



Subdirección de Producción

## ANÁLISIS FÍSICO-QUÍMICOS DEL AGUA EN FUENTES DE ABASTECIMIENTO

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*Datos históricos 2011-2016*

*Septiembre 2016*

## DATOS HISTÓRICOS DE ANÁLISIS FÍSICO QUÍMICOS DEL AGUA EN FUENTES DE ABASTECIMIENTO.

Los análisis Físico –Químicos y Bacteriológicos realizados por el OOAPAS para dar atención al abastecimiento de agua potable están indicados en la norma NOM-127-SSA1-1994 y se consideran los siguientes parámetros:

1. Cloro Residual
2. Dureza Total
3. Dureza de Calcio
4. Dureza de Magnesio
5. Sulfatos
6. Bicarbonatos
7. Sodio

### Cloro Residual

Este parámetro permite asegurar la inocuidad del agua potable que se entrega a los usuarios del servicio, la concentración en el agua potable de la red de distribución en Morelia oscila entre 0.2 – 1.5 mg/L. Para verificar lo anterior el OOAPAS monitorea su contenido en la red de agua de cada fuente de abastecimiento.

### Dureza Total

La norma NOM-127-SSA1-1994 señala para la dureza total en el agua un límite máximo permisible de 500 mg/L y en el caso de OOAPAS el valor máximo registrado en los análisis químicos realizados en las fuentes subterráneas durante el periodo 2011 a 2016, ha sido de **427.0** mg/L; ver tabla 1.

Tabla 1. Valores de la Dureza Total Fuentes Subterráneas.

DUREZA TOTAL		AÑOS						
ID. POZO	FUENTE DE ABASTECIMIENTO	2011	2012	2013	2014	2015	2016	MAX.
1	BOULEVARD GARCIA DE LEON	90.80	92.20	85.60	99.40	99.20	104.20	104.20
2	CIUDAD UNIVERSITARIA	171.80	159.80	154.60	177.20	153.20	161.80	177.20
3	LAS AMERICAS	164.00	148.20	154.80	162.20	156.80	153.40	164.00
5	VILLA UNIVERSIDAD	222.20	223.40	231.20	342.00	219.80	222.20	342.00
6	LOPEZ MATEOS	114.60	113.40	123.60	125.20	121.20	121.80	125.20
7	ENRIQUE RAMIREZ I	148.20			102.20		122.80	148.20
9	FOVISSSTE MORELOS II	81.80	86.20	81.20	94.20	109.80	128.80	128.80
11	COLONIA GUADALUPE	118.00	122.80	114.60	144.00	132.00	137.20	144.00
13	LOMAS DEL VALLE	137.20		134.40	129.00	145.80	136.60	145.80
16	PRADOS VERDES (GALEANAS)	108.00	113.40	116.00	113.80	124.80	133.80	133.80
19	CONALEP (SUST.)	231.00	114.80	106.40	100.80	127.20	114.40	231.00
20	SAN RAFAEL	76.80	92.60	87.00	77.60	87.60	84.00	92.60
21	MERCADO DE ABASTOS (SUST.)	96.60	192.00	94.60	85.80	99.20	100.60	192.00
22	SANTA CECILIA	95.60	92.60	94.20	85.80	100.80	102.20	102.20

<b>ID. POZO</b>	<b>FUENTE DE ABASTECIMIENTO</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>MAX.</b>
23	DELTA DE LOS RIOS	138.20			130.00	151.60	130.40	151.60
24	MARIANO ESCOBEDO I		165.60	124.60	208.00	209.80	204.80	209.80
25	EL REALITO	370.60	399.80	387.60	370.80	419.40	427.00	427.00
26	LOMAS DEL TECNOLOGICO	145.20	135.40	131.80				145.20
27	LA SOLEDAD I	93.00	115.40	135.20	119.20	101.60	112.20	135.20
28	NORMA	153.60	116.20	132.20	114.00	142.20	147.60	153.60
29	OCOLUCEN	123.00	106.40	112.20	134.40	113.40	112.20	134.40
30	LA QUEMADA	112.60	122.40	105.60		103.20	104.20	122.40
31	EDUARDO RUIZ	86.20	103.80	92.20	108.00	102.40	102.20	108.00
33	EL RETIRO	115.40	111.60	108.40	130.00	121.40	128.60	130.00
34	FUENTES DE VALLADOLID	106.00	103.40	107.60	105.80	106.60	114.40	114.40
36	FOVISSSTE LA HUERTA	165.00	161.40	197.00	175.00	157.80	141.60	197.00
37	JARDINES DEL RINCON	163.00	160.80	146.00	183.80	166.60	173.20	183.80
38	RINCON QUIETO	157.60	133.60	173.80	135.00	132.40	149.20	173.80
39	COSMOS II	137.60	135.40	157.20	148.00	136.20	145.40	157.20
40	EMILIANO ZAPATA I	88.40		49.60		52.60	84.20	88.40
41	6 DE JULIO	157.40	142.00	156.80	165.80	162.80	168.40	168.40
42	IGNACIO ZARAGOZA	67.40	80.60	60.60	73.60	77.60	76.20	80.60
44	MARIANO ESCOBEDO II	171.60	143.00	175.00	133.80	137.80	150.20	175.00
45	SANTA CRUZ	213.60	209.80	358.20	248.00	249.00	229.80	358.20
46	RINCONADA DEL VALLE	87.20	88.40	130.40	113.40	89.40	170.40	170.40
47	EL LAGO I	91.00		65.20	96.00	98.40	102.40	102.40
48	FUENTES DE MORELIA	97.80	86.80	97.60		92.60	117.20	117.20
49	POTRERILLOS	102.40	104.20	98.60	116.00	113.60	107.80	116.00
51	LOMAS DE SANTIAGUITO I	88.20	85.40	93.60	91.40	112.20	117.40	117.40
53	LA SOLEDAD II	122.20	120.00	124.60	133.20	128.80	122.80	133.20
54	PERIODISTAS	161.20	158.60	173.40	195.20	170.40	163.20	195.20
55	RESERVA OCOLUCEN	155.80	131.20	140.40	154.80	143.20	142.20	155.80
56	INDECO III	124.80	131.60	119.60	157.00	141.60	137.60	157.00
58	ARROYO AGUA CLARA	95.20	86.00	88.20	82.00	94.60	83.20	95.20
63	CIUDAD INDUSTRIAL II	100.40	97.60	93.60	91.80	102.20	107.60	107.60
64	SAN ISIDRO ITZICUARO	68.80	94.60	62.40	65.20	97.40	64.20	97.40
65	GERTRUDIS SANCHEZ I	59.80	72.20	62.00	132.00	200.20	159.60	200.20
66	SAN JUANITO ITZICUARO	106.80	112.80	117.40	137.20	120.60	116.60	137.20
68	LAS ARBOLEDAS	85.00						85.00
69	PEÑA BLANCA	70.20	68.00	62.20	65.20	63.80	59.60	70.20
70	VILLAS DEL REAL III	194.20	203.40					203.40
72	EL LAGO II	88.00	86.80	88.40	63.20	78.80	68.40	88.40
73	TANGANXOAN	72.60	83.60	68.60	97.60	75.60	70.20	97.60
76	AMP. TORREON NUEVO I	167.20	186.80	162.00	200.20	175.60	193.60	200.20

<b>ID. POZO</b>	<b>FUENTE DE ABASTECIMIENTO</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>MAX.</b>
77	REFORMA	84.20	98.20	97.60		120.80	100.20	120.80
78	EJIDO ISAAC ARRIAGA II	114.20	124.60	115.80	114.80	128.20	115.80	128.20
79	EJIDO ISAAC ARRIAGA III	114.40	117.60	67.20	71.20	85.20	74.20	117.60
81	AMP. PRIMO TAPIA OTE	63.40	60.60	69.20	77.60	78.60	74.20	78.60
83	ENRIQUE RAMIREZ III		102.60	95.00	95.80	112.80	136.60	136.60
88	LA PALMA	72.80	85.60	64.80	66.60	109.60	101.80	109.60
89	PLAN DE LOS OLIVOS	86.80	83.20	97.80	84.20	97.20	96.20	97.80
90	MARIANO ESCOBEDO III	76.40	105.40	91.00	92.00	91.40	89.40	105.40
91	EMILIANO ZAPATA II	79.20		84.40	77.20	87.80	78.20	87.80
92	JESUS ROMERO FLORES	84.20	79.20	110.40	96.60	91.40		110.40
93	AMP. TORREON NUEVO II	170.40				191.80	49.60	191.80
94	RICARDO FLORES MAGON	48.60	52.80	50.20	51.80	58.20	49.00	58.20
95	VALLE DE LAS FLORES	78.40	74.40	81.20	79.40	88.80	77.60	88.80
96	LUCIO CABAÑAS	86.60	92.20	95.20	89.40	110.20	87.80	110.20
98	CASA HOGAR	140.40	130.40	129.80	151.80	118.60	130.20	151.80
99	LOS SAUCES	103.80	102.80	103.20	102.60	116.60	102.80	116.60
100	REPOSICION GERTRUDIS SANCHEZ II	59.60	76.40	58.20	59.60	73.40	71.20	76.40
101	INFONAVIT QUINCEO	71.60	78.40	76.40	84.00	84.20	77.20	84.20
102	AMP. SOLIDARIDAD	128.40	139.40					139.40
103	AMP. LA SOLEDAD	111.40	113.40	105.40	120.00	115.60	104.60	120.00
105	MIL CUMBRES	221.40	241.60	222.80	230.20	246.80	247.80	247.80
106	DIAZ ORDAZ	88.00	122.80	122.60	147.60	250.20	121.40	250.20
107	VENUSTIANO CARRANZA	79.40	88.00	86.20	87.40	86.20	94.40	94.40
108	EL REALITO II	195.40	215.60		206.80	192.20	176.20	215.60
109	23 DE MARZO			69.00	78.80	94.80	92.60	94.80
110	VILLAS DEL REAL IV	79.40	66.60	42.80	56.00	91.40	52.80	91.40
111	RIO GRANDE	65.00	73.20	90.40	82.60	92.20	89.20	92.20
114	LOMA REAL	116.80	137.20	135.20	151.20	145.40	125.40	151.20
115	MARIANO ABASOLO	114.20	137.80	140.60	152.80	148.80	152.80	152.80
116	LA ESPERANZA	45.00	70.60	71.40	65.80	82.20	74.60	82.20
117	VILLAS DEL SOL	139.20	153.40	153.20	153.20		172.60	172.60
119	EXHACIENDA LA TRINIDAD	84.80		90.40		91.40	89.60	91.40
122	3 DE AGOSTO	75.20	69.20	65.20	66.80	77.60	83.20	83.20
123	GUAYANGAREO	167.20	165.20					167.20
124	PUNHUATO	208.80	217.80		217.80	225.40	225.40	225.40
125	LAGO II (REP)	88.40	65.60					88.40
127	AMP. STA. CRUZ	154.20	176.20	153.20	190.00	193.80	163.20	193.80
128	NIÑOS HEROES	89.80	95.80	104.20	128.00	121.80	115.40	128.00
129	FRACC. ARIO 1815	87.40				114.80	100.20	114.80
131	IGNACIO ALLENDE	93.80	95.40	109.20	62.20	100.20	96.20	109.20

ID. POZO	FUENTE DE ABASTECIMIENTO	2011	2012	2013	2014	2015	2016	MAX.
133	HEROES REPUBLICANOS	82.20	77.00	88.40	75.00	86.00	77.60	88.40
134	GALEANA	93.20		92.80	84.00	93.20	94.60	94.60
135	RINCONADA DE MORELIA	146.60	133.20	125.80	165.80	201.40	218.20	218.20
136	SAN JOSE ITZICUARO	82.20	97.60	87.80	78.20	89.20	89.40	97.60
137	ARKO SAN ANTONIO	140.40	144.00	152.40	139.40	152.60	157.60	157.60
138	RESIDENCIAL TORREON NUEVO	128.80	134.80	126.60	160.00	207.80	143.60	207.80
139	RESIDENCIAL TINIJARO	66.40		91.20	66.20	101.80	71.60	101.80
140	TZINDURIO SARH	75.60	87.40	77.80	77.60	85.20	79.60	87.40
141	TENENCIA MORELOS	82.20	92.40	100.20	84.80	92.20	86.20	100.20
142	Real San Diego		72.60	70.20		79.20	67.80	79.20
144	Villa Magna I			74.80		163.20		163.20
146	CAPULA			105.60				105.60
147	Jesús Romero Flores II	85.40		82.40	87.40	98.60	90.60	98.60
148	Real Universidad	160.00	201.20	128.40	166.00	160.20		201.20
149	Torreón Nuevo II	43.80	51.00	41.40	45.60	57.40	61.20	61.20
150	Villas del Pedregal I	129.80	92.20	76.80	99.20	82.20	83.80	129.80
151	Misión del Valle				128.80	139.60	120.80	139.60
153	Villa Magna III	64.40	74.20	64.60	72.00	61.20	68.20	74.20
162	Puntalba				155.20	223.80	148.20	223.80
166	Torreón Nuevo Manantiales				71.40		56.40	71.40
167	HACIENDA DEL VALLE				42.00		64.20	64.20
168	SANTA FE					169.20	136.80	169.20
<b>MAX.</b>		<b>370.60</b>	<b>399.80</b>	<b>387.60</b>	<b>370.80</b>	<b>419.40</b>	<b>427.00</b>	<b>427.00</b>

Para el caso de las potabilizadoras se dio un valor máximo en Dureza Total de 273.40 mg/L. Ver tabla 2.

Tabla 2. Valores de Dureza Total en Plantas Potabilizadoras

DUREZA TOTAL FUENTE DE ABASTECIMIENTO	AÑOS							MAX.
	2011	2012	2013	2014	2015	2016		
EFLUENTE MANANTIALES	92.8	78.2	157.6	116.6	115.8	103.8	157.6	
EFLUENTE P.T.A.P. LOMA LARGA	167.2	78.8	118	93	83.2	102.8	167.2	
EFLUENTE P.T.A.P. MINTZITA	93.2	102.6	235.2	86.8	106.2	92.6	235.2	
EFLUENTE P.T.A.P. SAN MIGUEL	132.8	84.2	223.2	100	95.6	87.2	223.2	
EFLUENTE P.T.A.P. VISTA BELLA (SALIDA 1)		85.6	231.8	96.4	91.4	96.6	231.8	
EFLUENTE P.T.A.P. VISTA BELLA (SALIDA 2)	143.4	94.4	150.4	98	98.4	107.2	150.4	
INFLUENTE MANANTIALES	88.6	104.4	134.6	124.2	123.8	108.8	134.6	
INFLUENTE P.T.A.P. MINTZITA	113.6	78	273.4	92	84.2	101.6	273.4	
INFLUENTE P.T.A.P. SAN MIGUEL	89	89	142.4	97.6	98.8	87.4	142.4	
INFLUENTE P.T.A.P. VISTA BELLA	105	85.2	234.4	90	86.4	90.4	234.4	
<b>MAX.</b>	<b>167.2</b>	<b>104.4</b>	<b>273.4</b>	<b>124.2</b>	<b>123.8</b>	<b>108.8</b>	<b>273.4</b>	

## Dureza de Calcio

La norma NOM-127-SSA1-1994 no hace referencia a un límite máximo permisible para la dureza de calcio, ya que esta forma parte de la dureza total esta última se regula con un límite máximo permisible de 500 mg/L. Durante el periodo 2011 - 2016 se obtuvo un valor máximo de Dureza de calcio de **413.60** mg/L. Ver tabla 3.

Tabla 3. Valores de la Dureza de Calcio en Fuentes Subterráneas.

ID. POZO	FUENTE DE ABASTECIMIENTO	AÑOS							MAX.
		2011	2012	2013	2014	2015	2016		
1	BOULEVARD GARCIA DE LEON	43.60	35.80	46.80	67.60	35.80	41.20	67.60	
2	CIUDAD UNIVERSITARIA	92.40	89.80	85.60	84.80	81.80	86.40	92.40	
3	LAS AMERICAS	88.20	101.60	101.60	86.20	71.40	82.40	101.60	
5	VILLA UNIVERSIDAD	125.40	128.60	130.60	118.60	124.20	124.00	130.60	
6	LOPEZ MATEOS	72.40	78.80	80.40	75.60	85.40	87.60	87.60	
7	ENRIQUE RAMIREZ I	82.20			61.20		64.40	82.20	
9	FOVISSSTE MORELOS II	44.60	57.80	73.60	68.20	74.80	70.40	74.80	
11	COLONIA GUADALUPE	71.80	84.20	75.00	81.60	88.20	120.60	120.60	
13	LOMAS DEL VALLE	76.40		83.80	66.20	77.80	83.80	83.80	
16	PRADOS VERDES (GALEANAS)	75.60	77.00	73.80	75.20	87.40	88.40	88.40	
19	CONALEP (SUST.)	49.20	45.40	84.20	56.00	61.40	58.20	84.20	
20	SAN RAFAEL	34.80	39.20	37.80	33.80	56.20	43.40	56.20	
21	MERCADO DE ABASTOS (SUST.)	51.00	47.00	78.20	54.20	54.40	64.80	78.20	
22	SANTA CECILIA	49.20	47.00	47.00	45.20	59.20	52.40	59.20	
23	DELTA DE LOS RIOS	107.20			90.00	91.40	100.60	107.20	
24	MARIANO ESCOBEDO I		153.40	98.80	128.00	147.40	127.80	153.40	
25	EL REALITO	334.00	372.20	271.80	298.80	344.20	413.60	413.60	
26	LOMAS DEL TECNOLOGICO	107.00	122.80	108.40				122.80	
27	LA SOLEDAD I	59.20	78.40	112.60	91.20	73.80	76.80	112.60	
28	NORMA	102.00	79.00	100.80	76.00	96.80	87.20	102.00	
29	OCOLUCEN	60.40	53.20	60.20	64.00	59.80	60.60	64.00	
30	LA QUEMADA	79.20	73.20	62.60		61.80	55.80	79.20	
31	EDUARDO RUIZ	50.40	50.60	51.20	58.00	53.40	58.20	58.20	
33	EL RETIRO	92.20	78.80	94.80	84.00	91.40	88.20	94.80	
34	FUENTES DE VALLADOLID	62.40	62.40	66.20	60.60	62.80	67.60	67.60	
36	FOVISSSTE LA HUERTA	104.60	96.40	120.20	101.80	112.60	93.40	120.20	
37	JARDINES DEL RINCON	85.40	82.20	72.80	90.20	78.40	86.80	90.20	
38	RINCON QUIETO	89.20	73.20	97.40	69.60	72.40	76.20	97.40	
39	COSMOS II	79.60	76.80	105.60	75.20	95.80	86.40	105.60	
40	EMILIANO ZAPATA I	46.80		31.20		28.60	30.80	46.80	
41	6 DE JULIO	76.60	72.40	78.20	82.20	85.80	93.20	93.20	
42	IGNACIO ZARAGOZA	52.80	58.80	48.80	52.20	50.20	68.60	68.60	

<b>ID. POZO</b>	<b>FUENTE DE ABASTECIMIENTO</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>MAX.</b>
44	MARIANO ESCOBEDO II	109.20	111.60	110.40	108.20	119.40	108.80	119.40
45	SANTA CRUZ	121.60	121.60	210.00	128.00	161.20	137.40	210.00
46	RINCONADA DEL VALLE	55.00	54.20	77.60	51.40	57.80	110.20	110.20
47	EL LAGO I	48.80		46.40	50.00	48.60	51.20	51.20
48	FUENTES DE MORELIA	49.60	47.40	57.20		55.20	64.20	64.20
49	POTRERILLOS	54.40	57.80	49.00	60.00	60.40	61.60	61.60
51	LOMAS DE SANTIAGUITO I	62.00	60.60	75.20	59.00	85.20	83.80	85.20
53	LA SOLEDAD II	94.40	106.80	88.80	99.60	108.20	96.20	108.20
54	PERIODISTAS	72.20	72.40	77.00	78.20	78.80	78.20	78.80
55	RESERVA OCOLUCEN	70.00	70.80	70.40	70.20	72.60	72.80	72.80
56	INDECO III	68.40	69.60	74.20	76.80	90.20	78.40	90.20
58	ARROYO AGUA CLARA	48.00	44.00	46.80	40.40	53.60	46.60	53.60
63	CIUDAD INDUSTRIAL II	52.80	50.20	46.00	47.80	59.40	54.40	59.40
64	SAN ISIDRO ITZICUARO	36.80	37.60	39.20	40.20	34.60	33.20	40.20
65	GERTRUDIS SANCHEZ I	37.40	42.80	39.20	70.00	100.20	93.80	100.20
66	SAN JUANITO ITZICUARO	74.00	79.60	90.40	77.40	89.20	81.20	90.40
68	LAS ARBOLEDAS	53.00						53.00
69	PEÑA BLANCA	33.00	26.40	34.60	32.00	31.40	35.60	35.60
70	VILLAS DEL REAL III	96.80	93.20					96.80
72	EL LAGO II	48.00	51.60	41.80	45.20	56.80	45.60	56.80
73	TANGANXOAN	34.40	41.20	35.40	34.80	31.20	35.20	41.20
76	AMP. TORREON NUEVO I	81.80	85.80	86.00	88.00	82.60	94.00	94.00
77	REFORMA	50.60	56.60	58.20		79.80	54.40	79.80
78	EJIDO ISAAC ARRIAGA II	44.20	53.00	52.80	44.40	67.40	51.20	67.40
79	EJIDO ISAAC ARRIAGA III	51.20	51.60	29.60	27.60	36.20	29.20	51.60
81	AMP. PRIMO TAPIA OTE	20.60	18.40	47.80	25.20	31.40	22.60	47.80
83	ENRIQUE RAMIREZ III		58.60	58.80	55.20	65.80	84.80	84.80
88	LA PALMA	55.20	51.80	54.00	46.60	78.20	72.40	78.20
89	PLAN DE LOS OLIVOS	58.80	51.40	67.40	43.80	58.80	66.40	67.40
90	MARIANO ESCOBEDO III	65.80	67.20	65.20	78.00	62.00	66.60	78.00
91	EMILIANO ZAPATA II	42.60		51.80	40.00	50.60	46.60	51.80
92	JESUS ROMERO FLORES	49.40	44.60	72.00	53.00	41.60		72.00
93	AMP. TORREON NUEVO II	82.00				91.20	33.80	91.20
94	RICARDO FLORES MAGON	29.20	25.00	27.60	31.60	25.00	27.40	31.60
95	VALLE DE LAS FLORES	47.40	51.00	50.40	47.40	59.20	47.60	59.20
96	LUCIO CABAÑAS	41.20	42.20	44.60	37.80	45.00	41.20	45.00
98	CASA HOGAR	54.40	73.00	82.80	88.20	84.80	72.20	88.20
99	LOS SAUCES	54.40	47.40	55.80	49.00	56.20	52.40	56.20
100	REPOSICION GERTRUDIS SANCHEZ II	36.60	72.40	39.60	37.60	44.20	37.60	72.40
101	INFONAVIT QUINCEO	30.40	37.60	30.40	30.00	42.80	39.80	42.80

<b>ID. POZO</b>	<b>FUENTE DE ABASTECIMIENTO</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>MAX.</b>
102	AMP. SOLIDARIDAD	97.40	117.00					117.00
103	AMP. LA SOLEDAD	74.40	82.60	75.80	82.00	77.80	76.20	82.60
105	MIL CUMBRES	95.40	97.40	92.40	101.80	110.20	109.80	110.20
106	DIAZ ORDAZ	64.00	80.20	71.20	71.20	130.80	88.60	130.80
107	VENUSTIANO CARRANZA	65.60	72.00	67.20	66.40	83.20	73.60	83.20
108	EL REALITO II	131.80	159.80		108.20	116.40	125.40	159.80
109	23 DE MARZO			42.60	49.20	56.20	59.60	59.60
110	VILLAS DEL REAL IV	38.00	38.80	30.40	38.00	41.40	28.60	41.40
111	RIO GRANDE	35.00	46.40	52.60	49.60	46.80	46.80	52.60
114	LOMA REAL	78.00	99.60	78.40	86.20	112.60	84.20	112.60
115	MARIANO ABASOLO	52.40	69.20	71.60	65.80	71.60	86.80	86.80
116	LA ESPERANZA	30.40	39.20	43.20	45.20	45.40	49.20	49.20
117	VILLAS DEL SOL	86.20	91.20	91.20	86.80		93.80	93.80
119	EXHACIENDA LA TRINIDAD	53.00		53.80		61.20	53.60	61.20
122	3 DE AGOSTO	37.80	37.60	43.40	35.40	37.80	44.80	44.80
123	GUAYANGAREO	80.00	82.20					82.20
124	PUNHUATO	98.20	92.60		94.60	108.40	93.00	108.40
125	LAGO II (REP)	48.40	51.00					51.00
127	AMP. STA. CRUZ	99.20	132.20	94.60	112.00	116.40	98.60	132.20
128	NIÑOS HEROES	45.00	52.20	56.40	58.00	59.20	57.40	59.20
129	FRACC. ARIO 1815	65.60				84.20	72.80	84.20
131	IGNACIO ALLENDE	41.80	46.20	53.60	49.40	48.60	47.60	53.60
133	HEROES REPUBLICANOS	34.20	34.20	38.60	33.60	35.60	37.60	38.60
134	GALEANA	49.00		49.00	50.20	50.20	52.60	52.60
135	RINCONADA DE MORELIA	71.20	66.20	62.20	83.20	113.20	108.60	113.20
136	SAN JOSE ITZICUARO	33.40	35.80	36.20	42.20	40.40	38.00	42.20
137	ARKO SAN ANTONIO	94.40	98.60	100.00	93.60	102.60	102.20	102.60
138	RESIDENCIAL TORREON NUEVO	77.20	83.60	76.80	98.00	126.20	84.60	126.20
139	RESIDENCIAL TINIJARO	34.20		53.40	37.20	45.20	37.80	53.40
140	TZINDURIO SARH	40.60	45.20	43.00	40.60	41.60	37.20	45.20
141	TENENCIA MORELOS	50.20	52.80	55.20	52.20	65.80	58.20	65.80
142	Real San Diego		34.40	37.80		41.40	40.20	41.40
144	Villa Magna I			31.60		74.80		74.80
146	CAPULA			40.80				40.80
147	Jesús Romero Flores II	34.80		43.20	32.20	62.60	43.60	62.60
148	Real Universidad	98.20	137.80	64.20	89.40	105.80		137.80
149	Torreón Nuevo II	33.40	32.20	34.40	28.60	36.40	32.20	36.40
150	Villas del Pedregal I	61.20	41.80	33.80	50.20	34.20	35.20	61.20
151	Misión del Valle				70.60	63.40	72.20	72.20
153	Villa Magna III	30.40	28.80	31.40	30.80	31.20	27.40	31.40



<b>ID. POZO</b>	<b>FUENTE DE ABASTECIMIENTO</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>MAX.</b>
<b>162</b>	Puntalba				84.40	89.40	85.20	89.40
<b>166</b>	Torreón Nuevo Manantiales				47.60		34.20	47.60
<b>167</b>	HACIENDA DEL VALLE				23.20		31.60	31.60
<b>168</b>	SANTA FE					140.80	88.80	140.80
<b>MAX.</b>		<b>334.00</b>	<b>372.20</b>	<b>271.80</b>	<b>298.80</b>	<b>344.20</b>	<b>413.60</b>	<b>413.60</b>

Para el caso de las Plantas Potabilizadoras se obtuvo un valor máximo de en Dureza de Calcio de 374.20 mg/L. Ver tabla 4.

Tabla 4. Valores de Dureza de Calcio en Plantas Potabilizadoras.

<b>DUREZA DE CALCIO</b>	<b>AÑOS</b>						
<b>FUENTE DE ABASTECIMIENTO</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>MAX.</b>
EFLUENTE MANANTIALES	43.8	34.8	89.6	46.8	55.2	50.4	89.6
EFLUENTE P.T.A.P. LOMA LARGA	84.6	38.8	67.8	44	50.8	45.2	84.6
EFLUENTE P.T.A.P. MINTZITA	45.8	41.6	118.6	44.2	39.4	39.8	118.6
EFLUENTE P.T.A.P. SAN MIGUEL	69.6	52.2	118.2	60	51.2	66.2	118.2
EFLUENTE P.T.A.P. VISTA BELLA (SALIDA 1)		42.6	126.6	50.8	374.2	54.4	374.2
EFLUENTE P.T.A.P. VISTA BELLA (SALIDA 2)	61	54.8	77.4	66.4	54.2	71.2	77.4
INFLUENTE MANANTIALES	40.2	48	80.8	56.6	56.8	48.8	80.8
INFLUENTE P.T.A.P. MINTZITA	41	43.8	184.2	38.8	36.2	45.6	184.2
INFLUENTE P.T.A.P. SAN MIGUEL	55.2	54.2	80.6	57.2	54.2	52.6	80.6
INFLUENTE P.T.A.P. VISTA BELLA	46.8	90.4	89.6	40.4	41.8	48.6	90.4
<b>MAX.</b>	<b>84.6</b>	<b>90.4</b>	<b>184.2</b>	<b>66.4</b>	<b>374.2</b>	<b>71.2</b>	<b>374.2</b>

## Dureza de Magnesio.

La norma NOM-127-SSA1-1994 no hace referencia a un límite máximo permisible para la dureza de magnesio, ya que esta forma parte de la dureza total, la cual si tiene un límite máximo permisible de 500 mg/L. Durante el periodo 2011 - 2016 se obtuvo un valor máximo de Dureza de calcio de **223.40** mg/L. Ver tabla 5.

Tabla 5. Valores de la Dureza de Magnesio en Fuentes Subterráneas.

ID. POZO	FUENTE DE ABASTECIMIENTO	DUREZA DE MAGNESIO							MAX
		AÑOS							
		2011	2012	2013	2014	2015	2016		
1	BOULEVARD GARCIA DE LEON	47.20	56.40	48.40	59.60	63.60	63.00	63.60	
2	CIUDAD UNIVERSITARIA	79.40	70.00	69.00	134.00	77.80	75.40	134.00	
3	LAS AMERICAS	90.80	86.80	75.40	76.00	85.40	74.20	90.80	
5	VILLA UNIVERSIDAD	96.80	104.80	110.40	223.40	131.40	107.20	223.40	
6	LOPEZ MATEOS	42.20	63.80	46.20	52.80	44.00	46.60	63.80	
7	ENRIQUE RAMIREZ I	66.00			41.00		62.40	66.00	
9	FOVISSSTE MORELOS II	37.20	35.40	25.00	26.00	47.60	92.00	92.00	
11	COLONIA GUADALUPE	46.20	44.00	39.60	64.00	47.80	59.00	64.00	
13	LOMAS DEL VALLE	60.80		60.80	62.80	68.00	62.80	68.00	
16	PRADOS VERDES (GALEANAS)	33.00	41.20	42.20	38.60	51.60	45.40	51.60	
19	CONALEP (SUST.)	189.40	69.40	66.40	62.60	78.60	63.80	189.40	
20	SAN RAFAEL	42.00	53.40	49.20	51.80	50.00	52.50	53.40	
21	MERCADO DE ABASTOS (SUST.)	51.60	151.00	46.60	31.60	56.00	43.40	151.00	
22	SANTA CECILIA	47.20	45.60	50.00	40.60	47.00	49.80	50.00	
23	DELTA DE LOS RIOS	31.00			50.20	60.20	44.00	60.20	
24	MARIANO ESCOBEDO I		56.40	25.80	80.00	72.80	77.00	80.00	
25	EL REALITO	36.60	27.60	140.40	72.00	111.80	120.60	140.40	
26	LOMAS DEL TECNOLOGICO	38.20	23.40	29.80				38.20	
27	LA SOLEDAD I	37.60	37.00	22.60	50.40	37.80	48.80	50.40	
28	NORMA	51.60	42.20	52.20	38.00	54.20	68.00	68.00	
29	OCOLUCEN	64.80	54.40	52.00	71.80	53.60	51.60	71.80	
30	LA QUEMADA	45.00	56.40	43.00		41.40	48.40	56.40	
31	EDUARDO RUIZ	40.40	53.60	41.00	50.00	49.00	50.80	53.60	
33	EL RETIRO	31.40	34.20	13.60	46.00	47.00	54.20	54.20	
34	FUENTES DE VALLADOLID	47.40	41.00	46.60	45.20	43.80	46.80	47.40	
36	FOVISSSTE LA HUERTA	64.00	66.60	76.80	73.20	54.20	57.80	76.80	
37	JARDINES DEL RINCON	83.60	89.80	73.20	93.60	88.60	86.40	93.60	
38	RINCON QUIETO	68.40	60.40	76.40	65.40	60.80	73.00	76.40	
39	COSMOS II	58.00	58.60	55.80	74.80	62.00	59.00	74.80	
40	EMILIANO ZAPATA I	41.60		18.40		24.00	53.40	53.40	
41	6 DE JULIO	81.00	70.20	81.20	99.80	77.00	75.20	99.80	
42	IGNACIO ZARAGOZA	17.20	24.80	14.60	21.40	27.40	18.20	27.40	

<b>ID. POZO</b>	<b>FUENTE DE ABASTECIMIENTO</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>MAX</b>
44	MARIANO ESCOBEDO II	62.40	32.60	64.60	25.60	32.20	41.40	64.60
45	SANTA CRUZ	92.00	88.20	148.20	120.00	107.20	94.40	148.20
46	RINCONADA DEL VALLE	32.20	34.80	52.80	67.20	48.20	60.20	67.20
47	EL LAGO I	42.20		18.80	46.00	52.60	51.20	52.60
48	FUENTES DE MORELIA	51.20	39.40	45.80	0.00	39.60	53.00	53.00
49	POTRERILLOS	49.40	46.40	49.60	56.00	58.00	46.20	58.00
51	LOMAS DE SANTIAGUITO I	26.40	30.60	25.60	32.40	34.40	38.80	38.80
53	LA SOLEDAD II	27.80	36.40	40.40	33.60	40.00	26.60	40.40
54	PERIODISTAS	157.39	90.00	96.40	117.00	91.60	88.00	157.39
55	RESERVA OCOLUCEN	88.00	65.20	70.00	84.60	70.60	69.40	88.00
56	INDECO III	56.40	63.20	45.40	80.20	58.20	59.20	80.20
58	ARROYO AGUA CLARA	49.00	42.00	41.40	41.60	47.20	36.60	49.00
63	CIUDAD INDUSTRIAL II	47.60	47.40	47.60	46.00	51.60	59.80	59.80
64	SAN ISIDRO ITZICUARO	34.20	57.80	24.20	25.00	62.80	31.00	62.80
65	GERTRUDIS SANCHEZ I	26.60	29.40	22.80	62.00	100.00	65.80	100.00
66	SAN JUANITO ITZICUARO	32.80	33.20	35.00	59.80	40.00	35.40	59.80
68	LAS ARBOLEDAS	32.00						32.00
69	PEÑA BLANCA	39.40	41.60	27.60	33.20	32.40	31.00	41.60
70	VILLAS DEL REAL III	97.40	110.20					110.20
72	EL LAGO II	40.80	35.20	46.60	18.00	22.00	24.40	46.60
73	TANGANXOAN	38.40	42.40	33.20	62.80	44.40	35.00	62.80
76	AMP. TORREON NUEVO I	85.40	101.00	76.00	114.40	93.00	99.60	114.40
77	REFORMA	33.60	45.80	47.00		43.00	45.80	47.00
78	EJIDO ISAAC ARRIAGA II	70.00	77.60	63.00	71.80	77.40	64.60	77.60
79	EJIDO ISAAC ARRIAGA III	63.20	66.00	37.60	46.60	49.00	45.00	66.00
81	AMP. PRIMO TAPIA OTE	42.80	42.20	40.60	52.40	47.20	51.60	52.40
83	ENRIQUE RAMIREZ III		44.00	36.20	40.60	51.60	51.80	51.80
88	LA PALMA	22.20	33.80	10.80	20.00	31.40	29.40	33.80
89	PLAN DE LOS OLIVOS	34.20	40.00	42.80	40.40	40.60	34.40	42.80
90	MARIANO ESCOBEDO III	10.60	38.20	28.00	14.00	29.60	24.60	38.20
91	EMILIANO ZAPATA II	36.60		38.40	37.20	41.60	31.60	41.60
92	JESUS ROMERO FLORES	37.00	34.60	38.40	55.20	49.80		55.20
93	AMP. TORREON NUEVO II	88.40				100.60	15.80	100.60
94	RICARDO FLORES MAGON	24.80	27.80	28.60	20.20	34.00	21.60	34.00
95	VALLE DE LAS FLORES	31.00	23.40	30.80	32.00	40.20	31.20	40.20
96	LUCIO CABAÑAS	48.60	50.00	50.60	51.60	80.00	46.60	80.00
98	CASA HOGAR	86.00	61.80	62.60	63.60	33.80	70.60	86.00
99	LOS SAUCES	49.40	55.40	47.40	53.60	60.40	50.40	60.40
100	REPOSICION GERTRUDIS SANCHEZ II	23.80	19.60	18.60	22.00	29.40	33.60	33.60
101	INFONAVIT QUINCEO	41.20	40.80	46.00	54.00	49.00	50.80	54.00

<b>ID. POZO</b>	<b>FUENTE DE ABASTECIMIENTO</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>MAX</b>
102	AMP. SOLIDARIDAD	40.60	35.60					40.60
103	AMP. LA SOLEDAD	39.00	30.80	29.60	38.00	41.00	28.40	41.00
105	MIL CUMBRES	126.00	144.20	130.40	128.40	147.00	151.40	151.40
106	DIAZ ORDAZ	24.00	42.60	53.00	76.40	119.40	49.80	119.40
107	VENUSTIANO CARRANZA	18.60	16.00	22.00	21.00	23.20	26.60	26.60
108	EL REALITO II	71.40	74.60		98.60	75.80	50.80	98.60
109	23 DE MARZO			26.40	29.60	38.60	33.00	38.60
110	VILLAS DEL REAL IV	41.40	39.20	13.40	26.00	50.00	24.20	50.00
111	RIO GRANDE	30.00	37.80	55.00	42.40	47.80	51.80	55.00
114	LOMA REAL	43.20	52.40	56.80	65.00	45.00	41.20	65.00
115	MARIANO ABASOLO	61.80	68.60	69.00	87.00	80.40	70.80	87.00
116	LA ESPERANZA	14.60	36.80	28.20	20.60	36.80	25.40	36.80
117	VILLAS DEL SOL	53.00	65.60	62.80	66.40		78.80	78.80
119	EXHACIENDA LA TRINIDAD	31.80		36.60		33.00	42.00	42.00
122	3 DE AGOSTO	37.40	33.00	23.20	34.40	39.80	51.40	51.40
123	GUAYANGAREO	87.20	83.00					87.20
124	PUNHUATO	110.60	132.00		126.60	117.00	133.00	133.00
125	LAGO II (REP)	40.00	14.60					40.00
127	AMP. STA. CRUZ	55.00	63.40	58.60	78.00	77.40	64.60	78.00
128	NIÑOS HEROES	46.60	46.60	47.80	70.00	68.33	60.60	70.00
129	FRACC. ARIO 1815	21.80				36.20	31.00	36.20
131	IGNACIO ALLENDE	52.00	49.20	56.20	12.80	53.20	49.40	56.20
133	HEROES REPUBLICANOS	48.00	42.80	49.80	41.40	52.40	40.00	52.40
134	GALEANA	44.20		43.80	33.80	43.60	42.00	44.20
135	RINCONADA DE MORELIA	75.40	67.00	63.60	82.60	95.60	109.60	109.60
136	SAN JOSE ITZICUARO	51.00	61.80	51.60	36.00	54.80	51.40	61.80
137	ARKO SAN ANTONIO	46.00	52.00	52.40	45.80	57.20	55.40	57.20
138	RESIDENCIAL TORREON NUEVO	51.60	51.20	49.80	62.00	81.60	59.00	81.60
139	RESIDENCIAL TINIJARO	33.40		37.80	29.00	56.60	33.80	56.60
140	TZINDURIO SARH	35.00	46.80	34.80	37.00	43.60	42.40	46.80
141	TENENCIA MORELOS	32.00	39.60	45.00	34.20	36.00	28.00	45.00
142	Real San Diego		38.20	32.40		37.80	27.60	38.20
144	Villa Magna I			49.00		88.40		88.40
146	CAPULA			64.80				64.80
147	Jesús Romero Flores II	50.60		41.20	55.20	41.60	50.20	55.20
148	Real Universidad	61.80	63.40	64.20	76.60	54.40		76.60
149	Torreón Nuevo II	10.40	18.80	7.00	17.00	21.00	29.00	29.00
150	Villas del Pedregal I	68.60	50.40	44.80	49.00	48.00	49.80	68.60
151	Misión del Valle				65.20	76.20	48.60	76.20
153	Villa Magna III	36.80	45.40	57.58	44.00	40.00	44.00	57.58

<b>ID. POZO</b>	<b>FUENTE DE ABASTECIMIENTO</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>MAX</b>
<b>162</b>	Puntalba				77.00	137.20	68.80	137.20
<b>166</b>	Torreón Nuevo Manantiales				23.80		24.80	24.80
<b>167</b>	HACIENDA DEL VALLE				21.60		32.60	32.60
<b>168</b>	SANTA FE					59.60	48.00	59.60
<b>MAX</b>		<b>189.40</b>	<b>151.00</b>	<b>148.20</b>	<b>223.40</b>	<b>147.00</b>	<b>151.40</b>	<b>223.40</b>

Para el caso de las Plantas Potabilizadoras se obtuvo un valor máximo en Dureza de Magnesio de 144.80 mg/L. Ver tabla 6.

Tabla 6. Valores de Dureza de Magnesio en Plantas Potabilizadoras.

<b>DUREZA DE MAGNESIO</b>	<b>AÑOS</b>						
<b>FUENTE DE ABASTECIMIENTO</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>MAX.</b>
EFLUENTE MANANTIALES	49	43.4	80.4	72.4	63.6	65.4	80.4
EFLUENTE P.T.A.P. LOMA LARGA	82.6	45	54.2	57.8	53.8	59.6	82.6
EFLUENTE P.T.A.P. MINTZITA	61	61	116.6	54	76	61.8	116.6
EFLUENTE P.T.A.P. SAN MIGUEL	93.6	35.6	105	44	52	46.4	105
EFLUENTE P.T.A.P. VISTA BELLA (SALIDA 1)		46.8	105.2	58.6	53.2	60.6	105.2
EFLUENTE P.T.A.P. VISTA BELLA (SALIDA 2)	102.8	47.2	74.4	47.6	55.2	53.6	102.8
INFLUENTE MANANTIALES	53.4	56.4	77.4	72.2	67.2	64.4	77.4
INFLUENTE P.T.A.P. MINTZITA	82.4	45.6	89.2	60	55	71	89.2
INFLUENTE P.T.A.P. SAN MIGUEL	43.2	40	83	56	46.6	40.8	83
INFLUENTE P.T.A.P. VISTA BELLA	75.6	50.8	144.8	52	55.8	55.6	144.8
<b>MAX.</b>	<b>102.8</b>	<b>61</b>	<b>144.8</b>	<b>72.4</b>	<b>76</b>	<b>71</b>	<b>144.8</b>

## Sulfatos

La norma NOM-127-SSA1-1994 establece un límite máximo permisible para los sulfatos de 400 mg/L y en el caso de OOAPAS el valor máximo registrado en los análisis químicos de las fuentes subterráneas durante el periodo 2011 a 2016 ha sido de **143.2 mg/L**. Ver tabla 7.

Tabla 7. Valores de Sulfatos en Fuentes de Abastecimiento Subterráneas.

SULFATOS		AÑOS							
ID. POZO	FUENTE DE ABASTECIMIENTO	2011	2012	2013	2014	2015	2016	MAX.	
1	BOULEVARD GARCIA DE LEON	16.43	14.48	15.05	11.90	17.22	20.26	20.26	
2	CIUDAD UNIVERSITARIA	14.23	12.43	14.05	10.42	15.74	18.67	18.67	
3	LAS AMERICAS	17.70	21.58	19.31	14.13	23.84	25.59	25.59	
5	VILLA UNIVERSIDAD	21.09	24.27	27.99	21.91	33.64	35.45	35.45	
6	LOPEZ MATEOS	11.67	10.35	13.96	13.34	20.23	21.18	21.18	
7	ENRIQUE RAMIREZ I	34.13			20.14		35.13	35.13	
9	FOVISSSTE MORELOS II	20.99	20.53	25.83	21.51	37.80	49.10	49.10	
11	COLONIA GUADALUPE	20.06	19.82	21.77	22.86	31.79	35.39	35.39	
13	LOMAS DEL VALLE	11.88		33.08	16.74	24.42	23.63	33.08	
16	PRADOS VERDES (GALEANAS)	22.27	20.94	25.18	34.21	35.61	37.47	37.47	
19	CONALEP (SUST.)	13.88	12.69	11.24	14.66	16.48	18.47	18.47	
20	SAN RAFAEL	14.98	16.31	19.57	16.08	27.61	26.47	27.61	
21	MERCADO DE ABASTOS (SUST.)	15.03	14.02	15.83	15.39	21.02	24.49	24.49	
22	SANTA CECILIA	6.44	5.71	7.05	6.37	6.50	6.79	7.05	
23	DELTA DE LOS RIOS	21.90			43.79	23.22	33.54	43.79	
24	MARIANO ESCOBEDO I		68.91	36.49	81.15	93.64	90.22	93.64	
25	EL REALITO	100.69	87.98	141.01	114.33	118.09	114.90	141.01	
26	LOMAS DEL TECNOLOGICO	23.49	24.93	55.59				55.59	
27	LA SOLEDAD I	22.98	32.30	38.49	30.20	42.90	45.66	45.66	
28	NORMA	44.84	21.01	35.74	28.07	39.49	43.39	44.84	
29	OCOLUCEN	15.65	15.24	19.83	14.74	25.79	25.13	25.79	
30	LA QUEMADA	14.98	14.82	12.09		14.59	16.14	16.14	
31	EDUARDO RUIZ	8.41	7.32	9.07	10.20	11.99	12.58	12.58	
33	EL RETIRO	27.61	37.09	28.38	28.62	38.43	36.81	38.43	
34	FUENTES DE VALLADOLID	11.84	10.37	73.80	12.76	19.37	18.42	73.80	
36	FOVISSSTE LA HUERTA	17.53	17.71	35.96	14.27	23.28	24.47	35.96	
37	JARDINES DEL RINCON	20.69	18.41	22.80	24.39	30.29	31.42	31.42	
38	RINCON QUIETO	10.15	7.81	14.76	7.05	8.66	11.13	14.76	
39	COSMOS II	9.49	9.14	9.44	9.11	14.49	19.65	19.65	
40	EMILIANO ZAPATA I	5.50		7.80		5.40	9.21	9.21	
41	6 DE JULIO	24.04	24.92	26.77	25.56	35.44	37.04	37.04	
42	IGNACIO ZARAGOZA	46.58	43.01	56.18	41.18	48.65	50.56	56.18	
44	MARIANO ESCOBEDO II	73.08	25.33	29.69	21.34	36.09	35.93	73.08	

<b>ID. POZO</b>	<b>FUENTE DE ABASTECIMIENTO</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>MAX.</b>
45	SANTA CRUZ	78.37	69.61	143.20	89.21	100.36	92.31	143.20
46	RINCONADA DEL VALLE	6.91	8.35	14.56	7.57	13.99	34.62	34.62
47	EL LAGO I	8.37		10.22	7.89	12.77	11.02	12.77
48	FUENTES DE MORELIA	6.68	6.20	40.71	6.69	6.06	19.27	40.71
49	POTRERILLOS	8.77	8.39	6.15	10.42	9.21	13.19	13.19
51	LOMAS DE SANTIAGUITO I	26.57	24.27	31.90	22.69	41.45	42.63	42.63
53	LA SOLEDAD II	28.50	25.03	30.93	23.87	36.52	38.84	38.84
54	PERIODISTAS	25.24	17.75	19.19	20.87	27.61	27.95	27.95
55	RESERVA OCOLUCEN	35.55	27.62	32.02	22.30	35.06	35.57	35.57
56	INDECO III	15.11	11.58	11.83	11.32	19.82	20.33	20.33
58	ARROYO AGUA CLARA	6.33	4.52	14.08	6.31	5.32	6.03	14.08
63	CIUDAD INDUSTRIAL II	14.94	16.20	17.77	14.03	20.86	22.31	22.31
64	SAN ISIDRO ITZICUARO	6.77	5.94	8.34	5.34	6.26	6.25	8.34
65	GERTRUDIS SANCHEZ I	6.29	6.42	13.56	10.67	33.08	23.27	33.08
66	SAN JUANITO ITZICUARO	12.06	11.01	14.92	134.84	18.84	13.51	134.84
68	LAS ARBOLEDAS	9.45						9.45
69	PEÑA BLANCA	11.60	12.55	15.05	15.02	17.51	19.31	19.31
70	VILLAS DEL REAL III	48.98	48.76					48.98
72	EL LAGO II	27.66	12.00	6.08	9.20	17.55	18.63	27.66
73	TANGANXOAN	5.95	5.67	6.27	4.96	5.12	4.74	6.27
76	AMP. TORREON NUEVO I	18.41	19.77	23.77	21.32	22.96	35.97	35.97
77	REFORMA	44.42	12.27	12.70		20.95	26.01	44.42
78	EJIDO ISAAC ARRIAGA II	10.34	11.10	14.15	12.13	17.14	17.93	17.93
79	EJIDO ISAAC ARRIAGA III	11.09	12.32	12.60	11.83	8.55	19.75	19.75
81	AMP. PRIMO TAPIA OTE	10.73	10.97	14.28	11.37	17.66	16.32	17.66
83	ENRIQUE RAMIREZ III		22.37	26.71	18.19	32.98	50.57	50.57
88	LA PALMA	10.85	10.89	11.57	14.22	21.30	29.21	29.21
89	PLAN DE LOS OLIVOS	24.23	23.97	24.63	23.68	35.41	37.13	37.13
90	MARIANO ESCOBEDO III	21.56	29.47	93.35	23.83	33.93	32.61	93.35
91	EMILIANO ZAPATA II	4.66		25.91	5.37	5.26	4.70	25.91
92	JESUS ROMERO FLORES	26.61	25.12	32.04	32.61	30.55		32.61
93	AMP. TORREON NUEVO II	17.58				31.71	6.98	31.71
94	RICARDO FLORES MAGON	5.45	12.21	6.47	4.72	4.85	4.67	12.21
95	VALLE DE LAS FLORES	28.66	25.25	28.09	23.60	39.78	29.45	39.78
96	LUCIO CABAÑAS	25.37	26.47	25.43	19.57	37.81	27.68	37.81
98	CASA HOGAR	24.04	21.58	23.62	13.75	20.31	24.57	24.57
99	LOS SAUCES	5.69	5.47	6.79	5.08	5.30	5.82	6.79
100	REPOSICION GERTRUDIS SANCHEZ II	8.61	10.19	9.38	9.45	14.01	16.48	16.48
101	INFONAVIT QUINCEO	7.24	7.24	8.26	5.46	7.08	5.61	8.26
102	AMP. SOLIDARIDAD	15.22	12.32					15.22

<b>ID. POZO</b>	<b>FUENTE DE ABASTECIMIENTO</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>MAX.</b>
103	AMP. LA SOLEDAD	25.53	20.78	24.77	23.37	31.80	32.33	32.33
105	MIL CUMBRES	14.60	14.97	11.90	14.50	24.61	24.57	24.61
106	DIAZ ORDAZ	12.14	17.09	16.91	14.75	46.54	27.29	46.54
107	VENUSTIANO CARRANZA	17.10	16.10	22.75	14.83	23.38	26.73	26.73
108	EL REALITO II	40.53	35.62		31.26	40.37	47.68	47.68
109	23 DE MARZO			8.53	7.27	9.14	11.42	11.42
110	VILLAS DEL REAL IV	6.98	6.34	7.19	6.35	21.27	4.84	21.27
111	RIO GRANDE	5.45	13.57	11.26	10.49	19.19	15.93	19.19
114	LOMA REAL	19.49	18.86	23.20	22.17	35.55	35.94	35.94
115	MARIANO ABASOLO	11.37	15.67	15.08	9.92	23.44	25.69	25.69
116	LA ESPERANZA	5.12	6.84	7.05	5.46	6.21	7.76	7.76
117	VILLAS DEL SOL	15.41	16.04	17.31	18.89		27.09	27.09
119	EXHACIENDA LA TRINIDAD	8.69		10.73		13.97	16.56	16.56
122	3 DE AGOSTO	13.39	15.51	14.80	16.85	25.95	30.09	30.09
123	GUAYANGAREO	19.73	10.57					19.73
124	PUNHUATO	11.04	10.57		11.04	16.84	19.36	19.36
125	LAGO II (REP)	13.98	10.37					13.98
127	AMP. STA. CRUZ	17.81	20.41	28.02	22.75	38.05	39.49	39.49
128	NIÑOS HEROES	6.75	6.20	6.65	6.77	7.69	9.47	9.47
129	FRACC. ARIO 1815	10.52				18.00	16.36	18.00
131	IGNACIO ALLENDE	6.35	7.53	9.11	6.33	8.57	7.16	9.11
133	HEROES REPUBLICANOS	18.30	22.37	25.52	15.67	27.93	24.13	27.93
134	GALEANA	6.43		7.05	5.96	6.36	8.84	8.84
135	RINCONADA DE MORELIA	25.05	11.52	8.18	18.55	47.44	48.00	48.00
136	SAN JOSE ITZICUARO	6.02	9.50	6.38	5.40	6.19	7.42	9.50
137	ARKO SAN ANTONIO	13.91	18.70	16.31	11.74	19.14	19.09	19.14
138	RESIDENCIAL TORREON NUEVO	25.57	28.60	29.77	34.82	66.59	48.47	66.59
139	RESIDENCIAL TINIJARO	6.11		18.50	6.20	32.17	9.50	32.17
140	TZINDURIO SARH	6.98	7.00	8.34	6.57	8.75	8.14	8.75
141	TENENCIA MORELOS	6.18	3.83	6.98	6.52	5.61	6.92	6.98
142	Real San Diego		5.18	9.57		8.41	7.02	9.57
144	Villa Magna I			5.63		17.35		17.35
146	CAPULA			10.78				10.78
147	Jesús Romero Flores II	10.79		16.39	15.18	52.69	23.93	52.69
148	Real Universidad	9.87	16.38	6.49	10.10	13.51		16.38
149	Torreón Nuevo II	6.68	4.39	7.07	8.23	5.46	6.40	8.23
150	Villas del Pedregal I	29.94	8.79	5.83	18.28	8.45	5.71	29.94
151	Misión del Valle				43.45	55.71	58.17	58.17
153	Villa Magna III	5.22	4.69	39.96	4.59	7.93	5.30	39.96
162	Puntalba				28.27	45.67	42.28	45.67



ID. POZO	FUENTE DE ABASTECIMIENTO	2011	2012	2013	2014	2015	2016	MAX.
166	Torreón Nuevo Manantiales				9.02		9.46	9.46
167	HACIENDA DEL VALLE				9.44		10.91	10.91
168	SANTA FE					26.78	26.81	26.81
<b>MAX.</b>		<b>100.69</b>	<b>87.98</b>	<b>143.20</b>	<b>134.84</b>	<b>118.09</b>	<b>114.90</b>	<b>143.20</b>

Para el caso de las Plantas Potabilizadoras se obtuvo un valor máximo en Sulfatos de 367.08 mg/L. Ver tabla 8.

Tabla 8. Valores de Sulfatos en Plantas Potabilizadoras.

SULFATOS FUENTE DE ABASTECIMIENTO	AÑOS						
	2011	2012	2013	2014	2015	2016	MAX
EFLUENTE MANANTIALES	23.27	12.03	56.68	22.16	39.92	26.77	56.68
EFLUENTE P.T.A.P. LOMA LARGA	65.68	41.06	83.93	36.24	40.9	48.98	83.93
EFLUENTE P.T.A.P. MINTZITA	81.66	45.62	141.74	29.44	25.43	52.95	141.74
EFLUENTE P.T.A.P. SAN MIGUEL	11.96	35.78	62.88	9.85	7.49	8.21	62.88
EFLUENTE P.T.A.P. VISTA BELLA (SALIDA 1)		42.69	60.65	32.08	31.34	46.4	60.65
EFLUENTE P.T.A.P. VISTA BELLA (SALIDA 2)	60.93	46.04	63.07	39.58	45.21	46.35	63.07
INFLUENTE MANANTIALES	18.63	36.95	61.89	23.58	47.01	31.16	61.89
INFLUENTE P.T.A.P. MINTZITA	90.6	24.82	150.5	12.2	11.31	14.16	150.5
INFLUENTE P.T.A.P. SAN MIGUEL	47.18	33.39	63.21	37.45	17.58	46.14	63.21
INFLUENTE P.T.A.P. VISTA BELLA	367.08	31.36	65.89	13.12	10.43	47.3	367.08
<b>MAX</b>	<b>367.08</b>	<b>46.04</b>	<b>150.5</b>	<b>39.58</b>	<b>47.01</b>	<b>52.95</b>	<b>367.08</b>

## Bicarbonatos.

La norma NOM-127-SSA1-1994 no establece un límite máximo permisible para los bicarbonatos y en el caso de OOPAS el valor máximo registrado en los análisis químicos de las fuentes subterráneas durante el periodo 2011 a 2016 ha sido de **936.0** mg/L. Ver tabla 9.

Tabla 9. Valores de Bicarbonatos en Fuentes de Abastecimiento Subterráneas.

ID. POZO	FUENTE DE ABASTECIMIENTO	AÑOS							MAX.
		2011	2012	2013	2014	2015	2016		
1	BOULEVARD GARCIA DE LEON	312.00	296.00	310.00	302.00	341.00	312.00	341.00	
2	CIUDAD UNIVERSITARIA	260.00	260.00	298.00	282.00	292.00	278.00	298.00	
3	LAS AMERICAS	538.00	512.00	586.00	548.00	550.00	582.00	586.00	
5	VILLA UNIVERSIDAD	290.00	310.00	302.00	320.00	340.00	342.00	342.00	
6	LOPEZ MATEOS	250.00	260.00	276.00	272.00	316.00	284.00	316.00	
7	ENRIQUE RAMIREZ I	314.00			282.00		312.00	314.00	
9	FOVISSSTE MORELOS II	456.00	460.00	504.00	468.00	510.00	510.00	510.00	
11	COLONIA GUADALUPE	266.00	270.00	280.00	282.00	284.00	298.00	298.00	
13	LOMAS DEL VALLE	268.00		296.00	266.00	286.00	290.00	296.00	
16	PRADOS VERDES (GALEANAS)	300.00	320.00	330.00	340.00	378.00	340.00	378.00	
19	CONALEP (SUST.)	400.00	396.00	420.00	368.00	456.00	448.00	456.00	
20	SAN RAFAEL	492.00	520.00	514.00	438.00	532.00	536.00	536.00	
21	MERCADO DE ABASTOS (SUST.)	490.00	676.00	508.00	472.00	546.00	546.00	676.00	
22	SANTA CECILIA	140.00	140.00	162.00	140.00	178.00	164.00	178.00	
23	DELTA DE LOS RIOS	394.00			328.00	372.00	410.00	410.00	
24	MARIANO ESCOBEDO I		336.00	438.00	352.00	380.00	370.00	438.00	
25	EL REALITO	372.00	438.00	434.00	422.00	470.00	500.00	500.00	
26	LOMAS DEL TECNOLOGICO	466.00	512.00	502.00				512.00	
27	LA SOLEDAD I	480.00	476.00	488.00	498.00	596.00	534.00	596.00	
28	NORMA	312.00	310.00	342.00	314.00	370.00	358.00	370.00	
29	OCOLUCEN	248.00	254.00	260.00	272.00	276.00	286.00	286.00	
30	LA QUEMADA	190.00	194.00	210.00		218.00	200.00	218.00	
31	EDUARDO RUIZ	190.00	192.00	192.00	198.00	210.00	204.00	210.00	
33	EL RETIRO	350.00	360.00	400.00	382.00	412.00	402.00	412.00	
34	FUENTES DE VALLADOLID	172.00	160.00	190.00	170.00	188.00	200.00	200.00	
36	FOVISSSTE LA HUERTA	352.00	370.00	368.00	390.00	430.00	412.00	430.00	
37	JARDINES DEL RINCON	274.00	280.00	250.00	284.00	290.00	320.00	320.00	
38	RINCON QUIETO	210.00	200.00	220.00	210.00	230.00	234.00	234.00	
39	COSMOS II	248.00	256.00	290.00	270.00	308.00	292.00	308.00	
40	EMILIANO ZAPATA I	146.00		82.00		70.00	96.00	146.00	
41	6 DE JULIO	270.00	280.00	292.00	294.00	330.00	314.00	330.00	
42	IGNACIO ZARAGOZA	630.00	664.00	656.00	670.00	718.00	690.00	718.00	
44	MARIANO ESCOBEDO II	384.00	432.00	350.00	450.00	432.00	454.00	454.00	

<b>ID. POZO</b>	<b>FUENTE DE ABASTECIMIENTO</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>MAX.</b>
45	SANTA CRUZ	260.00	284.00	294.00	290.00	310.00	310.00	310.00
46	RINCONADA DEL VALLE	240.00	264.00	270.00	262.00	248.00	212.00	270.00
47	EL LAGO I	136.00		352.00	138.00	160.00	164.00	352.00
48	FUENTES DE MORELIA	150.00	140.00	164.00		164.00	170.00	170.00
49	POTRERILLOS	232.00	244.00	250.00	250.00	254.00	214.00	254.00
51	LOMAS DE SANTIAGUITO I	430.00	434.00	482.00	434.00	460.00	494.00	494.00
53	LA SOLEDAD II	444.00	460.00	466.00	452.00	518.00	500.00	518.00
54	PERIODISTAS	304.00	316.00	330.00	350.00	344.00	360.00	360.00
55	RESERVA OCOLUCEN	250.00	250.00	260.00	270.00	256.00	298.00	298.00
56	INDECO III	252.00	260.00	280.00	280.00	292.00	302.00	302.00
58	ARROYO AGUA CLARA	134.00	134.00	136.00	130.00	164.00	164.00	164.00
63	CIUDAD INDUSTRIAL II	366.00	364.00	382.00	374.00	422.00	424.00	424.00
64	SAN ISIDRO ITZICUARO	138.00	148.00	136.00	136.00	136.00	142.00	148.00
65	GERTRUDIS SANCHEZ I	160.00	172.00	174.00	222.00	310.00	302.00	310.00
66	SAN JUANITO ITZICUARO	294.00	312.00	342.00	328.00	408.00	368.00	408.00
68	LAS ARBOLEDAS	216.00						216.00
69	PEÑA BLANCA	310.00	310.00	344.00	320.00	348.00	344.00	348.00
70	VILLAS DEL REAL III	230.00	242.00					242.00
72	EL LAGO II	334.00	360.00	150.00	306.00	372.00	370.00	372.00
73	TANGANXOAN	140.00	134.00	132.00	136.00	124.00	160.00	160.00
76	AMP. TORREON NUEVO I	214.00	234.00	260.00	276.00	492.00	290.00	492.00
77	REFORMA	158.00	170.00	370.00		200.00	278.00	370.00
78	EJIDO ISAAC ARRIAGA II	332.00	500.00	316.00	500.00	408.00	438.00	500.00
79	EJIDO ISAAC ARRIAGA III	372.00	476.00	372.00	446.00	512.00	532.00	532.00
81	AMP. PRIMO TAPIA OTE	476.00	470.00	544.00	524.00	526.00	538.00	544.00
83	ENRIQUE RAMIREZ III		278.00	300.00	280.00	352.00	344.00	352.00
88	LA PALMA	180.00	188.00	184.00	176.00	230.00	240.00	240.00
89	PLAN DE LOS OLIVOS	468.00	450.00	484.00	448.00	550.00	520.00	550.00
90	MARIANO ESCOBEDO III	470.00	520.00	522.00	492.00	524.00	556.00	556.00
91	EMILIANO ZAPATA II	140.00		164.00	118.00	164.00	176.00	176.00
92	JESUS ROMERO FLORES	356.00	368.00	416.00	414.00	474.00		474.00
93	AMP. TORREON NUEVO II	228.00				264.00	158.00	264.00
94	RICARDO FLORES MAGON	104.00	100.00	110.00	102.00	114.00	132.00	132.00
95	VALLE DE LAS FLORES	300.00	284.00	350.00	264.00	334.00	338.00	350.00
96	LUCIO CABAÑAS	96.00	100.00	98.00	94.00	142.00	104.00	142.00
98	CASA HOGAR	514.00	544.00	578.00	592.00	592.00	622.00	622.00
99	LOS SAUCES	152.00	140.00	180.00	136.00	178.00	156.00	180.00
100	REPOSICION GERTRUDIS SANCHEZ II	164.00	182.00	180.00	164.00	194.00	210.00	210.00
101	INFONAVIT QUINCEO	94.00	100.00	100.00	100.00	110.00	118.00	118.00
102	AMP. SOLIDARIDAD	428.00	425.00					428.00

<b>ID. POZO</b>	<b>FUENTE DE ABASTECIMIENTO</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>MAX.</b>
103	AMP. LA SOLEDAD	402.00	432.00	422.00	432.00	468.00	440.00	468.00
105	MIL CUMBRES	280.00	306.00	60.00	320.00	356.00	360.00	360.00
106	DIAZ ORDAZ	286.00	306.00	320.00	320.00	320.00	350.00	350.00
107	VENUSTIANO CARRANZA	762.00	778.00	858.00	832.00	936.00	884.00	936.00
108	EL REALITO II	346.00	352.00		172.00	378.00	440.00	440.00
109	23 DE MARZO			212.00	214.00	240.00	256.00	256.00
110	VILLAS DEL REAL IV	132.00	144.00	136.00	166.00	264.00	156.00	264.00
111	RIO GRANDE	360.00	440.00	432.00	424.00	482.00	422.00	482.00
114	LOMA REAL	224.00	242.00	250.00	260.00	350.00	366.00	366.00
115	MARIANO ABASOLO	178.00	184.00	226.00	210.00	242.00	240.00	242.00
116	LA ESPERANZA	110.00	148.00	168.00	172.00	184.00	230.00	230.00
117	VILLAS DEL SOL	244.00	260.00	260.00	252.00		290.00	290.00
119	EXHACIENDA LA TRINIDAD	170.00		192.00		186.00	202.00	202.00
122	3 DE AGOSTO	432.00	438.00	440.00	440.00	490.00	464.00	490.00
123	GUAYANGAREO	520.00	544.00					544.00
124	PUNHUATO	376.00	394.00		400.00	408.00	448.00	448.00
125	LAGO II (REP)	136.00	330.00					330.00
127	AMP. STA. CRUZ	268.00	286.00	260.00	292.00	304.00	310.00	310.00
128	NIÑOS HEROES	202.00	220.00	230.00	230.00	260.00	260.00	260.00
129	FRACC. ARIO 1815	256.00				352.00	302.00	352.00
131	IGNACIO ALLENDE	150.00	152.00	166.00	170.00	170.00	172.00	172.00
133	HEROES REPUBLICANOS	150.00	150.00	156.00	150.00	128.00	184.00	184.00
134	GALEANA	146.00		152.00	152.00	164.00	188.00	188.00
135	RINCONADA DE MORELIA	170.00	188.00	194.00	212.00	252.00	290.00	290.00
136	SAN JOSE ITZICUARO	130.00	130.00	140.00	128.00	150.00	148.00	150.00
137	ARKO SAN ANTONIO	320.00	310.00	344.00	340.00	380.00	358.00	380.00
138	RESIDENCIAL TORREON NUEVO	296.00	330.00	340.00	342.00	380.00	348.00	380.00
139	RESIDENCIAL TINIJARO	128.00		150.00	118.00	142.00	132.00	150.00
140	TZINDURIO SARH	144.00	140.00	140.00	130.00	160.00	160.00	160.00
141	TENENCIA MORELOS	162.00	170.00	190.00	178.00	200.00	224.00	224.00
142	Real San Diego		144.00	140.00		150.00	170.00	170.00
144	Villa Magna I			146.00		190.00		190.00
146	CAPULA			118.00				118.00
147	Jesús Romero Flores II	420.00		406.00	418.00	482.00	464.00	482.00
148	Real Universidad	252.00	280.00	216.00	272.00	270.00		280.00
149	Torreón Nuevo II	124.00	150.00	148.00	118.00	156.00	174.00	174.00
150	Villas del Pedregal I	140.00	140.00	146.00	140.00	150.00	156.00	156.00
151	Misión del Valle				340.00	340.00	372.00	372.00
153	Villa Magna III	130.00	130.00	148.00	144.00	166.00	160.00	166.00
162	Puntalba				230.00	260.00	264.00	264.00

<b>ID. POZO</b>	<b>FUENTE DE ABASTECIMIENTO</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>MAX.</b>
<b>166</b>	Torreón Nuevo Manantiales				128.00		170.00	170.00
<b>167</b>	HACIENDA DEL VALLE				220.00		240.00	240.00
<b>168</b>	SANTA FE					392.00	322.00	392.00
<b>MAX.</b>		<b>762.00</b>	<b>778.00</b>	<b>858.00</b>	<b>832.00</b>	<b>936.00</b>	<b>884.00</b>	<b>936.00</b>

Para el caso de las Plantas Potabilizadoras se obtuvo un valor máximo en Bicarbonatos de 406.00 mg/L. Ver tabla 10.

Tabla 10. Valores de Bicarbonatos en Plantas Potabilizadoras.

<b>BICARBONATOS</b>	<b>AÑOS</b>						
<b>FUENTE DE ABASTECIMIENTO</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>MAX.</b>
EFLUENTE MANANTIALES	92	94	334	120	124	130	334
EFLUENTE P.T.A.P. LOMA LARGA	230	74	280	100	76	92	280
EFLUENTE P.T.A.P. MINTZITA	90	106	300	92	100	102	300
EFLUENTE P.T.A.P. SAN MIGUEL	112	108	320	128	122	124	320
EFLUENTE P.T.A.P. VISTA BELLA (SALIDA 1)		80	372	88	98	102	372
EFLUENTE P.T.A.P. VISTA BELLA (SALIDA 2)	78	74	270	84	78	104	270
INFLUENTE MANANTIALES	94	106	260	122	126	130	260
INFLUENTE P.T.A.P. MINTZITA	100	92	260	100	124	120	260
INFLUENTE P.T.A.P. SAN MIGUEL	112	116	320	130	126	120	320
INFLUENTE P.T.A.P. VISTA BELLA	80	80	406	90	204	104	406
<b>MAX.</b>	<b>230</b>	<b>116</b>	<b>406</b>	<b>130</b>	<b>204</b>	<b>130</b>	<b>406</b>

## Sodio.

La norma NOM-127-SSA1-1994 establece un límite máximo permisible para sodio de 200 mg/L, y en el caso de OOPAS el valor máximo registrado en los análisis químicos de las fuentes subterráneas durante el periodo 2011 a 2016 ha sido de **621.5.0** mg/L. Ver tabla 6.

Tabla 11. Valores de Bicarbonatos en Fuentes de Abastecimiento Subterráneas.

SODIO ID. POZO	FUENTE DE ABASTECIMIENTO	AÑOS							MAX.
		2011	2012	2013	2014	2015	2016		
1	BOULEVARD GARCIA DE LEON	117.30		117.00	115.20	165.00		165.00	
2	CIUDAD UNIVERSITARIA	67.21	79.44	74.00	81.01	152.50		152.50	
3	LAS AMERICAS	180.60		207.30	207.30			207.30	
5	VILLA UNIVERSIDAD	76.76	93.10	88.12	91.71	178.20	88.26	178.20	
6	LOPEZ MATEOS	103.10	102.90	104.60	103.50	149.30	91.20	149.30	
7	ENRIQUE RAMIREZ I	125.80			115.30			125.80	
9	FOVISSSTE MORELOS II	212.70	235.10	244.50	224.30	447.60	224.20	447.60	
11	COLONIA GUADALUPE		110.60	109.90	107.70	0.00	103.80	110.60	
13	LOMAS DEL VALLE			87.48	83.61	0.00	76.04	87.48	
16	PRADOS VERDES (GALEANAS)	146.60	145.20	147.40	142.60	215.30	143.50	215.30	
19	CONALEP (SUST.)	145.30	160.70	153.90	152.20	0.00	152.60	160.70	
20	SAN RAFAEL	190.10	214.40	214.60	205.20		227.60	227.60	
21	MERCADO DE ABASTOS (SUST.)	202.90	217.00	208.00	212.90	404.30	212.00	404.30	
22	SANTA CECILIA	0.00		0.00	0.00	0.00		0.00	
23	DELTA DE LOS RIOS	201.10			131.60	0.00	175.20	201.10	
24	MARIANO ESCOBEDO I		162.40	204.00	156.80	301.40	157.80	301.40	
25	EL REALITO	96.90	117.30	132.00	116.30	244.30	121.40	244.30	
26	LOMAS DEL TECNOLOGICO	253.30	258.20	253.70				258.20	
27	LA SOLEDAD I	240.50	242.10	254.10	261.20	497.60	286.00	497.60	
28	NORMA	123.20	138.80	132.30	128.60	272.40	131.00	272.40	
29	OCOLUCEN	72.05		84.85	88.21			88.21	
30	LA QUEMADA	0.00	55.18	54.15	0.00	125.00		125.00	
31	EDUARDO RUIZ	55.63	54.72	0.00	54.43	0.00	60.48	60.48	
33	EL RETIRO	156.70	173.30	168.20	168.40	329.50	162.10	329.50	
34	FUENTES DE VALLADOLID	28.18		0.00	0.00	0.00		28.18	
36	FOVISSSTE LA HUERTA	123.40	148.20	146.20	148.30	297.80	145.20	297.80	
37	JARDINES DEL RINCON	44.02		54.02	60.72	0.00		60.72	
38	RINCON QUIETO	0.00	0.00	0.00	0.00	56.11	79.58	79.58	
39	COSMOS II	56.52	69.24	67.35	70.40	138.30	67.21	138.30	
40	EMILIANO ZAPATA I	0.00		0.00		0.00		0.00	
41	6 DE JULIO	77.29		84.24	89.24	130.70		130.70	

<b>ID. POZO</b>	<b>FUENTE DE ABASTECIMIENTO</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>MAX.</b>
42	IGNACIO ZARAGOZA	383.20	372.40	376.40	369.00	0.00	357.50	383.20
44	MARIANO ESCOBEDO II	158.50	196.30	161.00	200.40	386.00	212.00	386.00
45	SANTA CRUZ		97.35	93.68	92.04	0.00	91.50	97.35
46	RINCONADA DEL VALLE	78.92	92.73	66.12	91.98	132.70		132.70
47	EL LAGO I			178.40	0.00	0.00	34.98	178.40
48	FUENTES DE MORELIA	0.00		0.00	0.00			0.00
49	POTRERILLOS	85.85	89.70	87.25	86.06	171.50		171.50
51	LOMAS DE SANTIAGUITO I	195.60	215.40	211.70	199.50	314.80	192.00	314.80
53	LA SOLEDAD II	235.60	219.70	217.30	224.20	432.00		432.00
54	PERIODISTAS	69.84		84.54	88.43			88.43
55	RESERVA OCOLUCEN	53.09		63.83	67.89			67.89
56	INDECO III	73.15	83.56	90.35	83.97	0.00	43.58	90.35
58	ARROYO AGUA CLARA	0.00		0.00	0.00	0.00		0.00
63	CIUDAD INDUSTRIAL II	137.90	151.60	148.50	141.00	286.10	186.00	286.10
64	SAN ISIDRO ITZICUARO	20.00	65.73	0.00	0.00	0.00		65.73
65	GERTRUDIS SANCHEZ I	55.39	52.77	53.80	0.00		57.04	57.04
66	SAN JUANITO ITZICUARO	136.20	145.50	160.40	149.90	238.60		238.60
68	LAS ARBOLEDAS	69.61						69.61
69	PEÑA BLANCA	115.20		139.60	145.40			145.40
70	VILLAS DEL REAL III	28.51	0.00					28.51
72	EL LAGO II	176.70	173.70	0.00	151.30	345.50		345.50
73	TANGANXOAN	0.00	0.00	0.00	0.00			0.00
76	AMP. TORREON NUEVO I	0.00	0.00	0.00	0.00	79.23	46.11	79.23
77	REFORMA	0.00	0.00	0.00	0.00	0.00		0.00
78	EJIDO ISAAC ARRIAGA II	147.90	145.80	142.60	205.60			205.60
79	EJIDO ISAAC ARRIAGA III	123.30	207.30	206.30	198.40			207.30
81	AMP. PRIMO TAPIA OTE	238.60	230.40	264.30	227.20			264.30
83	ENRIQUE RAMIREZ III		118.10	115.10	112.40	181.90	109.70	181.90
88	LA PALMA	0.00	57.39	0.00	0.00	0.00	59.58	59.58
89	PLAN DE LOS OLIVOS	193.70	216.40	203.70	195.30	134.30	234.70	234.70
90	MARIANO ESCOBEDO III	257.40	273.40	272.70	249.40	510.10	285.30	510.10
91	EMILIANO ZAPATA II	0.00		0.00	0.00	0.00		0.00
92	JESUS ROMERO FLORES	185.10	195.00	192.40	203.00			203.00
93	AMP. TORREON NUEVO II	0.00				0.00		0.00
94	RICARDO FLORES MAGON	0.00	0.00	0.00	0.00	0.00		0.00
95	VALLE DE LAS FLORES	127.10	132.40	134.80	130.20	0.00	122.50	134.80
96	LUCIO CABAÑAS	0.00	0.00	0.00	0.00	0.00		0.00
98	CASA HOGAR	214.70	229.80	238.60	230.50		251.10	251.10
99	LOS SAUCES	0.00		0.00	0.00			0.00
100	REPOSICION GERTRUDIS SANCHEZ II	44.44	59.50	0.00	51.91	0.00		59.50

<b>ID. POZO</b>	<b>FUENTE DE ABASTECIMIENTO</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>MAX.</b>
101	INFONAVIT QUINCEO		0.00	0.00	0.00	0.00	0.00	0.00
102	AMP. SOLIDARIDAD	205.50	207.90					207.90
103	AMP. LA SOLEDAD	198.30	189.90	186.70	191.90	382.60		382.60
105	MIL CUMBRES	0.00	0.00	0.00	0.00	0.00	48.32	48.32
106	DIAZ ORDAZ	123.60	133.00	131.50	131.70	247.00	120.80	247.00
107	VENUSTIANO CARRANZA	359.60	367.10	383.00	382.10	621.50		621.50
108	EL REALITO II	126.20	139.60		152.30	284.00		284.00
109	23 DE MARZO			78.75	82.53	133.10	92.86	133.10
110	VILLAS DEL REAL IV	56.37	56.23	0.00	55.26	90.59		90.59
111	RIO GRANDE	178.30	184.50	176.30	180.00	358.30		358.30
114	LOMA REAL	75.49	77.20	75.23	86.73	233.50		233.50
115	MARIANO ABASOLO	23.30	0.00	0.00	0.00	51.45	38.98	51.45
116	LA ESPERANZA	0.00	0.00	0.00	0.00	117.50		117.50
117	VILLAS DEL SOL	67.16	80.93	81.83	76.61	122.10	81.05	122.10
119	EXHACIENDA LA TRINIDAD	31.96		0.00		0.00	46.56	46.56
122	3 DE AGOSTO	189.40	203.90	204.10	202.70	395.20	222.60	395.20
123	GUAYANGAREO	194.60	204.00					204.00
124	PUNHUATO	71.60	88.07		91.13		92.42	92.42
125	LAGO II (REP)	0.00	176.70					176.70
127	AMP. STA. CRUZ	59.11	75.43	71.88	66.13	154.00		154.00
128	NIÑOS HEROES	55.29	64.53	64.87	65.17	143.10	71.90	143.10
129	FRACC. ARIO 1815	106.20				258.90	120.80	258.90
131	IGNACIO ALLENDE	0.00	0.00	0.00	0.00	0.00	29.45	29.45
133	HEROES REPUBLICANOS	72.57	0.00	52.09	61.58	0.00		72.57
134	GALEANA	0.00		0.00	0.00	0.00	33.68	33.68
135	RINCONADA DE MORELIA	0.00	0.00	0.00	0.00		47.30	47.30
136	SAN JOSE ITZICUARO	0.00	0.00	0.00	0.00	0.00	27.10	27.10
137	ARKO SAN ANTONIO	92.01	118.60	130.30	123.60	158.30		158.30
138	RESIDENCIAL TORREON NUEVO	120.80	129.00	142.60	122.00			142.60
139	RESIDENCIAL TINIJARO	0.00		0.00	0.00	0.00		0.00
140	TZINDURIO SARH	0.00	0.00	0.00	0.00	0.00		0.00
141	TENENCIA MORELOS	0.00	0.00	0.00	0.00	0.00		0.00
142	Real San Diego		0.00	0.00		0.00		0.00
144	Villa Magna I			0.00		0.00		0.00
146	CAPULA							
147	Jesús Romero Flores II	175.60		185.40	185.90	373.60	194.00	373.60
148	Real Universidad	0.00	50.15	0.00	61.07	0.00		61.07
149	Torreón Nuevo II	0.00	0.00	0.00	0.00	0.00	54.28	54.28
150	Villas del Pedregal I	0.00	0.00	0.00	0.00	0.00	31.33	31.33
151	Misión del Valle				133.80			133.80



<b>ID. POZO</b>	<b>FUENTE DE ABASTECIMIENTO</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>MAX.</b>
<b>153</b>	Villa Magna III	0.00	0.00	0.00	0.00	0.00	39.38	39.38
<b>162</b>	Puntalba				51.31	69.54	54.33	69.54
<b>166</b>	Torreón Nuevo Manantiales				61.10			61.10
<b>167</b>	HACIENDA DEL VALLE				90.24			90.24
<b>168</b>	SANTA FE					212.60		212.60
<b>MAX.</b>		<b>383.20</b>	<b>372.40</b>	<b>383.00</b>	<b>382.10</b>	<b>621.50</b>	<b>357.50</b>	<b>621.50</b>