



## La Vega, Guatemala Water Project

Rotary Club of Kalispell and Partners

Dear Friend,

Thank you for your interest in helping the Sustainable Global Coalition, our partners, and the community of La Vega, Guatemala secure a safe and reliable water source for 1,340 adults and children. This packet provides detailed information about the project and is our invitation to you to participate in this life-saving project for the families of La Vega.

Your packet contains:

- One-page summary of the project
- Proposed project schedule and milestones
- Sections of a detailed report about the community of the La Vega, description of the project, and a detailed project cost estimate. The complete report is available upon request.
- Project Organizational Chart and Roles
- Donor Commitment Form

Our Sustainable Global Coalition and international partners have worked in Guatemala for over 10 years and successfully completed 2 Rotary International Global Grant water projects. The Coalition is currently working on three projects, including the La Vega water project. We have assembled a highly capable and comprehensive team to design and implement sustainable projects in Guatemala.

If you would like additional information or have questions for us, please contact Mitch McKinley at (406) 314-8321 or email [nwmtcoalition@gmail.com](mailto:nwmtcoalition@gmail.com).

Thank you again for your interest in the La Vega Water Project! A Donor Commitment form is included as the last page of this packet. We would love to work with you and hope you will join us on this critical effort to provide clean water to people in need. Together, we can change lives for the better.

Sincerely,

A handwritten signature in blue ink that reads 'Mark Rohweder'.

Mark Rohweder  
Rotary Club of Kalispell

## Phase I: Water Global Grant 18-72020 in La Vega, Guatemala

Our Rotary project will impact over 1,300 lives in the community of La Vega, Guatemala by providing a safe and reliable drinking water source (Phase I) and sanitation services (Phase II). Phase I will involve drilling a well, constructing a water storage tank, and installing water distribution lines to homes. Phase I to provide potable water will cost \$290,000. The second phase to improve sanitation will be constructed after Phase I is complete and operational.

Currently, residents of La Vega rely on individual shallow wells that are generally 30 feet (9.1 m) deep. Homes in the community use individual pit toilets. Therefore, most wells are contaminated by fecal coliform necessitating the need to boil water before drinking. In addition, the community is surrounded by sugar cane and rubber tree plantations and is located at the end of a large watershed. The proximity to production agricultural and location within the watershed introduces other pollutants to their drinking water. Water borne diseases are a constant presence in the community resulting in lost wages and poor health outcomes.

Phase I will solve the issue of contaminated water. To implement a successful project, our Rotary coalition has built strong partnerships with local and international organizations: Fundazucar, Rotary Club of Mazatenango, Engineers Without Borders, and a Guatemalan engineer. This project will be assisted through in-kind contributions from the communities in the form of local labor, local funding, and local leadership.

By providing clean and accessible water, this grant will give much-needed support to the existing community. With your support we can assist this community sustain and growth in a healthy environment.

**We need you, your club, and district to help raise these funds to change lives.** This project is led by Mitch McKinley with the Rotary Club of Kalispell, Montana in Rotary District 5390. We plan to submit this Global grant in June 2019. Help us transform the lives of people in Guatemala with this project, please! For more information please contact Mitch McKinley at (406) 314-8321 or via email at [nwmtcoalition@gmail.com](mailto:nwmtcoalition@gmail.com). The Rotary Club of Mazatenango is the host club in Guatemala.



Typical residential water well in the community of La Vega and how water is removed from the well. Proposed water tank at La Vega.



## La Vega Project Schedule and Milestones

Item	Responsible Party	Est. Completion Date	Completion Date
Community Assessment	FundAzucar		2014
Water and sanitation design	FundAzucar		2014
Request for Project & visit community	Sustainable Global Coalition, Mazatenango Rotary Club & Engineers without Borders		September-16
Visit Community	Sustainable Global Coalition, Mazatenango Rotary Club & Engineers without Borders		October-17
Visit Community	Guatemalan Engineer & Engineers without Borders		July-18
Draft Global Grant Application	Rotary Club of Kalispell		April-18
Visit Community	Sustainable Global Coalition, Mazatenango Rotary Club & Engineers without Borders	November-18	November-18
Project Fair and visit community	Sustainable Global Coalition, Mazatenango Rotary Club & Engineers without Borders	January-19	January-19
Establish required committees and project governance	Sustainable Global Coalition & Mazatenango Rotary Club	April-19	
Secure project funding	Rotary Club of Kalispell	May-19	
Submit complete Global Grant	Rotary Club of Kalispell	July-19	
CADRE visit	Sustainable Global Coalition, Mazatenango Rotary Club & Engineers without Borders	July-19	
Health, Sanitation, and Governance training	FundAzucar	November-19	
Complete water project, conduct health and maintenance meetings	Sustainable Global Coalition, Mazatenango Rotary Club, Fundazucar & Engineers without Borders	October-20	
CADRE visit	Sustainable Global Coalition, Mazatenango Rotary Club & Engineers without Borders	October-20	
Monitoring trip & Cadre visit	Sustainable Global Coalition, Mazatenango Rotary Club & Engineers without Borders	October-21	

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DIRECCIÓN DE DESARROLLO MUNICIPAL



**Water System Construction**  
COMMUNITY LA VEGA, MAZATENANGO, SUCHITEPÉQUEZ

Guatemala, November 2015

## INDEX

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### Content

INDEX .....	2
LIST OF PLANS .....	3
DESCRIPTION .....	4
1. BACKGROUND .....	4
2. DESCRIPTION OF TECHNICAL VISIT .....	4
2.1. Location.....	4
2.2. Justification of Project.....	6
3. COMMUNITY ANALYSIS.....	6
4. DESCRIPTION OF PROJECT .....	6
4.1 Design Data .....	7
4.2 Design Duration .....	7
4.3 Population.....	7
4.4 Sources.....	7
4.5 Type of system.....	7
4.6 Allotment.....	7
4.7 Average daily consumption.....	8
4.8 Pumping Flow .....	8
4.9 Pumping Period .....	8
4.10 Disinfection .....	8
4.11 Drive Line .....	8
4.12 Distribution Tank or storage.....	8
4.13 Distribution network.....	8
4.14 Control Valves.....	8
4.15 Home Connections.....	9
5. UNIT COSTS .....	9
7. COST/BENEFIT .....	9
ANNEXES .....	10
BUDGET PER LINE .....	11
HYDRAULIC DESIGN MEMORY .....	12
STRUCTURAL DESIGN MEMORY.....	13
SURVEY NOTEBOOK.....	14
OPERATION AND MAINTENANCE MANUAL.....	15
BLUEPRINTS .....	16

## LIST OF PLANS

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DEPARTMENT:	Suchitepéquez
MUNICIPALITY:	Mazatenango
COMMUNITY	La Vega
DATE:	November 2015
DEVELOPER:	Mildred Meza De Díaz
PROJECT:	CONSTRUCTION OF WATER SYSTEM
CODE	2015 - 22

Housing Density Plant	01/08
Plant level Curves	02/08
Pressure Curves plant	03/08
Hydraulic plant	04/08
Hydraulic plant demand	05/08
Home Connection and Counter box	06/08
Detail Valve Box	07/08
Chlorination Booth	08/08

## DESCRIPTION

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### 1. BACKGROUND

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The municipality of Mazatenango, requested FUNDAZUCAR's collaboration to plan the project "Construction of Water System", for the Community of La Vega of said municipality.

A technical visit was made to learn the feasibility of the Project, determining with the information and data obtained that said project is technically feasible, using it as a base to create the present study.

To meet this request, the topographic survey was carried out with the Foundation's team in September of 2015.

### 2. DESCRIPTION OF TECHNICAL VISIT

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La Vega Community does not have a water system, they are supplied by artesian wells that cover the demand of the entire community.

The project includes the drilling of a mechanical well, which will carry the water by pumping to the distribution tank, which must be raised with a tower of 18m and finally will be distributed to each home by the distribution network.

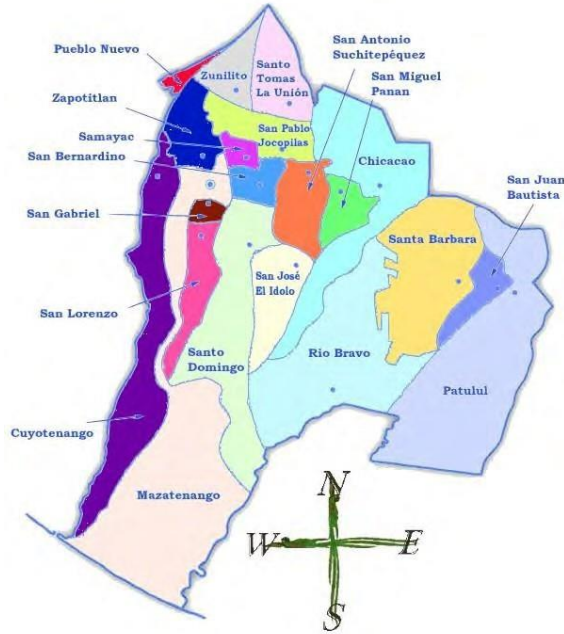
To start planning, the surveying crew that completed the survey required for the design of the construction of the Water System was sent out.

#### 2.1. Location

The municipality of Mazatenango is located in the western central part of the department of Suchitepéquez, and is the departmental capital. It is bounded on the North with San Francisco Zapotitlán and Samayac; to the South with the Pacific Ocean; to the East with Santo Domingo, San Lorenzo, San Gabriel and San Bernardino and to the West with Cuyotenango, all of which are part of the department of Suchitepéquez

It is located at latitude 14° 32' 04" north and 91° 30' 10 west and has an altitude of 375m above sea level. The distance from this departmental capital to the capital city is 160 kilometers.





The La Vega Community is located approximately 2 hours from the municipality of Mazatenango. This community has approximately 305 homes and 1,220 inhabitants. Its geographical coordinates are: 14 ° 11'40.54 "N, 91 ° 35'34.13" W.





## 2.2. Justification of Project

Due to the fact that they currently do not have any system, the community has presented their project before the municipality of Mazatenango, proposing to provide the service, the drilling of a well for the source, pumping and chlorination booth, drive line, elevated distribution tank and distribution network.

## 3. COMMUNITY ANALYSIS

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There is well-defined community, which helps justifying the implementation of a suitable water system. The topography of the community consists of flat slopes, therefore it will be necessary to place a tower 18m tall at the distribution tank to create a better distribution network.

## 4. DESCRIPTION OF PROJECT

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They have land for drilling the well and plan to extract the water by pumping it to an elevated tank. Although the tank would be built within the same terrain and the drive line would be very small, a 160PSI PVC should be used in order to comply with the UNEPAR guidelines in pressures and speeds.

The distribution network will use PVC tubing of 160PSI, with the capacity to distribute the water of the distribution tank to the current and future homes; home connection and counter installation were included to regulate the use of water for current homes.

**It will be the responsibility of members in the local committee to ensure compliance and appropriate use of water of each user, exclusively for domestic use, and punish those who fail to comply or do not pay the fee.**

### 4.1 Design Data

For the design of the water system the following parameters were considered:

TIPO DE ABASTECIMIENTO	BOMBEO		octubre - 2015
Viviendas Actuales (viv)	305	No. Lotes	30
Densidad de Vivienda (hab/viv)	4	No. de Escuelas	1
Población Actual (hab)	1,340	No. de Iglesias	5
Tasa de Crecimiento (%)	3.38	Viviendas Futuras (viv)	702
Periodo de diseño (años)	22	Población Futura (hab)	2,784
Aforo en conjunto (L/s)	5	Caudal Medio Qm (L/s)	3.75
Dotación (L/hab/día)	115	Caudal Máximo Diario - CMD (L/s)	4.502
		Caudal Máximo Horario - CMH (L/s)	7.504
Factor Máximo Diario - FMD	1.2	Tanque Distribucion Calculado (m³)	129.66
Factor Máximo Horario - FMH	2	Deficit de Almacenamiento (m³)	129.66
		Tanque Distribución Recomendado(m³) 12añ	90
% para calcular Vol. en T.D.	40	Tanque Distribución Recomendado(m³) 22añ	40
Tanque de Distribución Existente (m³)	0		

### 4.2 Design Time Frame

A project life of 22 years is estimated, starting in 2016, the year that the system is expected to start operating. This is accounting for 1 year of management and 1 year of execution.

### 4.3 Population

An estimated population rate for urban population of 3.38% was used, according to the growth rate for the municipality according to the INE (National Institute of Statistics).

Year	La Vega	
2016	1,340 Inhabitants	335 Residences
2046	2,784 Inhabitants	702 Residences

### 4.4 Sources

The community will be supplied with water through the drilling of a mechanical well that will be located in the E-1 station, with a ground level of 99.34. According to the design, the minimum necessary capacity should be 5 liters / second (79.25GPM).

### 4.5 Type of System

Because the source is through the drilling of a mechanical well, it will be driven from the well to the distribution tank (elevated + 18m tower) by a pumping system.

### 4.6 Allotment

An allotment of 115 liters / inhab / day (liters per inhabitant per day) was adopted. For the climate, customs of the population and quantity of housing.

### 4.7 Daily Average Consumption

$Q_m = 3.75$  Lts/sec (liters per second).

### 4.8 Pumping Flow

The production of the well must be 6.70 lts/sec (liters per second) or 106.20 gpm (gallons per minute).

### 4.8 Pumping Period

The pumping of the mechanical well to the distribution tank will be 12 hours, driving a flow of 6.70 lts/sec, for which a pump with 15HP power is needed, during the first 12 years. Then it will always be the same power of the pump but in 16.5 hours.

### 4.9 Disinfection

Disinfection is necessary and obligatory to prevent the proliferation of intestinal diseases. A Pentair brand of in-line dosing will be used for chlorine tablets (without electrical current). They will be placed in the inlet of the pipe to the tank, to take advantage of the speed and thus to make a homogeneous mixture.

### 4.10 Drive Line

The drive line will have a length of 59.36 ml (linear meters), with PVC pipes of 10".

### 4.11 Distribution or Storage Tank

The storage or distribution tank will have the capacity to store approximately 90 m<sup>3</sup> and must be elevated due to the topography of the community. Plus an 18m high tower. It will be located at the E-1 station of the topographic survey. It is recommended that after 12 years another elevated tank with a capacity of 40m<sup>3</sup> be constructed to cover all homes. The outlet pipe of the storage tank must be fitted with a pass-through valve to better control the distribution in the system.

### 4.12 Distribution Network

The distribution network will have a length of 7,400.96 ml (linear meters), with PVC pipes of 10", 8", 6", 4", 3", 2 1/2", 2", 1 1/2", 1 1/4" and 1" of 160PSI respectively. Which will drive the Q<sub>HM</sub> (maximum hour flow) of 7.504 lt/sec using FHM = 2 (maximum hour factor). The pipe will be buried in a ditch of 0.60 x 0.80 m in places where no vehicle passes, otherwise it must be buried 1.20 m, to protect the pipe.

### 4.13 Control Valves

For control and sectorization of the distribution network, whether for repairs, or adding new home connections, it is intended to place 7 control valves between the stations 5-16, 6-47, 9-42, 9-8, 16-22, 49-53 and 42-63.



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**4.14 Home Connections**

There will be 305 home connections and cover 100% of the current housing of the sectors to be catered for. Having houses, schools and churches.

**5. UNIT COSTS**

	Descripción	Cantidad	Unidad	Precio/unidad	TOTAL RENGLÓN
I )	SISTEMA BOMBEO	1	Unidad	Q 62,560.00	Q 62,560.00
II )	DESINFECCIÓN	1	Unidad	Q 12,500.00	Q 12,500.00
III )	CASETA DE BOMBEO Y DESINFECCIÓN	1	Unidad	Q 31,129.85	Q 31,129.85
IV )	LÍNEA DE IMPULSIÓN	60	ml	Q 1,029.77	Q 61,786.00
V )	TANQUE DE ELEVADO DE 90M3	1	Unidad	Q 752,099.94	Q 752,099.94
VI )	LÍNEA DE DISTRIBUCIÓN	7,302	ml	Q 106.06	Q 774,419.30
VII )	CAJAS PARA VÁLVULAS	7	U	Q 2,289.16	Q 16,024.15
VIII )	CONEXIONES DOMICILIARES	305	Unidad	Q 775.83	Q 236,628.60
					<b>Q 1,947,147.84</b>

The total direct cost of the project amounts to about one million nine hundred and forty-seven thousand one hundred and forty-seven quetzals with 84/100. (Q.1,947,147.84) in which only the direct expenses of the work are included. This cost does not include technical supervision, field administration, I.G.S.S. quota, employment benefits, etc.

**6. COST/ BENEFIT**

The total cost of the project divided by the number of home connections is equal to six thousand three hundred and eighty-four quetzals with 09/100 (Q.6,384.09).

# APPENDIX

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## DESIGN BASES



### WATER SYSTEM CONSTRUCTION Community La Vega, Mazatenango, Suchitepéquez

October-2015

#### TYPE OF SUPPLY PUMPING

Current Housing (VIV)	305
Housing density (HAB/Viv)	4
Current population (hab)	1,340
Growth rate (%)	3.38
Design Period (years)	22
Overall capacity (L/s)	5
Endowment (L/HAB/day)	115

No. Lots	30
No. of Schools	1
No. of Churches	5
Future Housing (VIV)	702
Future population (hab)	2,784
Qm average flow (L/s)	3.75
Maximum Flow Daily-CMD (L/s)	4.502
Maximum flow Time-CMH (L/s)	7.504
Calculated distribution Tank (m <sup>3</sup> )	129.66
Storage Deficit (m <sup>3</sup> )	129.66
Recommended distribution tank (m <sup>3</sup> ) 12 years	90
Recommended distribution tank (m <sup>3</sup> ) 22years	40

Factor Maximum Daily – FMD	1.2
Factor Maximum Hourly – FMH	2
% for calculating Volume of Distribution Tank	40
Existing Distribution Tank (m <sup>3</sup> )	0





## WATER SYSTEM CONSTRUCTION

Community La Vega, Mazatenango, Suchitepéquez



### TOTAL DYNAMIC LOAD

October-2015

PUMPING DATA	
Design period (years) pump	22.00
Future population (hab) at 22 years	2,784
Q Medium to 22 years	3.84
Q dia Max to 22 years	4.61
Pumping hours	16.50
Pumping Flow Qb in (L/s)	6.70
Pumping Flow Qb in (Gal/min)	106.20
Pipe Speed Impulse	0.70
Pipe Speed Well	0.72
Suction Tank *	175.13
TOPOGRAPHICAL DATA	
Natural terrain Elevation	98.49
Elevation arrival floor Tank Dist.	116.49
Tank useful Height	6.00
N.E. Depth (m)	25.49
Depth N.D. (m)	25.49
Long. Driving Line (m)	24.00

DYNAMIC LOAD LINE IMPULSE	
Length Pipe Drive-Vertical (MT)	24.00
Length Drive-Horizontal tubing (MT)	24.00
Total Length Drive	48.00
H-W coefficient pipe Impulse	90.00
Speed Piping Drive impulse (m/s)	0.70
Lost Piping Drive (MT)	0.53
Minor K-Lost constants	5.10
Singular losses Pipe Drive (MT)	0.13
Dynamic load Impulse Line (MT)	24.68
DYNAMIC LOAD IMPULSE LINE (MT)	
Length Suction-Vertical tubing	73.00
H-W coefficient tubing suction HG TM	90.00
Speed Pipe Drive Suction	0.72
Leaking suction pipe	0.86
Minor K-Lost constants	12.81
Singular losses pipe suction	0.34
Dynamic load Suction Line (MT)	74.20
<b>TOTAL DYNAMIC LOAD</b>	<b>100.88</b>

TYPE OF PIPE IN IMPULSE	HG
BS-1387, LIGHT	
	TL
Diameter (v = 0.6 m/s)	4.70
Diameter (v = 2.0 m/s)	2.57
Diametro economico	3.81
Diameter to be used	4.00
Inside diameter to be used	4.36
Pipe thickness	0.14

HAMMER STRIKE CALCULATION	
Modulus of elasticity impulse (kg/cm <sup>2</sup> )	2050000
Modulus of elasticity well (kg/cm <sup>2</sup> )	2050000
Celerity (m/s) Impulse	1242.92
Celerity (m/s) Well	1272.12
Over pressure by water hammer (M.W.C.) I	88.32
Over pressure by water hammer (M.W.C.) P	93.25
Check Pipe Impulse	116.17
Check pipe Well	194.14
Critical Time Closed Valves	0.08

TYPE OF PIPE IN WELL	HG
BS-1387, MEDIUM	
	TM
Diameter (v = 0.6 m/s)	4.70
Diameter (v = 2.0 m/s)	2.57
Economic diameter	3.81
Diameter to be used	4.00
Inside diameter to be used	4.2876
Pipe thickness	0.16

POTENICA PUMP	
Pump efficiency	0.60
Pump Power (KW)	14.82
Recommended pump Power (KW)	15.00
PDT with recommended Power (M.W.C.)	102.09
Recommended pump power 12 years (KW)	15.00
At age 12, pumping hours	12.00
INITIAL PIEZOMETRIC DIMENSION	127.57

# Line Item Budget



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# BUDGET

**DEPARTMENT:** Suchitepéquez  
**MUNICIPALITY:** Mazatenango  
**COMMUNITY:** La Vega  
**DESIGN:** Mildred Meza  
**QUANTIFY:** Mildred Meza  
**DATE:** November 2015  
**PROJECT:** PI-2015-22



## WATER SYSTEM CONSTRUCTION, COMMUNITY OF LA VEGA, MAZATENANGO, SUCHITEPÉQUEZ

	Description	Quantity	Unit	Unit Price	Sub-total	Total Sub-Line	TOTAL LINE
<b>I )</b>	<b>PUMPING SYSTEM</b>	<b>1</b>	<b>U</b>	<b>Q 62,560.00</b>			<b>Q 62,560.00</b>
	A ) Labor					Q 4,700.00	
	a.1 Assembly and assembling of boards, electrical connection and start-up		Global		Q 1,000.00		
	a.2 Crane Service for Well pump installation		Global		Q 3,500.00		
	a.3 Installation vulcanized Joint and moorings		Global		Q 200.00		
	B ) Equipment and Accessories					Q 56,860.00	
	b.1 Model 7T30-350 5-stage submersible pump Warson Franklin Submersible Motor Bronze 15HP/460V/3PH/3450RPM/60HZ.	1	unit		Q 27,560.00		
	b.2 Metal cabinet with key for electric boards	1	unit		Q 900.00		
	b.3 3X70 Amp/460V safety switch. Industrial type	1	unit		Q 1,000.00		
	b.4 60 amp./460V. Tripolar Magnetic Starter	1	unit		Q 1,600.00		
	b.5 Phase Failure Protector	1	unit		Q 1,200.00		
	b.6 600v three-phase line arrester	1	unit		Q 400.00		
	b.7 ON-OFF Selector and pilot light	1	unit		Q 200.00		
	b.8 300 feet Submersible Cable # 6x3 Double Lining		Global		Q 4,300.00		
	b.9 300 feet Piezometer - 1/4"		Global		Q 350.00		
	b.10 14 - 4" TM Galvanized Tubes		Global		Q 15,600.00		
	b.11 8" x 4" Sanitary Seal	1	unit		Q 250.00		
	b.12 4" Support Collar	1	unit		Q 400.00		
	b.13 4" R.V. Flomatic check valve	1	unit		Q 1,600.00		
	b.14 4" Unloading Manifold with Universal Union	1	unit		Q 600.00		
	b.15 6" Engine Cooling case	1	unit		Q 600.00		
	b.16 Electrical Installation Accessories No more than 6 mts.		Global		Q 300.00		
	C ) Transport					Q 1,000.00	
	<b>Description</b>	<b>Quantity</b>	<b>unit</b>	<b>Price/unit</b>	<b>Sub-total</b>	<b>Total Sub-Line</b>	<b>TOTAL LINE</b>
<b>II )</b>	<b>DISINFECTION</b>	<b>1</b>	<b>U</b>	<b>Q 12,500.00</b>			<b>Q 12,500.00</b>
	a.1 Automatic Chlorination system that includes an electronic dosing machine (brand Pulsatron) should C Plus series of 30 GPF and 80 PSI, a 220v/110v current converter for automatic start-up of the Doser, a tank of 60 gallons type polyethylene barrel, 60 gallons Chlorine type "B" 5%, 1 kit for measuring chlorine and ph, installation, consulting and design.	1	unit	Q 12,500.00	Q 12,500.00	Q 12,500.00	
	<b>Description</b>	<b>Quantity</b>	<b>unit</b>	<b>Price/unit</b>	<b>Sub-total</b>	<b>Total Sub-Line</b>	<b>TOTAL LINE</b>
<b>III )</b>	<b>PUMPING AND DISINFECTING BOOTH</b>	<b>1</b>	<b>U</b>	<b>Q 31,129.85</b>			<b>Q 31,129.85</b>
	A ) Labor					Q 13,137.85	
	a.1 Stroke and Staked	11.9	ml	Q 5.00	Q 59.50		
	a.2 Leveling	8.85	m2	Q 5.00	Q 44.25		
	a.3 Raised Block wall	27.3	m2	Q 50.00	Q 1,365.00		
	a.4 Foundry Foundation Run	11.9	ml	Q 50.00	Q 595.00		
	a.5 Cast iron columns	28.7	ml	Q 50.00	Q 1,435.00		
	a.6 Casting screeds	87	ml	Q 50.00	Q 4,350.00		
	a.7 Forms	115.7	ml	Q 15.00	Q 1,735.50		
	a.8 Formed walls	27.3	m2	Q 15.00	Q 409.50		
	a.9 Stripping	115.7	ml	Q 5.00	Q 578.50		
	a.10 Stripping Walls	27.3	m2	Q 5.00	Q 136.50		
	a.11 Excavation (Hard terrain)	2.8	m3	Q 40.00	Q 112.00		
	a.12 Reinforcing	271.7	ml	Q 3.00	Q 815.10		
	a.13 Make Stirrups No. 2 (Ø ¼")	515	unit	Q 1.00	Q 515.00		
	a.14 Link No. 2 (Ø ¼")	637	unit	Q 1.00	Q 637.00		
	a.15 Sheet placement	8	unit	Q 25.00	Q 200.00		
	a.16 Window Placement	1	unit	Q 100.00	Q 100.00		
	a.17 Metal Door Placement	1	unit	Q 50.00	Q 50.00		

# BUDGET

**DEPARTMENT:** Suchitepéquez  
**MUNICIPALITY:** Mazatenango  
**COMMUNITY:** La Vega  
**DESIGN:** Mildred Meza  
**QUANTIFY:** Mildred Meza  
**DATE:** November 2015  
**PROJECT:** PI-2015-22



## WATER SYSTEM CONSTRUCTION, COMMUNITY OF LA VEGA, MAZATENANGO, SUCHITEPÉQUEZ

B ) Building materials						Q 17,242.00	
b.1	River Sand	2.75	m3	Q 180.00	Q 495.00		
b.2	Gravel	1.75	m3	Q 200.00	Q 350.00		
b.3	Select Material	1	m3	Q 200.00	Q 200.00		
b.4	Block 0.15 X 0.20 X 0.40	341	unit	Q 9.00	Q 3,069.00		
b.5	Grey Cement	48	sacos	Q 80.00	Q 3,840.00		
b.6	Iron No. 2 (Ø ¼")	2	qq	Q 500.00	Q 1,000.00		
b.7	Iron No. 3 (Ø 3/8")	4	qq	Q 500.00	Q 2,000.00		
b.8	Tie Wire C-18	38	lb	Q 7.00	Q 266.00		
b.9	Long nail. 1 1/2" and 2 1/2"	6	lb	Q 7.00	Q 42.00		
b.10	Waterfron 2" x 4" x 12'	3	unit	Q 350.00	Q 1,050.00		
b.11	Blade P-10 of 6'	10	unit	Q 155.00	Q 1,550.00		
b.12	Screw 5½ "X ¼ " P/anchor Laminate	38	unit	Q 5.00	Q 190.00		
b.13	Table 1' x 6' x ¾"	32	unit	Q 45.00	Q 1,440.00		
b.14	Metal Door	1	unit	Q 1,100.00	Q 1,100.00		
b.15	Window	1	unit	Q 650.00	Q 650.00		
C ) Transport						Q 750.00	
<b>Description</b>						<b>Quantity</b>	<b>unit</b>
<b>Description</b>						<b>Price/unit</b>	<b>Sub-total</b>
<b>Description</b>						<b>Total Sub-Line</b>	<b>TOTAL LINE</b>
<b>IV )</b>	<b>DRIVE LINE</b>	<b>60</b>	<b>ml</b>	<b>Q 1,029.77</b>		<b>Q 61,786.00</b>	
A ) Labor						Q 2,849.00	
a.1	Cleaning	30	m2	Q 5.00	Q 150.00		
a.2	Stroke and Staked	60	ml	Q 5.00	Q 300.00		
a.3	Excavation in soft and hard terrain	45	m3	Q 45.00	Q 2,025.00		
a.4	Filling	33	m3	Q 3.00	Q 99.00		
a.5	PVC Pipe and Accessories installation	10	unit	Q 25.00	Q 250.00		
a.6	Hydraulic Installation	1	Global	Q 25.00	Q 25.00		
B ) Pipe and Accessories						Q 53,937.00	
b.1	Pipe Ø 10" PVC 160 PSI	10	Tubes	Q 4,007.00	Q 40,070.00		
b.2	PVC Elbow Ø10"x45°	1	unit	Q 5,439.90	Q 5,439.90		
b.3	PVC Elbow Ø10"x90°	1	unit	Q 8,427.10	Q 8,427.10		
C ) Transport						Q 5,000.00	
<b>Description</b>						<b>Quantity</b>	<b>unit</b>
<b>Description</b>						<b>Price/unit</b>	<b>Sub-total</b>
<b>Description</b>						<b>Total Sub-Line</b>	<b>TOTAL LINE</b>
<b>V )</b>	<b>100M3 High Tank</b>	<b>1</b>	<b>U</b>	<b>Q 752,099.94</b>		<b>Q 752,099.94</b>	
(High metallic + four concrete bases + 18m tower)							
<b>Description</b>						<b>Quantity</b>	<b>unit</b>
<b>Description</b>						<b>Price/unit</b>	<b>Sub-total</b>
<b>Description</b>						<b>Total Sub-Line</b>	<b>TOTAL LINE</b>
<b>VI )</b>	<b>DISTRIBUTION LINE</b>	<b>7,302</b>	<b>ml</b>	<b>Q 106.06</b>		<b>Q 774,419.30</b>	
A ) Labor						Q 343,705.80	
a.1	Cleaning	3,651	m2	Q 5.00	Q 18,255.00		
a.2	Stroke and Staked	7,302	ml	Q 5.00	Q 36,510.00		
a.3	Excavation in soft and hard terrain	5,476.50	m3	Q 45.00	Q 246,442.50		
a.4	Filling	4,016.10	m3	Q 3.00	Q 12,048.30		
a.5	Installation PVC Pipe and fittings	1,217	unit	Q 25.00	Q 30,425.00		
a.6	Hydraulic Installation	1	Global	Q 25.00	Q 25.00		
B ) Piping and Accessories						Q 424,713.50	
b.1	Pipe Ø 1" PVC 160 PSI	207	Tubes	Q 71.00	Q 14,697.00		
b.2	Pipe Ø 1 1/4" PVC 160 PSI	38	Tubes	Q 90.00	Q 3,420.00		
b.3	Pipe Ø 1 1/2" PVC 160 PSI	385	Tubes	Q 125.00	Q 48,125.00		
b.4	Pipe Ø 2" PVC 160 PSI	178	Tubes	Q 182.00	Q 32,396.00		

## BUDGET

DEPARTMENT: Suchitepéquez  
 MUNICIPALITY: Mazatenango  
 COMMUNITY: La Vega  
 DESIGN: Mildred Meza  
 QUANTIFY: Mildred Meza  
 DATE: November 2015  
 PROJECT: PI-2015-22



### WATER SYSTEM CONSTRUCTION, COMMUNITY OF LA VEGA, MAZATENANGO, SUCHITEPÉQUEZ

b.5	Pipe Ø 2 1/2" PVC 160 PSI	64	Tubes	Q	269.00	Q 17,216.00	
b.6	Pipe Ø 3" PVC 160 PSI	165	Tubes	Q	397.00	Q 65,505.00	
b.7	Pipe Ø 4" PVC 160 PSI	151	Tubes	Q	655.00	Q 98,905.00	
b.8	Pipe Ø 6" PVC 160 PSI	29	Tubes	Q	1,420.00	Q 41,180.00	
b.9	Pipe Ø 8" PVC 160 PSI	4	Tubes	Q	2,426.00	Q 9,704.00	
b.10	Pipe Ø 10" PVC 160 PSI	13	Tubes	Q	4,007.00	Q 52,091.00	
b.11	Gate valve Ø 3" BR	3	unit	Q	730.00	Q 2,190.00	
b.12	Gate Valve Ø 4" BR	3	unit	Q	1,130.00	Q 3,390.00	
b.13	PVC Elbow Ø10"x45°	1	unit	Q	5,439.90	Q 5,439.90	
b.14	PVC Elbow Ø1"x90°	1	unit	Q	7.30	Q 7.30	
b.15	PVC Elbow Ø1 ½"x90°	3	unit	Q	10.20	Q 30.60	
b.16	PVC Elbow Ø3"x90°	1	unit	Q	83.60	Q 83.60	
b.17	PVC Elbow Ø4"x90°	1	unit	Q	98.20	Q 98.20	
b.18	Cruz PVC Ø1½"	5	unit	Q	48.20	Q 241.00	
b.19	Cruz PVC Ø2"	1	unit	Q	69.90	Q 69.90	
b.20	Cruz PVC Ø2½"	2	unit	Q	204.40	Q 408.80	
b.21	Cruz PVC Ø3"	1	unit	Q	259.80	Q 259.80	
b.22	Cruz PVC Ø4"	2	unit	Q	384.20	Q 768.40	
b.23	Cruz PVC Ø8"	1	unit	Q	611.00	Q 611.00	
b.24	PVC Reducer Ø1½"x1"	9	unit	Q	8.20	Q 73.80	
b.25	PVC Reducer Ø2"x1"	1	unit	Q	11.60	Q 11.60	
b.26	PVC Reducer Ø2"x1½"	9	unit	Q	11.60	Q 104.40	
b.27	PVC Reducer Ø2½"x1¼"	1	unit	Q	37.60	Q 37.60	
b.28	PVC Reducer Ø2½"x1½"	6	unit	Q	37.60	Q 225.60	
b.29	PVC Reducer Ø2½"x2"	5	unit	Q	37.60	Q 188.00	
b.30	PVC Reducer Ø3"x1"	1	unit	Q	53.70	Q 53.70	
b.31	PVC Reducer Ø3"x1½"	1	unit	Q	53.70	Q 53.70	
b.32	PVC Reducer Ø3"x2"	4	unit	Q	53.70	Q 214.80	
b.33	PVC Reducer Ø3"x2½"	4	unit	Q	53.70	Q 214.80	
b.34	PVC Reducer Ø4"x2"	1	unit	Q	85.70	Q 85.70	
b.35	PVC Reducer Ø4"x2½"	1	unit	Q	85.70	Q 85.70	
b.36	PVC Reducer Ø4"x3"	4	unit	Q	85.70	Q 342.80	
b.37	PVC Reducer Ø6"x3"	1	unit	Q	285.40	Q 285.40	
b.38	PVC Reducer Ø6"x4"	2	unit	Q	285.40	Q 570.80	
b.39	PVC Reducer Ø8"x4"	1	unit	Q	1,002.20	Q 1,002.20	
b.40	PVC Reducer Ø8"x6"	2	unit	Q	1,002.20	Q 2,004.40	
b.41	PVC Reducer Ø10"x6"	1	unit	Q	4,325.40	Q 4,325.40	
b.42	PVC Reducer Ø10"x8"	1	unit	Q	4,325.40	Q 4,325.40	
b.43	PVC Cap Ø 1"	8	unit	Q	4.90	Q 39.20	
b.44	PVC Cap Ø 1¼"	1	unit	Q	5.80	Q 5.80	
b.45	PVC Cap Ø 1½"	1	unit	Q	7.00	Q 7.00	
b.46	Tee PVC Ø1"	3	unit	Q	7.30	Q 21.90	
b.47	Tee PVC Ø1½"	10	unit	Q	20.10	Q 201.00	
b.48	Tee PVC Ø2"	5	unit	Q	22.10	Q 110.50	
b.49	Tee PVC Ø2½"	1	unit	Q	74.60	Q 74.60	
b.50	Tee PVC Ø3"	8	unit	Q	91.30	Q 730.40	
b.51	Tee PVC Ø4"	4	unit	Q	151.70	Q 606.80	
b.52	Tee PVC Ø10"	1	unit	Q	10,597.00	Q 10,597.00	
b.53	Tee Reducer PVC Ø2½"x1½"	1	unit	Q	88.00	Q 88.00	
b.54	Tee Reducer PVC Ø6"x4"	1	unit	Q	1,188.00	Q 1,188.00	
C ) Transport							Q 6,000.00
Description	Quantity	unit	Price/unit	Sub-total	Total Sub-Line	TOTAL LINE	
<b>VII ) VALVE BOXES</b>	<b>7</b>	<b>U</b>	<b>Q 2,289.16</b>			<b>Q 16,024.15</b>	
A ) Labor							Q 3,619.95
a.1	Cleaning	15.75	m2	Q 5.00	Q 78.75		
a.2	Stroke and Staked	15.75	m2	Q 5.00	Q 78.75		
a.3	Leveling	15.75	m2	Q 5.00	Q 78.75		
a.4	Excavation + removal of surplus	6.93	m3	Q 50.00	Q 346.50		
a.5	Casting	2.10	m3	Q 500.00	Q 1,050.00		
a.6	Forming	17.92	m2	Q 15.00	Q 268.80		
a.7	Stripping	17.92	m2	Q 5.00	Q 89.60		
a.8	Assembly No. 3	1548	octavos	Q 0.60	Q 928.80		
a.9	Hydraulic Installation	7	unit	Q 100.00	Q 700.00		

# BUDGET

**DEPARTMENT:** Suchitepéquez  
**MUNICIPALITY:** Mazatenango  
**COMMUNITY:** La Vega  
**DESIGN:** Mildred Meza  
**QUANTIFY:** Mildred Meza  
**DATE:** November 2015  
**PROJECT:** PI-2015-22



## WATER SYSTEM CONSTRUCTION, COMMUNITY OF LA VEGA, MAZATENANGO, SUCHITEPÉQUEZ

B ) Pipe and Accessories						Q 1,400.00	
b.1	Stainless steel chain 3/16"	3.5	ml	Q	30.00	Q 105.00	
b.2	Válvula de Pila Ø 2"	7	unit	Q	60.00	Q 420.00	
b.3	Outdoor padlock	7	unit	Q	125.00	Q 875.00	
C ) Building materials						Q 9,004.20	
c.1	Cement	18	sacos	Q	80.00	Q 1,440.00	
c.2	River Sand	0.92	m3	Q	160.00	Q 147.84	
c.3	Gravel	1.85	m3	Q	200.00	Q 369.60	
c.4	Table 10"x1"x1"	28	unit	Q	75.00	Q 2,100.00	
c.5	Parales 8"x3"x3"	42	unit	Q	50.00	Q 2,100.00	
c.6	4" Nail	17.82	lb	Q	7.00	Q 124.73	
c.7	Iron No. 3	86	varilla	Q	30.08	Q 2,586.88	
c.8	Tie Wire	19.31	lb	Q	7.00	Q 135.15	
D ) Transport						Q 2,000.00	
<b>Description</b>		<b>Quantity</b>	<b>unit</b>		<b>Price/unit</b>	<b>Sub-total</b>	<b>Total Sub-Line</b>
<b>VIII ) HOME CONNECTIONS</b>		<b>305</b>	<b>U</b>		<b>Q 775.83</b>		<b>Q 236,628.60</b>
A ) Labor						Q 20,716.00	
a.1	Excavation (Hard terrain)	878.40	m3	Q	12.00	Q 10,540.80	
a.2	Filling	815.04	m3	Q	5.00	Q 4,075.20	
a.3	Installation connection	305	U	Q	5.00	Q 1,525.00	
a.4	Installation Counter Box	305	U	Q	15.00	Q 4,575.00	
B ) Pipe and Accessories						Q 214,412.60	
b.1	Pipe Ø ½" PVC clase 315 psi	305	Tubes	Q	41.00	Q 12,505.00	
b.2	Counter Ø ½" "Pacific Water Meters"	305	U	Q	346.34	Q 105,633.70	
b.3	Counter Boxes	305	U	Q	90.00	Q 27,450.00	
b.4	Globe valve Ø ½" Br	305	U	Q	45.00	Q 13,725.00	
b.5	Stopcock Ø ½" Br	305	U	Q	30.00	Q 9,150.00	
b.6	Check Valve Ø ½" Br	305	U	Q	60.00	Q 18,300.00	
b.7	Male adaptor Ø ½" PVC	1830	U	Q	1.61	Q 2,946.30	
b.8	90 ° X Elbow diam. ½" PVC	305	U	Q	3.00	Q 915.00	
b.9	Home Clamp PVC 2" Ø x ½"	40	unit	Q	118.70	Q 4,748.00	
b.11	Home Clamp PVC 3" Ø x ½"	41	unit	Q	162.30	Q 6,654.30	
b.12	Home Clamp PVC 4" Ø x ½"	45	unit	Q	167.70	Q 7,546.50	
b.13	Home Clamp PVC 6" Ø x ½"	4	unit	Q	383.30	Q 1,533.20	
b.14	Home Clamp PVC 8" Ø x ½"	1	unit	Q	504.00	Q 504.00	
b.16	Narrow bushing Smooth PVC Ø 1" x ½"	64	unit	Q	4.00	Q 256.00	
b.17	Narrow bushing Smooth PVC Ø 1¼" x ½"	10	unit	Q	7.50	Q 75.00	
b.18	Narrow bushing Smooth PVC Ø 1½" x ½"	91	unit	Q	8.20	Q 746.20	
b.19	Narrow bushing Smooth PVC Ø 2½" x ½"	9	unit	Q	37.60	Q 338.40	
b.20	Narrow bushing Smooth PVC Ø10" x 8"	1	unit	Q	4,325.40		
b.21	Solvent Cement	3	Galón	Q	462.00	Q 1,386.00	
C ) Transport						Q 1,500.00	

**TOTAL DIRECT COST**

**Q 1,947,147.84**



# BUDGET SUMMARY

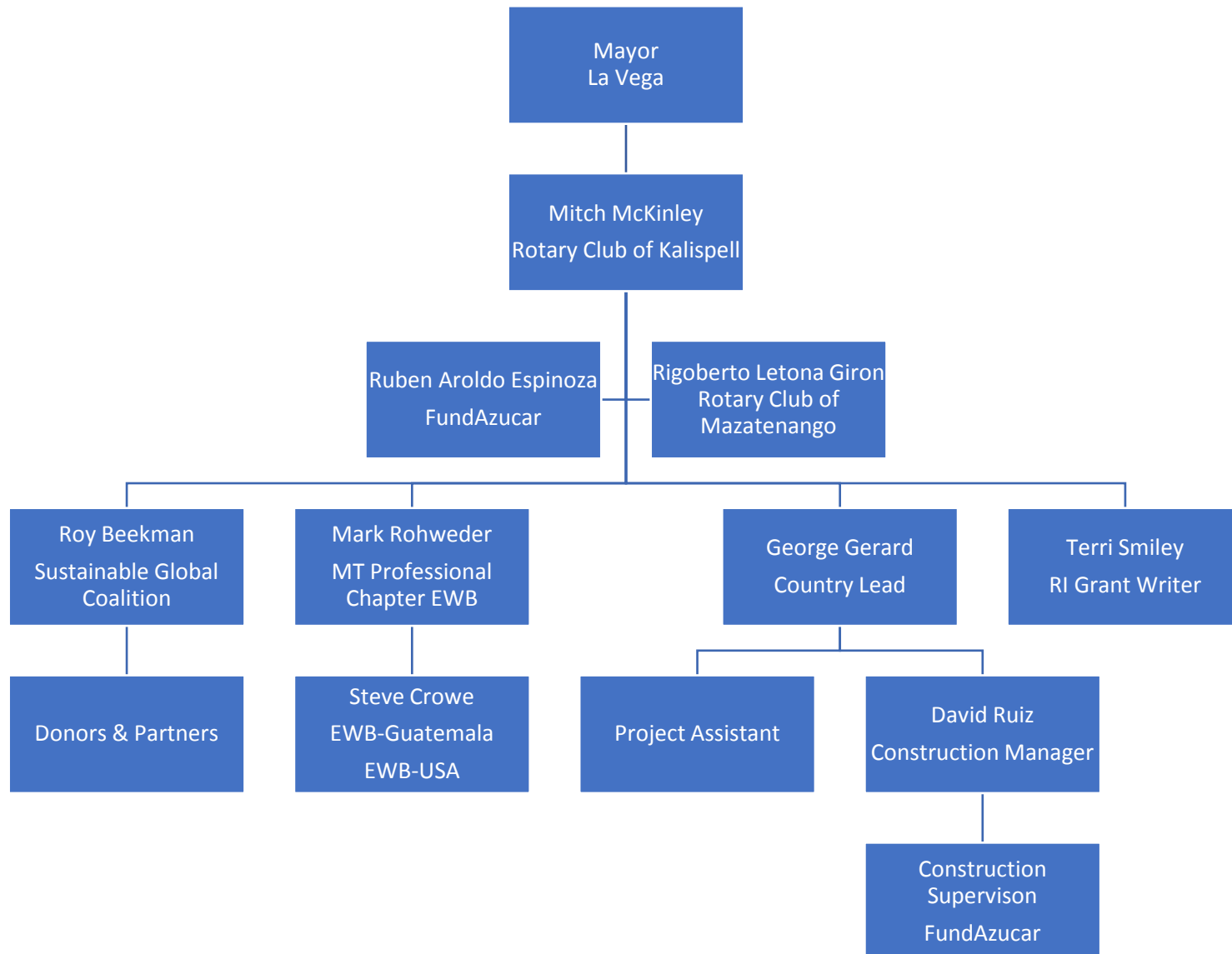
DEPARTAMENT: Suchitepéquez  
 MUNICIPALITY: Mazatenango  
 COMMUNITY: La Vega  
 DESIGN: Mildred Meza  
 QUANTITY: Mildred Meza  
 DATE: Noviembre 2015  
 PROJECT: PI-2015-22



PROJECT:  
 WATER SYSTEM CONSTRUCTION, COMMUNITY OF LA VEGA, MAZATENANGO, SUCHITEPÉQUEZ

Description	Quantity	Price/unit	TOTAL LINE
<b>I ) PUMPING SYSTEM</b>	<b>1</b>	<b>U</b>	<b>Q62,560.00</b>
A ) Labor		Q4,700.00	
B ) Equipment and Accessories		Q56,860.00	
C ) Transport		Q1,000.00	
<b>II ) DISINFECTION</b>	<b>1</b>	<b>U</b>	<b>Q12,500.00</b>
Automatic Chlorification system that includes an electronic dosing machine (brand Pulsatron) should C Plus series of 30 GPF and 80 PSI, a 220v/110v current converter for automatic start-up of the Doser, a tank of 60 gallons type polyethylene barrel, 60 gallons Chlorine type "B " 5%, 1 kit for measuring chlorine and ph, installation, consulting and design.		Q12,500.00	
<b>III ) PUMPING AND DISINFECTION BOOTH</b>	<b>1</b>	<b>U</b>	<b>Q31,129.85</b>
A ) Labor		Q13,137.85	
B ) Building materials		Q17,242.00	
C ) Transport		Q750.00	
<b>IV ) DRIVE LINE</b>	<b>60</b>	<b>ml</b>	<b>Q61,786.00</b>
A ) Labor		Q2,849.00	
B ) Pipe and Accessories		Q53,937.00	
C ) Transport		Q5,000.00	
<b>V ) 100M3 HIGH TANK</b>	<b>1</b>	<b>U</b>	<b>Q752,099.94</b>
(High metallic + four concrete bases + 18m tower)		Q752,099.94	
<b>VI ) DISTRIBUTION LINE</b>	<b>7,302</b>	<b>ml</b>	<b>Q774,419.30</b>
A ) Labor		Q343,705.80	
B ) Pipe and Accessories		Q424,713.50	
C ) Transport		Q6,000.00	
<b>VII ) VALVE BOXES</b>	<b>7</b>	<b>U</b>	<b>Q16,024.15</b>
A ) Labor		Q3,619.95	
B ) Pipe and Accessories		Q1,400.00	
C ) Building materials		Q9,004.20	
D ) Transport		Q2,000.00	
<b>VIII ) HOMECONNECTIONS</b>	<b>305</b>	<b>U</b>	<b>Q236,628.60</b>
A ) Labor		Q20,716.00	
B ) Pipe and Accessories		Q214,412.60	
C ) Transport		Q1,500.00	
<b>TOTAL DIRECT COST</b>			<b>Q1,947,147.84</b>

# LA VEGA PROJECT ORGANIZATIONAL CHART AND ROLES



# LA VEGA PROJECT ORGANIZATIONAL CHART AND ROLES

## Proposed Roles

### Community of La Vega

- Create committees and meet committee requirements as set forth by Rotary International under the Global Grant
- Provide monetary and/or in-kind donations of materials and labor.
- Provide timely information and updates to Fundazucar and the Rotary Club of Mazatenango as the project progresses. The information and updates are vital to successfully implement the project and meet Global Grant requirements.

### Rotary Club of Kalispell

- Project lead
- Coordinate between all partners
- Submit Global Grant
- Administer Global Grant
- Fundraise

### FundAzucar

- Provide training to the community of La Vega on Governance and Health & Hygiene
- Supervise Onsite Construction: visit site regularly to observe and answer questions and provide updates on the progress.
- Assist community create committees required by the Global Grant

### Rotary Club of Mazatenango

- Administration and oversight of project funds once deposited in Guatemalan Bank.
- Communicate regularly with the community of La Vega and help provide required information for the Global Grant application and administration of the grant.
- Logistical support to partners (Rotary Clubs) before, during, and after construction.
- Monetary support

### Sustainable Global Coalition

- Monetary support
- Logistical support from membership to manage partners and donors
- Fundraise

# LA VEGA PROJECT ORGANIZATIONAL CHART AND ROLES

- Assist in managing partners and donors

## Engineers without Borders (EWB): Montana Professional Chapter and Guatemalan EWB office

- Engineering plan review
- Engineering support and guidance during the design, construction, and operation of the water system
- Logistical and material support

## Country Lead

- Provide logistical support
- Coordination with local partners

## Project Assistant

- In-country person assisting with pre-construction requirements of the global grant
- Spanish-English translator

## Construction Manager

- In-country engineer: provide review and guidance during design, construction, and operation of the water system
- Construction management during major milestones such as initiation of water well drilling, operational start-up, layout
- Verification of purchased materials, quantities, and prices.
- Assist in gathering required information for the administration of the global grant

## Rotary International Grant Writer

- Assist the Rotary Club of Kalispell write and submit a global grant application



# LA VEGA WATER PROJECT DONOR COMMITMENT FORM

Contributions can also be made at [[facebook page](#)]

## 1. DONOR OF CONTRIBUTION

Type of Donor (Check one):  Individual  Rotary club  Rotaract/Interact club  District  Business

Charitable organization/Foundation  Other: \_\_\_\_\_

Name: \_\_\_\_\_ Donor ID: \_\_\_\_\_

Club Name: \_\_\_\_\_ Club No.: \_\_\_\_\_ District No.: \_\_\_\_\_

Billing Address: \_\_\_\_\_ City: \_\_\_\_\_ State/Province: \_\_\_\_\_

Country: \_\_\_\_\_ Postal Code: \_\_\_\_\_

Daytime Phone: \_\_\_\_\_ Email Address: \_\_\_\_\_

## 2. DESIGNATION/PURPOSE:

Approved Foundation grant #1872020

## 3. COMMITMENT AMOUNT

Amount of contribution \_\_\_\_\_ Currency \_\_\_\_\_

## 4. INDIVIDUAL COMPLETING THIS FORM

Signature: \_\_\_\_\_

Please mail or email this form.

### Mail:

Flathead Rotary Community Foundation

PO Box 481

Kalispell, MT 59903

**Email:** [nwmtcoalition@gmail.com](mailto:nwmtcoalition@gmail.com).

For more information or questions regarding this form, please contact Mitch McKinley at (406) 314-8321 or Mark Rohweder at (406) 890-1193.