



## Jayous Municipality

تشغيل بئر جوفي في جیوس

Tender No.

June,2021

**Tender Documents**

**Volume IV**

**Bill of Quantities/ Cost Estimate**

**ENGINEERS**  
Consultants & Project Managers

**ENGINEERS**  
Consultants and Project Managers



## BILL No.01

Item	Description	Unit	Qty	Unit Price US \$	Total Price US \$
1.0	THE COSTS PROVIDED BY THE CONTRACTOR IN THIS BILL OF QUANTITIES ARE ALL INCLUSIVE FOR THE WORK DESCRIBED IN THE DRAWINGS AND SPECIFICATIONS, WHETHER SPECIFICALLY MENTIONED IN THE BELOW DESCRIPTIONS OR NOT.				
	<b>MECHANICAL WORKS</b>				
	<b>General</b>				
A	Unit prices of all items shall include for cleaning the site from all surplus, backfill materials, or results of excavation, and repairing all damages of concrete, or stone walls, or asphalted yards, edge of asphalted roads, sidewalks, existing water pipelines, sewerage lines, cables, cesspools, etc..., that may occur in the course of executing the works. All according to drawings, specifications, conditions and the instructions of Engineer or his representative.				
B	Unit prices also include testing, balancing, adjusting, flushing, disinfections and commissioning of water facility components and handling to the Recipient of complete operational systems.				
C	The price of pipes shall include all types of fittings, lowering, mounting, jointing, welding, supporting, trenching works including excavation, bedding, embedment, backfilling and reinstatement.				
D	The unit price of all isolating, safety, control valves includes flanges, bolts, nuts, gaskets, spindles, chambers, boxes, supports, fittings, couplers, all necessary accessories, earth works (excavation, bedding, backfilling and reinstatement).				
E	The Bills of Quantities, Specifications, Drawings and all other Contract documents are complementary to each other.				
F	It is the responsibility of the Contractor to check the locations and quantities of the materials and equipment to be executed in accordance with the contract drawings.				
G	The unit rate of the materials and equipment shall be based on the Specification, all components as required and specified under each item concerned in the Specifications, Contract Drawings, and all other Contract documents.				
H	In addition to the above mentioned requirements, the Unit Rate shall include the following which are complementary to the mentioned items in the bill of quantities.				
h1	Supply of materials and equipment.				
h2	Off loading and handling from trucks on site to place of installation.				
h3	Installation of materials and equipment.				
h4	All civil works required and connected with the mechanical installations, such as: equipment concrete bases and supports, hangers, brackets, cutting through walls and slabs for passage of pipes and conduits and ducts, pipe sleeves, re-patching, erecting, lowering, mounting of pipes and supports to structure, excavation and backfilling, riggings, hoisting, water proofing, cleaning, protection and painting.				
<b>Total</b>					

ENGINEERS

Consultants &amp; Project Managers

## BILL No.01

Item	Description	Unit	Qty	Unit Price US \$	Total Price US \$
<b>h5</b>	All labor, materials, tools, instruments needed for perfect operation.				
<b>h6</b>	System identifications, tags, labels, nameplates, and charts.				
<b>h7</b>	Shop-drawings, as built and record drawings.				
<b>h8</b>	Recommended Spare parts, O&M manuals, training and components for ideal running of all services and equipment.				
<b>h9</b>	Samples as required by the Engineer.				
<b>h10</b>	Inspection, testing, rejection, adjusting, balancing, commissioning, and handling to Owner of all materials, equipment and workmanship.				
<b>h11</b>	Maintenance of all items supplied by contractor as per Contract Conditions.				
<b>h12</b>	Assist in testing and commissioning of all mechanical devices which are supplied by others for all equipment and systems as shown on drawings and called for in the specifications.				
<b>I</b>	The quantities shown in this bill are estimates and are liable for variation according to actual execution on ground or Engineer orders without any adjustment to contract unit prices.				
<b>J</b>	The contractor is not entitled to claim for changing of unit prices in the event of changing pipe routes or equipment locations as a result of technical reasons on ground during execution.				
<b>K</b>	The diameters of needed pipes and valves are the nominal diameters. The outside and inside diameters of pipes shall be according to the Palestinian Standards No's 186, 141 or equally approved.				
<b>L</b>	Pipes, fittings, valves, accessories, controllers, instrumentation, specials, protective coatings, jointing materials etc. should be according to the latest editions' of standards and references specified in the tender documents.				
<b>M</b>	Pipes, fittings, valves, accessories, controllers, instrumentation, specials, protective coatings, jointing materials etc that may come in contact with portable water should not constitute any toxic hazards, should not support any microbial growth, or cause taste/odor, cloudiness or discoloration of water and must be approved by a recognized certifying authorities as being suitable for drinking water.				
<b>Total</b>					

## BILL No.01

Item	Description	Unit	Qty	Unit Price US \$	Total Price US \$
1.01	<p><b>Well Turbine Pump:</b> Supply and installations for the perfect operation of Ein Sultan well.</p> <p>Supply, deliver, furnish, position, install, test, operate, commissioning, disinfect and maintain Deep Well Submersible Turbine pump water lubricated of 130 m<sup>3</sup>/hr flow against 270 m total dynamic head , shut off head not less than 325m and efficiency not less than 78% complete with all pump parts and components according to specifications complete with all pump parts and components according to specifications and drawings (bowls, protection seal, shroud, pump column rising pipes 6" X 300 m.l, couplings, discharge head, mounting plate, 316 SS non return valve with spring. The submersible motor shall be 250 HP, with 2960 r.p.m., 3ph - 380 / 415 volt - 50 Hz), motor efficiency not less than 88%.</p> <p>Note :- Submersible pump motor and pump shall be equipped all requirements to operate the pump with V.F.D /or soft starter systems , the Electrical Motor must be heavy duty with suitable power needed</p> <p>This shall include all well pump equipment, appurtenances, instrumentation. This item includes the pump foundation, well sounder and well transducer with two lines of access pipes 1.5" PVC-Sch80 or HDPE; one for well level sensor of 320 l.m. (90 l.m. slotted), and the other also 320 l.m. for M-scope measurment, extension of well casing, electrical cable complete with all required fittings, accessories and works for the perfect operations of the well as shown on drawings and tender documents. The rate includes also expenses for the PWA representative to attend the Factory Witness Test of the pump as described in the technical specifications.</p>	LS	1	90,000	90,000
1.02	Supply and install above and under ground 3/16" steel pipe dia 6" and 4" with all fittings from well pump to existing pipeline and from well pump washout to washout including flap valve , price to include flanges elbows 45 and 90, flanges tees, flanges reducer tees , reducers ,adjustable pipe jack support ,hydrostatic pressure leakage test, etc and all necessary fittings to complete the job according to the Specifications, drawings and as direction of the Engineer. ( Price include also the excavation and backfilling for the under ground pipes	LS	1.00	7,000.00	7,000
1.03	Supply and install 6" gate valve the price to include flanges, and all accosserios etc and all necessary fittings to complete the job . according to the Specifications, drawings and as direction of the Engineer.	ea	3.00	700.00	2,100
1.04	Ditto item 1.3 but 4" gate valve	ea	2.00	350.00	700
1.05	Supply and install 6" dismantling Joint , the price to include flanges, and all accosserios etc and all necessary fittings to complete the job . according to the Specifications, drawings and as direction of the Engineer.	ea	5.00	500.00	2,500
<b>Total</b>					<b>102,300</b>

## BILL No.01

Item	Description	Unit	Qty	Unit Price US \$	Total Price US \$
1.06	Ditto item 1.5 but 4" dismantling Joint ,	ea	1.00	250.00	250
1.07	Supply and install 2" Air release valve with 2" flange gate valve the price to include flanges, and all accessories etc and all necessary fittings to complete the job . according to the Specifications, drawings and as direction of the Engineer.	ea	1.00	1,000.00	1,000
1.08	Supply and install 6" check valve the price to include flanges, and all accessories etc and all necessary fittings to complete the job . according to the Specifications, drawings and as direction of the Engineer.	ea	1.00	1,200.00	1,200
1.09	Supply and install cast iron pressure relief valves PN16, DN100 mm (4") including all flanges gaskets, bolts and nuts with all related accessories. All in accordance to PWA specifications and engineer approval. Price to include and any other required accessories.	ea	1.00	2,200.00	2,200
1.10	Supply and install cast iron pressure relief valves PN16, DN25 mm (1") including all flanges gaskets, bolts and nuts with all related accessories. All in accordance to PWA specifications and engineer approval. Price to include welding 1' Coupling , valves, union , elbow and any other required accessories.	ea	1.00	300.00	300
1.11	Supply and install and welding 1/2" Coupling with 1/2" Stop Valve( for chlorine injection and well water test	ea	2.00	50.00	100
2.00	<b><u>Chlorination system</u></b>				
2.01	Supply and installation of chlorination system including two dosing pumps with 2.2 l/hr @ 10 bar, two injectors, two multifunction valves, two foot valves, two HDPE 1000 lt tanks, 50 meters of tubing (special tubing for HCL) with 2" pvc sleeves for tube , eye wash and shower , fan 12" , fittings and any other required to complete and operate the	ea	1.00	9,000.00	9,000
2.02	Supply and install above and under ground pipes inside chlorination room and potable water pipes from well pump line to connect the equipment with water price to include flanges elbows 45 and 90, flanges tees, flanges reducer tees , reducers , support , hydrostatic pressure leakage test, etc and all necessary fittings to complete the	LS	1.00	1,000.00	1,000
<b>TOTAL CARRIED TO SUMMARY</b>					<b>15,050</b>
<b>Total Carried to Summary</b>					<b>117,350</b>

## BILL No.02

Item	Description	Unit	Qty	Unit Price US \$	Total Price US \$
1.0	THE COSTS PROVIDED BY THE CONTRACTOR IN THIS BILL OF QUANTITIES ARE ALL INCLUSIVE FOR THE WORK DESCRIBED IN THE DRAWINGS AND SPECIFICATIONS, WHETHER SPECIFICALLY MENTIONED IN THE BELOW DESCRIPTIONS OR NOT.				
	<b>ELECTRICAL WORKS</b>				
	<b>General</b>				
A	Unit prices of all items shall include for cleaning the site from all surplus, backfill materials, or results of excavation, and repairing all damages of concrete, or stone walls, or asphalted yards, edge of asphalted roads, sidewalks, existing water pipelines, sewerage lines, cables, cesspools, etc...,				
B	Unit prices also include testing, adjusting, settings and commissioning of all electrical components and handling to the Recipient of complete operational systems.				
C	The price shall include all types of Cable Ladder, UPVC pipes for power, control & communication lines, electrical manhole, 25TN cast iron cover labeled Electrical, Cables and Wires, supporting, trenching works including excavation, bedding, embedment, backfilling and reinstatement.				
E	The Bills of Quantities, Specifications, Drawings and all other Contract documents are complementary to each other.				
F	It is the responsibility of the Contractor to check the locations and quantities of the materials and equipment to be executed in accordance with the contract drawings.				
G	The unit rate of the materials and equipment shall be based on the Specification, all components as required and specified under each item concerned in the Specifications, Contract Drawings, and all other Contract documents.				
H	In addition to the above mentioned requirements, the Unit Rate shall include the following which are complementary to the mentioned items in the bill of quantities.				
h1	Supply of materials and equipment.				
h2	Off loading and handling from trucks on site to place of installation.				
h3	Installation of materials and equipment.				
h4	All civil works required and connected with the electrical installations, such as: equipment concrete bases and supports, hangers, brackets, cutting through walls and slabs for passage of conduits and ducts, pipe sleeves, excavation and backfilling, riggings, hoisting, water proofing, cleaning, protection and painting.				
h5	All labor, materials, tools, instruments needed for perfect operation.				
h6	System identifications, tags, labels, nameplates, and charts.				
<b>Total</b>					

## BILL No.02

Item	Description	Unit	Qty	Unit Price US \$	Total Price US \$
<b>h7</b>	Shop-drawings, as built and record drawings.				
<b>h8</b>	Recommended Spare parts, O&M manuals, training and components for ideal running of all services and equipment.				
<b>h7</b>	Shop-drawings, as built and record drawings.				
<b>h8</b>	Recommended Spare parts, O&M manuals, training and components for ideal running of all services and equipment.				
<b>h9</b>	Samples as required by the Engineer.				
<b>h10</b>	Inspection, testing, rejection, adjusting, balancing, commissioning, and handling to Owner of all materials, equipment and workmanship.				
<b>h11</b>	Maintenance of all items supplied by contractor as per Contract Conditions.				
<b>h12</b>	Assist in testing and commissioning of all electrical devices which are supplied by others for all equipment and systems as shown on drawings and called for in the specifications.				
<b>I</b>	The quantities shown in this bill are estimates and are liable for variation according to actual execution on ground or Engineer orders without any adjustment to contract unit prices.				
<b>J</b>	The contractor is not entitled to claim for changing of unit prices in the event of changing pipe routes or equipment locations as a result of technical reasons on ground during execution.				
<b>K</b>	The cable and wire sizes shall be according to the Palestinian Standards or equally approved.				
<b>Total</b>					

## BILL No.02

Item	Description	Unit	Qty	Unit Price US \$	Total Price US \$
<b>3.00</b>	<b>Well pump:</b>				
<b>3.01</b>	Well Submersible Pump : Supply, installations, testing and commissioning for the perfect operation of the well pump. The price include Flat submersible pump cable, with suitable heat shrinkable joint between the Motor cable and the Flat cable Annealed bare stranded copper conductors PVC insulated form a -45 to 75°C 600/1000 Volt Multi-Conductor. The size of the cable must be as recommended by the pump supplier Furnish, install and termination of well pump power cables and control wire, conduits, cables, connection boxes and miscellaneous. The price including RTD cable from the Pump's motor winding to the control panel according	Ls	1.00	20,000.00	20,000
<b>3.02</b>	Furnish, install and termination of Submersible Level Sensor (Pressure Sensor), 17.5 mm stainless steel sensor Measure Range : Ranges from 3.5 to 600 mH2O (5 to 900 psi). Accuracy: • Accuracy $\pm 0.25\%$ . Power Supply : 10 - 30 Vdc, Signal Output : 4~20mA. All welded 316L stainless steel construction. Vented polyurethane cable with Kevlar® anti-stretch construction. - Level Sensor Accessories: Sensor Termination Enclosure, Cable Clamp. The price include connecting and monitoring by PLC	ea	1.00	3,200.00	3,200
<b>3.30</b>	Furnish, install and termination of well pump ,16 bar Electromagnetic Flow meter compact with Display, IP67 to EN 60529 / NEMA 4X/6 (1 mH2O for 30 minutes), Carbon steel, with corrosion-resistant two-component epoxy coating (min. 150 $\mu$ m), Corrosive category C4, according to ISO 12944-2 with sunproof cover, AISI 304 (1.4301), including power and signal cable Factory Assembly, conduits, cables, connection boxes and miscellaneous. The price include connecting and monitoring by PLC	ea	1.00	3,700.00	3,700
<b>3.40</b>	Furnish, install and termination of well Pump Pressure Transmitter with built in display IP68, 2.5 bar including control wire, conduits, connection boxes and miscellaneous. The price include connecting and monitoring by PLC. Operating voltage (7 - 33) VDC, Output (4 to 20) mA, Pressure range (0 - 10) bar, Controller degree of protection IP67, Sensor material Stainless Steel 316L, Bracket material Stainless Steel 316L.	ea	1.00	1,650.00	1,650
<b>Total</b>					<b>28,550</b>



## BILL No.02

Item	Description	Unit	Qty	Unit Price US \$	Total Price US \$
3.50	Furnish, install, calibration and termination for well pump PADDLE TYPE FLOW SWITCH , 16 bar including control wire, conduits, connection boxes and miscellaneous. Suitable for 4" pipe with all mechanical needed. - Housing Material: Aluminum Alloy, IP65. - Operation Temp.: -30 C~150 C. Paddle Material: SUS304 - Operation Pressure: Max. 355 PSIG. Set Point Tolerance: 25%. Contact Capacity : 60W 220V/200Vdc SPD	ea	1.00	650.00	650
3.60	Supplying , installing and calibration a pressure guage 16 bar, reading scale (0-10) bar complete.with thee way valve	ea	1.00	150.00	150
3.7	Supplying , installing and calibration a Low Pressure switch Regulation range (-0.8 – 5) bar, Differen tial $\Delta p$ (0.5 – 1.6)bar,Auto Reset,Maximum working pressure 22 bar, including control wire, conduits, connection boxes and miscellaneous. Suitable for 4" pipe with all mechanical needed. IP66 to EN 60529 / IEC 529, except for versions with ext. reset which are IP54, Suitable for alternating and direct current (AC and DC), Interchangeable contact system, Safety Integrity Level: SIL 2 according to IEC 61508	ea	1.00	350.00	350
3.8	Supplying , installing and calibration a High Pressure switch Regulation range (2 – 18) bar, Differen tial $\Delta p$ (1.2 – 4)bar,Auto Reset,Maximum working pressure 22 bar, including control wire, conduits, connection boxes and miscellaneous. Suitable for 4" pipe with all mechanical needed. IP66 to EN 60529 / IEC 529, except for versions with ext. reset which are IP54, Suitable for alternating and direct current (AC and DC), Interchangeable contact system, Safety Integrity Level: SIL 2 according to IEC 61508	ea	1.00	350.00	350
3.9	Supplying, installing and testing Earthing System includes galvanized steel strip 30x3 mm, welded each meter to its base steel structure, 3 sets of 19mm,Dia, 1.5m L,CU rods including 16mm CU wire, pits with heavy duty cast iron covers, 6mm <sup>2</sup> insulated earthing of all metal parts that includes cable trays, water pipes, cable ladder, ac units, distribution boards bodies,PEC 40x4x0.4 mm <sup>2</sup> in metal box, Earthing and grounding resistance must be $\leq 2$ ohm	Ls	1.00	1,500.00	1,500
<b>Total</b>					<b>3,000</b>

## BILL No.02

Item	Description	Unit	Qty	Unit Price US \$	Total Price US \$
<b>4.00</b>	<b><u>Chlorination system</u></b>				
<b>4.01</b>	Supply, install testing and commissioning of Chlorination control panel fiber glass, Stainless steel or equivalent , to operate and control the dosing pumps alternative, after well pump operate and according to the level of chlorine in the tanks, this include all cables, wires, conduits realis, timers, controllers, switches, indicators	ea	1.00	1,650.00	1,650
<b>4.02</b>	Furnish, install and termination of FLOAT LEVEL SWITCH for very aggressive liquid mixtures such as sulfuric acid, suitable for chlorination system. Allowed fluid density 0.75 to 1.50, Maximum pressure 2 bars, Maximum temperature 125°C, Protection index IP 68, Electric characteristics 230 VAC - 50/60 Hz, Housing material PVDF, Cable Conductors PTFE, The cable length must be suitable to connect to the control panel without any splices	ea	2.00	300.00	600
<b>4.03</b>	All electrical sensors, alarm system including lamps, buzzer, and power and control cables for eye wash shower, fans and switches	Ls	1.00	2,000.00	2,000
<b>5.00</b>	<b><u>PLC, MDB, Electrical work guard and pumps room.</u></b>				
<b>5.01</b>	Supply, installation Programing and connection of PLC Equipment, complying with level 4 of IEC EN 61000-4-4 and IEC EN 61000-4-5 standards, equipped with deported I/O modules for digital inputs and analogic inputs, UMTS / 3G modem and power supply card, including mounting in cabinet, electric protections, cabling with related equipment and general electric cabinet, trenches and all the necessary accessories.cables, wires . 24 V/10 A Stabilized power supply, compact CPU, DC/DC/DC , Communications processor CP, 0,5 kVA safety power supply including battery charger for a 12 hour battery as a minimum, Human Machine Interface (7" of the HMI display) graphic screenm full control the well pump , rady for SCADA connection in future , 20% spare in PLC	ea	1.00	18,000.00	18,000
<b>5.02</b>	Supply,Install and Connect Main Distribution Board according to IEC 61439 & GTS . Price to include metal panelboard oven painted 2mm thickness Waterproof,all cables required to connect well pump, guard &chlorination room , according to design drawing. ATS, Molded case Main circuit breakers MCCB with minimum breaking capacity of 25 K.A thermal and magnatic protection, miniature circuit breaker MCB with minimum breaking capacity of 10 K.A., bus bars, volts & amps-Measuringinstruments,voltage arrestor and space for KWHM according to electrical utility requirments. Also to include main earth bus bar as drawings and specifications with all necessary circle works. ATS, VFDs for well, indication lamps, switchs, Digital Multimeter	ea	1.00	12,500.00	12,500
<b>5.03</b>	Supply,Install and Connect 16A 3-pin power socket	ea	4.00	45.00	180
<b>Total</b>					<b>34,930</b>

## BILL No.02

Item	Description	Unit	Qty	Unit Price US \$	Total Price US \$
5.04	Supply,Install and Connect 16A 3-pin power socket water proof	ea	3.00	50.00	150
5.05	Supply,Install and Connect 20A, AC socket for split units	ea	3.00	55.00	165
5.06	16A 5-pin power socket water proof	ea	1.00	120.00	120
5.07	Supply,Install and Connect Hot Water Cylinder Point including isolating switch with indication lamp, cables, conduits, and all accessories	ea	1.00	75.00	75
5.08	Supply,Install and Connect Oval bulkhead lamp with ring, eyelid or grid cover. Made of shockproof resin material, UV-rays stabilized, rust and corrosion-free. Suitable for wall and GX53 LED or E27, IP66 18w, LED Ceiling light , 2000 LM water proof light	ea	2.00	110.00	220
5.09	Supply,Install and Connect LED Module, system flux 10,000 lm - 740 neutral white - Power supply unit - Beam category A1, projector, IP65	ea	4.00	200.00	800
5.10	Supply,Install and Connect LED 1200mm, 35W, Rated lumens 4200, CCT (K) 6500K, 120 lm/W, Rated lifetime, 30000 hrs @L70 25°C	ea	4.00	130.00	520
5.11	Supplying, installing and testing Earthing System for the site includes galvanized steel strip 30x3 mm, welded each meter to its base steel structure, 3 sets of 19mm,Dia, 1.5m L,CU rods including 95 CU wire, pits with heavy duty cast iron covers, 10mm <sup>2</sup> or 6mm <sup>2</sup> insulated earthing of all metal parts that includes cable trays, water pipes, cable ladder, ac units, distribution boards bodies,PEC 40x4x0.4 mm <sup>2</sup> in metal box, Earthing and grounding resistance must be $\leq 2$ ohm	Ls	1.00	1,700.00	1,700
<b>Total</b>					<b>3,750</b>
<b>Total Carried to Summary</b>					<b>70,230</b>

**Summary Sheet**

Bill No.	Description	Total Price US \$
1	Mechanical Works	117,350
2	Electrical Works	70,230
	Total	187,580

**Grand Total Including VAT****Percentage % discount or addition****Net Grand Total Including VAT****The sum of ..... Including VAT US\$****Contractor:** .....**Signature:** .....**Date:** .....

**ENGINEERS**  
Consultants & Project Managers