 hours of step draw-down pump test.
- B. If the borehole doesn't meet the stated condition in (A) above, FS.SS will not consider the borehole successful. As such, FS.SS will neither accept nor pay any of the items in the contract or expenses incurred during the drilling process; mobilization to the next site and commencement of the works will all lie under the Client's responsibility.
- C. The client will quote in the Bill of Quantity, taking into consideration that the borehole depth can vary and FS-SS will not make any payment beyond this quoted amount, independently of the drilling depth beyond 40- 90 meters that the Client needs to undertake in order to meet the design specification in terms of yield.
- D. Borehole drilling and construction will be supervised by the FS-SS coordinators representative in collaboration with the Ministry of Physical Infrastructure (MoPI) and Rural Water Department (RWD) of Yei- River, Tonj South, Bor and Yambio Counties. FS-SS will have the final authority in making decisions for the Client.
- E. The Client shall ensure that the drilling rig to be used must be able to drill beyond the anticipated depth.
- F. Cuttings (min.125 grams) of the strata penetrated shall be collected on-site at every 2-meter interval or every drill pipe, whichever gives the smallest interval and when required by FS-SS supervisor, by whatever method is standard for the drilling technique in use and approved by the Supervisor. The client shall take every possible precaution to guard against cutting contamination. Representative lithological samples shall be packed in sealed containers and with clearly marked labels covering the borehole location, number and depth interval. The samples shall be stored in a location where site conditions or drilling operations will not contaminate them.
- G. The Client shall ensure that the supplied materials are of good quality, adhering to the specifications provided in this ToRs and the BoQ. FS-SS will not authorize the installation or utilization of any material that is not in line with the requirements established in the ToR and BoQ.
- H. The client will supply and install U-PVC, class 10, drinking water standards, non-toxic plain casings with a 126.6mm (5") internal diameter and 6.7mm thickness for a total depth of well except where screen casings are installed. There should be at least 3m of plain casing as well as a sump/plug at the bottom of each well. The client should ensure verticality of the casing installed.



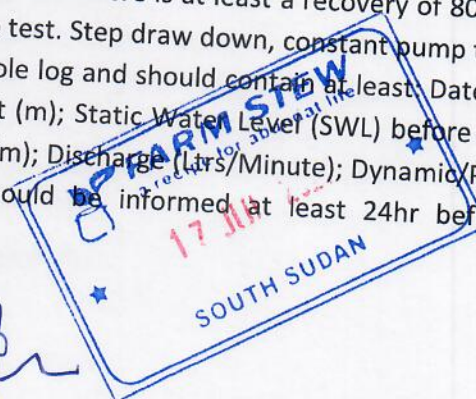
I. The client will supply and install U-PVC, class 10, drinking water standards, and non-toxic plain screen casings with an internal diameter of 126.6mm (5") and 6.7 mm thickness and with a slot size between 0.5mm to 1mm. The quantity/length of screen casings to be installed in the borehole will vary respectively to the soil/aquifer formations.

J. The client will supply and install a filter gravel pack, which is clean, uniform and of approved quality collected from river beds consisting of particles with a diameter of 1-5mm. The volume of the filter pack required must be calculated, taking into account the length of the screened area and an additional 50% to allow for settlement above screen casings and the annular space between the borehole and the external diameter of the casing. Installing the filter pack should be done with the aid of a tremmie pipe to ensure an even distribution of materials and reduce the risk of materials bridging in the annulus. Using a funnel (sheet metal, plastic sheet or pipe) and flowing water shall also be accepted as a method of passing the gravel through the annular space between the casing and the sides of the borehole.

K. Client should ensure the installation of a sanitary seal in the annular space between the screen casing and the borehole above the filter gravel pack to reach a minimum height of 3 meters. The sanitary seal shall consist of bentonite pellets of size between ¼" and ½". The bentonite pellets shall be installed in the annular space from the filter pack using a tremie pipe system. Above the sanitary seal, the annular space shall be backfilled with cuttings extracted by drilling up to 3 meters below the ground level. The sanitary top seal in cement grout corresponds to the first 3 meters below the surface. Including 2m of bentonite pellets and 1m of grout at the surface. Suppose the Client cannot supply the bentonite pellets. In that case, a written request should be sent to FS-SS providing the justification and the specifications of an alternative sealing and plugging material in order for FS-SS to approve its installation.

L. The boreholes must be developed by airlifting for a minimum of 4 hours until a stabilized satisfactory yield is reached and the turbidity is less than 5 NTU.

The Client should conduct the M. Step draw down pumping test for a minimum of 6 hours considering 4 steps with different yields ($Q_{mx}/5$, $Q_{mx}/3$, $Q_{mx}/2$ and Q_{max}) and a recovery step. Each test should last a minimum of 1.5hr. In addition, 4 hours constant pump test should be conducted by the Client using the optimal yield identified during the step draw down test. Recovery test will be for one hour or such time when there is at least a recovery of 80% of the static water level noted at the start of the pump test. Step draw down, constant pump test, and recovery data should be reported on the borehole log and should contain at least: Date of Test (Day, Month, Year); Depth of BH at time of test (m); Static Water Level (SWL) before the test (m); Type of Pump used; Depth of Pump Intake (m); Discharge (Ltrs/Minute); Dynamic/Pumping water level (m). FS.SS's coordinating staff should be informed at least 24hr before the



scheduled time for carrying out the pumping test. The procedure should be discussed and agreed by both parties (FS-SS and the client) before the client could initiate the pumping test.

N. After a successful completion of drilling and water testing, the borehole should be thoroughly disinfected with a chlorine-rich solution, preferably granular Calcium Hypochlorite (HTH) or Sodium Hypochlorite at a concentration of 500 grams per cubic meter of pack. This will initiate the process of sterilizing the borehole and the chlorine solution should stay in the well for at least 4 hours at the specified concentration, leaving a concentration of residual chlorine of 50 milligrams/litres (as per WHO standards). The disinfection procedure shall be discussed with FS-SS's coordinating staff in order to seek approval.

O. The Client shall supply and install India Mark II hand-pumps with all the components including GI rising pipe, the handle assembly, the pedestal, the water tank assembly, the pump head assembly, connecting rods and rising mains, pump cylinder. For lifting water beyond 45 m, Client must supply an India Mark II Extra Deep-well hand-pump.

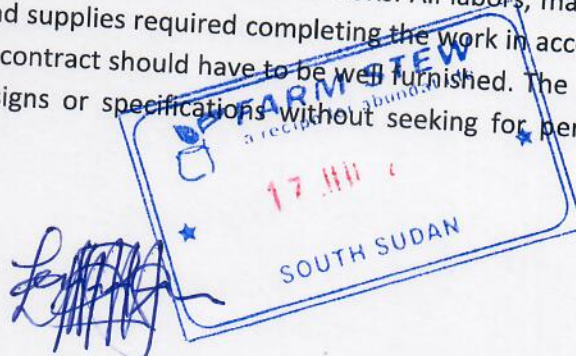
P. Construction of re-enforced concrete borehole apron, drainage channel with a minimum length of 6m and cattle trough of 1.8 metres long as per normal drawings.

Q. Client will coordinate with the FS-SS coordinators in Yei-River, Tonj South, Bor and Yambio Counties for the collection of samples of water from the borehole for full physical, chemical and bacteriological analysis of the water to ascertain its suitability for human consumption.

R. Upon completion of the borehole, Client should submit a report of the borehole drilling in which all the relevant information and drilling velocity, well casing and other well construction operations will be recorded. Client will also annotate all information pertaining to the appearance of water filtrations and aquifer, types of rock found and sampling details including geophysical testing analysis, drilling lithology log, sieve analysis, GPS coordinates, casing details, filter pack details, constant rate testing procedures and results, recovery testing results, yield, draw-down, disinfectant calculations and procedures, pump cylinder installation depth and photographs. No payment will be made prior to reception of all reports.

Role of the Client/Company

Client will have to provide for the construction and completion in every detail of the work described in the contract and contractual documents such as ToRs. All labors, materials, tools, equipment, transportation, food and supplies required completing the work in accordance with the specifications and terms of the contract should have to be well furnished. The client cannot deviate from the construction designs or specifications without seeking for permission and approval from FS-SS.



If the client is not able to finish the drilling or has to abandon the borehole due to loss of tools, accidents or any unforeseeable circumstances, Client should remove the casings or drive pipes already in the hole and refill it with clay or concrete. All materials extracted from the hole, after refilling it will be the property of the Client . FS.S will not pay for any of the work carried out, and will authorize in advance the drilling of a new hole, at a site near the abandoned one if need be, at the Client 's expenses.

Health and Safety

The Client's team leader shall take all reasonable precautions to prevent any death or injury to persons during said undertaken activities. These precautions shall include but not be limited to providing his crew with safety helmets, hard-toed boots (safety boots) or gumboots, heavy duty gloves, protective glasses and ensuring that all tools and equipment are in a safe condition and ensuring that his employees adopt safe working methods. The drilling crew will wear a uniform provided by The client at the site. No military-looking clothing will be accepted at any time.

Under this contract, Client team leader has the obligation and responsibility to safeguard the safety and security of its Personnel, the drilling crew's equipment and other property, Client -furnished equipment and supplies and Personnel's personal effects and other property.

Company team leader shall develop a security plan in consultation with FS.SS, including detailed procedures to cover evacuation, personnel, equipment, safeguarding of Client -furnished equipment and supplies, unlawful interference and prevention of sabotage.


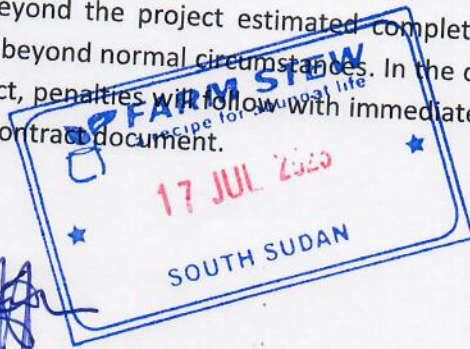
Equipment and work force:

Client should present a list of the drilling equipment that is going to execute for the contract, specifying the following: Name; Model; Quantity; Year of manufacturing. All equipment listed should be in perfect operational conditions. The client must provide a list of the workforce that it intends to use for execution of the project, detailing percentage of females and males if any.

Time for completion.

Client should perform the activity in a maximum period of 2 months after the signature of the contract. Client should submit a work schedule aligning activities to match the completion period. Any bid which schedule goes beyond the project estimated completion period of 2 month will not be accepted unless if it is beyond normal circumstances. In the case of delays in the implementation process of the project, penalties will follow with immediate effect and the penalty criteria will be stipulated on the contract document.

Defect liability period.

The borehole will be guaranteed for a period of 6 months after completion. In an event that there are defects found on the borehole within the 6 months' period, the Client will be notified and authorized to correct all the said defects.

