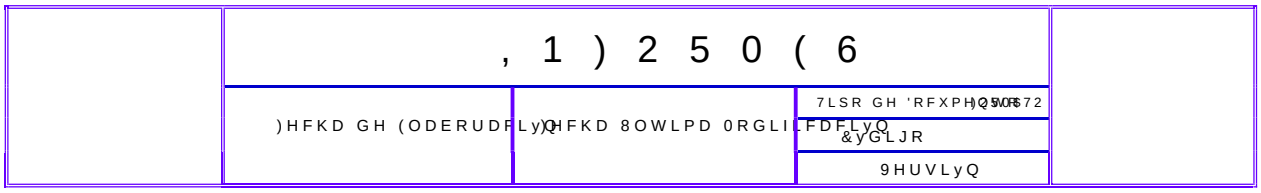
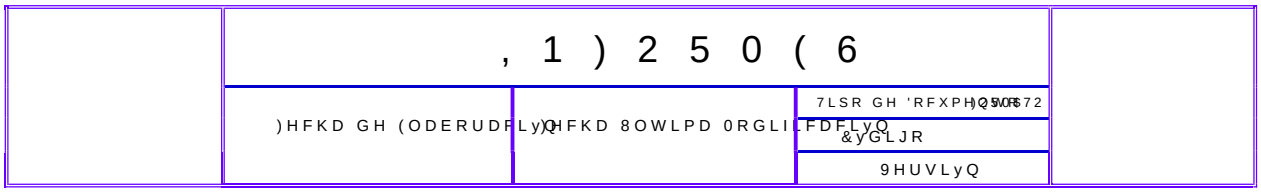


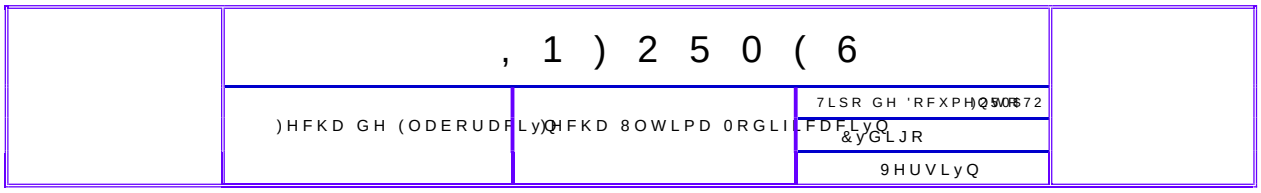
3iJLQD GH

1R 3URFH	'HVSDFKR -XGL	5DGLFDGF &RPSOHW	0HGLR GH FR	$FFLyQ MX &RQWHQF DGPLQLVWU RUGLQDU	(VWDGR DFWXDO GHO SURFHVR
	&RQVHMR GH (		5(3$5$&,Ï1 ',5(&7$	&217(1&,26 $'0,1,675$7	6((1&8(175$ 3(1',(17('( )$//2 '(6(*81'$,167$1&,$ '(/ &216(-2 '((67$'2
	-X]JDGR VHJX DGPLQLVWUDWLY		5(3$5$&,Ï1 ',5(	&217(1&,26 $'0,1,675$7	3(1',(17(3$*2 '(/,48,'$&,Ï1 '(&21'(1$
	-X]JDGR WHUF DGPLQLVWUD		5(3$5$&,Ï1 ',5(&7$	&217(1&,262 $'0,1,675$7,92	$&78$/0(17(6((1&8(175$ 3(',(17(&(55$5 /$ (7$3$ 352%$725,$
	-X]JDGR VHJXQGR DGPLQLVWUDWLYR GH &DVDQDUH	18/,'$' < '('(5(&+2	5(67$%/(&,0,(172 $'0,1,675$7,92	&217(1&,262 '(21'(&21),502	6((0,7,2)$//2 (/ '(0$5=2 '((1)$//2 '(35,0(5$,167$1&,$
	7ULEXQDO $GPLQLVWUDWLYR GH &DVDQDUH	&217529(56,$ &2175$&78$/	&217(1&,262 $'0,1,675$7,92		6((1&8(175$ 3(1',(17('( )$//2 '(6(*81'$,167$1&,$ (1 (/ &216(-2 '((67$'2
	-X]JDGR &XDUWR $GPLQLVWUDWLYR GH &DVDQDUH	18/,'$' < '('(5(&+2	5(67$%/(&,0,(172 $'0,1,675$7,92	&217(1&,262	(/ '( )(%5('(6(//(9Ï $ &$%2 $8',(1&,$ '(&21&,/,$&,Ï1 6(35(6(17Ï 2508/$ '(&21&,/,$&,Ï1 48(12)8($&(37$'$ 6,1 (0%$5*2 (;,67(È1,02



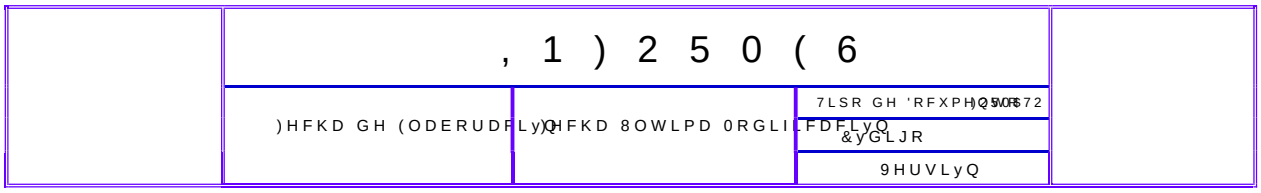
3iJLQD GH

1R 3URFH	'HVSDFKR -XGL	5DGLFDGF &RPSOHW	0HGLR GH FR	$FFLyQ MX &RQWHQF DGPLQLVWU RUGLQDU	(VWDGR DFWXDO GHO SURFHVR
					&21&,/,$72 325 3$57('(/$ '(0$1'$17(6('(&5(7$521 358(%$6 < 6( ),-Ï)(&+$ 3$5$ (/ '(6(37,(0%5($ /$6 $ 0
	7ULEXQDO DGPLQLVWUDWLYR GH &DVDQDUH	DFXPXODGR	(-(&87,92	&217(1&,262 $'0,1,675$7,92	(/ -8(9(6 '((1(52 '( )8(5(0,7,'2 $/ +2125$%/(&216(-2 '((67$'2 &21 (/),1 '(5(62/9(5 (/ 5(&856 ($3(/$&,Ï1 ,17(538(672 &2175$ /$ 6(17(1&,$ 352)(5,'$ 325 (/ 75,%81$/ $'0,1,675$7,92
	-XJDGR SULPHUR DGPLQLVWUDWLYR GH &DVDQDUH		&217529(56,$ &2175$&78$/	&217(1&,262 $'0,1,675$7,92	$ /$)(&+$ 12 6(+$ (0,7,'2)$//2 '(35,0(5$,167$1&,$
	-XJDGR SULPHUR DGPLQLVWUDWLYR GH &DVDQDUH		6(,167$852 & 5(3$5$&,21 ',5(&7$ $&7,2 ,1 5(0 9(562 0(',$17($872 '('(2&78%5('(6($'(&82 $ &217529(5&,$6 &2175$&78$/(6	&217(1&,262 $'0,1,675$7,92	$ /$)(&+$ 12 6(+$ (0,7,'2)$//2 '(35,0(5$,167$1&,$



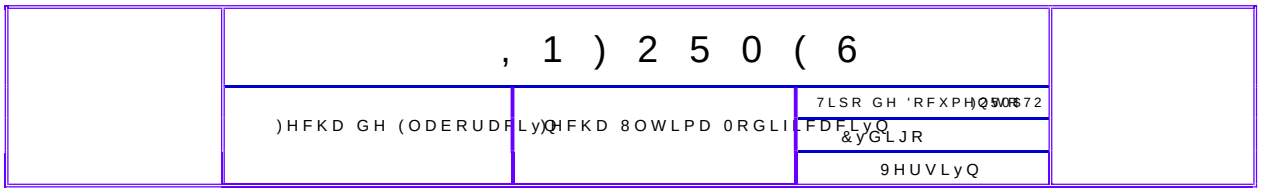
3iJLQD GH

1R 3URFH	'HVSDFKR -XGL	5DGLFDGF &RPSOHW	0HGLR GH FR	$FFLyQ MX &RQWHQF DGPLQLVWU RUGLQDU	(VWDGR DFWXDO GHO SURFHVR
	7ULEXQDO DGPLQLVWUDWLYR GH &DVDQDUH	&217529(56,$ &2175$&78$/	&217(1&,262 $'0,1,675$7,92		(/ '(0$5=2 '( )8(5(0,7,'2 $/ +2125$%/(&216(-2 '((67$'2 &21 (/),1 '(5(62/9(5 (/ 5(&8562 ($3(/$&,Ï1 ,17(538(672 &2175$ /$ 6(17(1&,$ 352)(5,'$ 325 (/ 75,%81$/ $'0,1,675$7,92
	-X]JDGR &XDUWR $GPLQLVWUDWLYR GH &DVDQDUH	18/,'$' < 5(67$%/(&,0,(172 '('(5(&+2	&217(1&,262 $'0,1,675$7,92		(/ '( )(%5('(6$/,2)$//2 (1 '21'(6('(&/5%$ 352%$'$ /$ (;&(3&,Ï1 '(,1(37$ '(0$1'$ < 6('(&/$52 7(50,1$5 (/ 352&(62 < $5&+,9$56(
	-X]JDGR SULPHUR DGPLQLVWUDWLYR GHO FLUFXLWR GH <RSDO	18/,'$' 6,03/(	&217(1&,262 $'0,1,675$7,92		6((1&8(175$ $/ '(63$&+2 3$5$ &255(5 75$6/$'2 '($/(*$726
	7ULEXQDO DGPLQLVWUDWLYR GH &DVDQDUH	18/,'$' < 5(67$%/(&,0,(172 '('(5(&+2	&217(1&,2626863(16,Ï1 $'0,1,675$7,92/26		0(',$17 3529,'(1&,$ '('( )(%5(52 6(&21),50$ /$ '(&,6,Ï1 '(1(*$5 /$6 0(','$6 &$87(/$5(6 '('(0$1'$'26 6(&21'(&((/ 5(&8562 '($3(/$&,Ï1 (1 ()(&72 '(92/87,92 $17((/ &216(-2 '((67$'2
	-X]JDGR 3ULPHUR $GPLQLVWUDWLYR	5(3$5$&,Ï1 ',5(&7$	&217(1&,262 $'0,1,675$7,92		(/ '(6(37,(0%5('(6(&217(672 /$ '(0$1'$



3iJLQD GH

1R 3URFH	'HVSDFKR -XGL	5DGLFDGF &RPSOHW	0HGLR GH FR	$FFLyQ MX &RQWHQF DGPLQLVWU RUGLQDU	(VWDGR DFWXDO GHO SURFHVR
	-X]JDGR 6HJXQGR $GPLQLVWUDWLYR GH &DVDQDUH		18/,'$' 6,03/(	&217(1&,262 $'0,1,675$7,92	6(352),5 6(17(1&,$ '(35,0(5$,167$1&,$ 6(35(6(17Ï < &21&(',Ï 5(&8562 '($3(/$&,Ï1 6((19,Ï (/ (;3('(17($/ 75,%81$/ $'0,1,675$7,92 '(&$6$1$5(
	7ULEXQDO DGPLQLVWUDWLYR GH &DVDQDUH	&217529(56,$ &2175$&78$/	&217(1&,262 $'0,1,675$7,92		(/ '(0$<2 '(/ 6(&217(67Ï /$ '(0$1'$ < 6(//$0Ï (1 *$5$17Ë$ &21),1(6 '(5(3(7,&,Ï1 (/ '(0$<2 ,1*5(6Ï $/ '(63$&+2 &21 &217(67$&,21(6
	-X]JDGR &XDUWR $GPLQLVWUDWLYR GH &DVDQDUH	5(3$5$&,Ï1 ',5(&7$	&217(1&,262 $'0,1,675$7,92		(/ '(-81,2 (,1*5(6Ï $/ '(63$&+2 3$5$ 3529(5
	75,%81$/ '($5%,75$0(172 '(/ &(1752 '($5%,75$-(&21&,/,$&,Ï1 < $0,*$%/(&20326,&,Ï1 &È0$5$ '(&20(5&,2 %2*27$ ' &	&217529(56,$ &2175$&78$/	$5%,75$/		0(',$17($872 12 '(/ '(129,(0%5('((/ 75,%81$/ '($5%,75$0(172 '(/ &(1752 '($5%,75$-(&21&,/,$&,Ï1 < $0,*$%/(&20326,&,Ï1 &È0$5$ '(&20(5&,2 5(62/9,Ï $&/$5$5 48(62%5(/$ ($$$< 12 5(&$(5Ë$ '(&,6,Ï1 $/*81$ '(%,'2 $ 48(6(5Ë$ '(69,1&8/$'$ 325 (/ 12 3$*2 '(/26

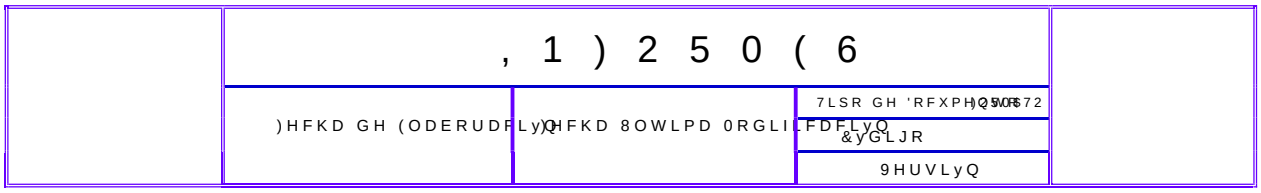


3iJLQD GH

1R 3URFH	'HVSDFKR -XGL	5DGLFDGI &RPSOHW	0HGLR GH FR	$FFLyQ MX &RQWHQF DGPLQLVWU RUGLQDU	(VWDGR DFWXDO GHO SURFHVR
					+2125$5,26 /26 È5%,7526 /$ ($$$<)8('(69,1&8/$'$ '(/ 352&(62 $5%,75$/

$&&,21(6 &2167,78&,21$/(6

1R 3URFH	'HVSDFKR -X	5DGLFDG &RPSOHW	'HPDQGDQ	0HGLI GH FRQW	(VWDGR DFWXDO GHO SURFHVR
	-8=*$'2 35,0($'0,1,675$7,		0$5,/8= *20(= &5,67,$12 $/9$52) 52-$0 0$1-$55(6	<$&&,Ï1 3238/$5	(67$ 3(1',(17(,1)25 &80/,0,(172 '( )$//26 -8',&,$/(6 (1 35,0(5$ < 6(*81'$,167$1&,$6 &216,67(17(6 (1 5(8%,&$&,Ï1 '(/26 5(6,'(17(6 '(/26 %$55,26 9 //$ 5,7$ < &,0$55Ï1
	-8=*$'2 35,0($'0,1,675$7,		1 0,/(1$ 5,1&21 $/%$55$&,1	$&&,Ï1 3238/$5	(67$ 3(1',(17($8',(1 9(5,),&$&,Ï1 3$5$ (/ 'Ë$ '($%5,/ $ /$6 30 '( )$//26 -8',&,$/(6 (1 35,0(5$ < 6(*81'$,167$1&,$6 &216,67(17(6 (1 &21 (/),1 '(&20352%$5 $9$1&(6 5($/,=$'26 (1 (/ $f2 3(50,626 $17(&25325,1248,$ '(9(57,0,(172 '($*8$6 5(6,'8$/(6 $/ 5Ë2 &+$57((/ (67$'2 $&78$/ '(&26$6 < /$6 '(&,6,21(6 '(&803/,0,(172 48(6(3/$17($5È 325 3$57('(/$ 18(9$ $'0,1,675$&,Ï1 < 18(92 3(5 2'2 '(*2%,(512
	-8=*$'2 6(*81 $'0,1,675$7,		$5*(0,52 6,/9$ *21 < 27523	$&&,Ï1 3238/$5	(/ '(0$5=2 '((/ (;3(',(17(3$62 $ '(63$&+2 3$5$ /$ 9(5,),&$&,Ï1 '(,1)250(35(6(17$'2 325 3$57('(/ 081,&3,2 '(<23$/ 5(/$&,21$'2 &21 (/ &803/,0,(17 '(6(17(1&,$
	75,%81$/ $'0,1,675$7,92 '(&$6$1$5(		352&85$'85Ë$ -8',&,$/ ,, $0%,(17$/ $*5$5,$	$&&,Ï1 <3238/$	$&78$/0(17(6((1&8(175$ (1 &20,7e '(9(5,),&$&,21 '(/ &803/,0,(172 '(/)$//2 < 6((67$1 //(9$1'2 $ &$%2 0(6$6 '(75$%$-2



3iJLQD GH

1R 3URFH	'HVSDFKR -X	5DGLFDG &RPSOHW	'HPDQGDQ	0HGLI GH FRQW	(VWDGR DFWXDO GHO SURFHVR
	75,%81$/ $'0,1,675$7,92 '(&$6$1$5(		352&85$'85Ë$ -8',&,$/ ,, $0%,(17$/ $*5$5,$	$&&,Ï1 <3238/$5	$/ '(63$&+2 '(/ 75,%81$/ &21 5(638(67$ '(/$6 (17,'$'(6 2%/,*$'$6 9(5,),&$&,Ï1 &803/,0,(172 '( )$//2
	-8=*$'2 35,0(52 $'0,1,675$7,92		$/'(0$5 *$5&,$	$&&,Ï1 3238/$5	/$ $/780$ $&78$&,Ï1 48(6(5(*,675$ (6 5(181&,$ '(/ $32'(5$'2 '(/$ ($ $ $ <
	75,%81$/ $'0,1,675$7,92 '(&$6$1$5(		352&85$'85Ë$ -8',&,$/ ,, $0%,(17$/ $*5$5,$	$&&,Ï1 <3238/$5	(/ '(129,(0%5('(5(48,5,2 $/ 081,,&3,2 '(<23$/ 3$5$ 48($//(*$5$1 623257(6 '(5(48,5,2 $/ 081,,&3,2 '(<23$/ 3$5$ 48($//(*$5$1 623257(6 '(/$ 37$5 '(/ 02552 (/ 081,&,3,2 '(<23$/ $//(*Ï (/ ,1)250(5(48(5,'2
	-8=*$'2 35,0(52 $'0,1,675$7,92		352&85$'85Ë$ -8',&,$/ ,, $0%,(17$/ $*5$5,$	$&&,Ï1 <3238/$5	6(5(352*5$02 /$)(&+$ '(,163(&&,Ï1 -8',&,$/ '(9(5,) &$&,21 3$5$ (/ '($*2672 '($ /$6 $0
	-8=*$'2 35,0(52 $'0,1,675$7,92		'()(1625,$ '(/ 38(%/2 5(*,21$/ '(&$6$1$5(	$&&,Ï1 3238/$5/(*$/	(/ '( )(%5(52 '(6$/,2 $8 (1 '21'(6(5(48,5,2 $/ $/&$/'('(/ 081,&,3,2 '(<23$/ 3$5$ 48((1 (/ 7e50,12 '(9(,17('Ë$6 352&('$ $ 5($/,=$5 /$6 $&78$&,21(6 $'0,1,675$7,9$6 1(&(6$5,$6 ,1&/8<(1'2 587$ '(&803/,0,(172 7e&1,&$$ < -85Ë',&$$ &21)(&+$6 (1 3$5$/(/2 $ /$6 Ï5'(1(6 '$'$6 < 5(63216$%/(6 '(1752 '(/$ (17,'$' 6(/(2725*Ï (/ 7e50,12 0È;,02 '(/ 'Ë$ 9(,17,75e6 '(0$5=2 '(3$5$ $//(*$5 ,1)250('(&803/,0,(172
	-8=*$'2 35,0(52 $'0,1,675$7,92		&(6$5 *8(9$5$ &$/'(5Ï1 < 27526	$&&,Ï1 3238/$5+$	(/ '(129,(0%5('($32'(5$'2 '(/$ 62&,('$' '($&7,926 (63(&,$/(6 35(6(17Ï 5(&8562 '($3(/$&,21 (1&21775$ '(/)$//2 '(35,0(5$,167$1&,$ 6,1 (0%$5*2 $ /$)(&+$ (/ -8=*$'2 12 6(352181&,$'2 (/ '( )(%5(52 '(/$ 62&,('$' '($7,926 (63(&,$/(6 $//(*Ï $/ -8=*$'2 ,1)250('(&803/,0,(172 (/ '(0$<2 '(6(&21&(',Ï 5(&8562 '($3(/$&,Ï1

3iJLQD GH

1R 3URFH	'HVSDFKR -X	5DGLFDG &RPSOHW	'HPDQGDQ	0HGLI GH FRQW	(VWDGR DFWXDO GHO SURFHVR
	-8=*$'2 6(*81'2 $'0,1,675$7,92		021,&$ 7$7,$1$ 6$/$0$1&$ *21=$/(=	$&&,Ï1 3238/$5	6($5&+,92 325 &803/,0,(172 '(6(17(1&,$ (/ '(0$5=2 '(
	75,%81$/ $'0,1,675$7,92 '(&$6$1$5(		&$5/26 $1'5(6 32/$1,$ 729$5	$&&,Ï1 3238/$5	(/ 75,%81$/ $'0,1,675$7,92 '(&$6$1$5((/ '(0$5=2 '(6(5($/,=2 $8',(1&,$ '(3$&72 '(&803/,0,(172 (1 '21'(6( ),-2 (/ '(2&78%5($ /$6 DP $8',(1&,$ '(358(%$6
	75,%81$/ $'0,1,675$7,92 '(&$6$1$5(		*XLOOHUPR *LUDOGR	$&&,Ï1 3238/$5	(/ 352&(62 12 6((1&8(175$ ',*,7$/,=$'2 38(6 6((19,Ï (/ (;3(',(17( ),6&2 $/ & (
	-8=*$'2 35,0(52 $'0,1,675$7,92		+(15< 26:$/'2 *$0%2$ 9$5*	$&&,Ï1 3238/$5	(/ '( )(%5(52 6(5($/,=2 $8',(1&,$ '(,163(&&,21 '(9(5,),&$&,21 '(&803/,0,(172 '(6(17(1&,$6
	-8=*$'2 6(*81'2 $'0,1,675$7,92 '(/ &,5&8,72 '(<23$/		'()(1625Ë$ '(/ 38(%/2 5(*,21$/ &$6$1$5(	$&&,Ï1 3238/$5	(/ '(129,(0%5('(3352),5,Ï 6(17(1&,$ '(35,0(5$,167$1&,$ $&&(',(1'2 $ /$6 35(7(16,21(6 48(%86&$%$1 48(6(%5,1'((/ 6(59,&,2 '($*8$ 327$%/((1 /$ 85%$1,=$&,21 *(76(0$1Ë 6,1 (0%$5*2 (/)$//2)8($3(/$'2 '(%,'2 $ 48((;,67( )$/7$ '(/(*,7,0$&,21 (1 /$ &86 325 3$6,9$ 6((1&8(175$ 3(1'(17('( )$//2 '(6(*81'$,167$1&,$ '(/ 75,%81$/ $'0,1,675$7,92 '(&$6$1$5(+8%2 $8',(1&,$ '(3$&72 '(&803/,0,(172 (/ '(0$<2 '(/
	-8=*$'2 35,0(52 $'0,1,675$7,92		'()(1625,$ '(/ 38(%/2 5(*,21$/ &$6$1$5(	$&&,Ï1 3238/$5	(1 /$ 6(17(1&,$ '(/ '(6(37,(0%5('(6('(&/$5Ï &26$ -8=*$'$ 325 /2 48(6(352&(',Ï $/ $5&+,92 3267(5,25 $ 1(*$5 /$6 35(7(16,21(6
	-8=*$'2 6(*81'2 $'0,1,675$7,92		'()(1625,$ '(/ 38(%/2 5(*,21$/ &$6$1$5(	$&&,Ï1 3238/$5	(/ '(-81,2 '(/ /$ ($$$< $//(*Ï ,1)250(48((9,'(1&,$ $&&,21(6 '(&803/,0,(172 '( )$//2 $ 75$9e6 '($32'(5$'2 -8',&,$/

1R 3URFH	'HVSDFKR -X	5DGLFDG &RPSOHW	'HPDQGDQ	0HGLI GH FRQW	(VWDGR DFWXDO GHO SURFHVR
	-8=*$'2 7(5&(52 $'0,1,675$7,92		'()(1625,$ '(/ 38(%/2 5(*,21$/ &$6$1$5(	$&&,Ï1 3238/$5	6((175(*Ï ,1)250('2&80(17$/ $9$1&(6 $&&,21 3238/$5 325 3$57('(/$ $/&$/',$ '(<23$/ 6((1&8(175$ $/ '(63$&+2
	-8=*$'2 6(*81'2 $'0,1,675$7,92		&,1'< 0$57,1(= 5,$f2 (175(27526	$&&,Ï1 3238/$5	6(17(1&,$ $&&('($ /$6 35(7)5(17($/ ($$$< (/ '(-81,2 '(35,0(5$,167$1&,$ 0(',$17(6(17(1&,$ '(35,0(5$,167$1&,$ 6(25'(1$ $/ $03$52 '(/ 6(59,&,2 38%/,&2 '($&8('8&72 $ /$ ($$$< (/ 081,&,3,2 '(<23$/ 62/,&,7Ï 5(&8562 '($3(/$&,Ï1
	-8=*$'2 &8$572 $'0,1,675$7,92		%(1(),&,$5,26 '(352<(&72 85%$1Ë67,&2 ³/27(9,6 9,3 ´ 9,3´	$&&,Ï1 3238/$5	(/ '(0$5=2 6((0,7,2)$//2 '(35,0(5$,167$1&,$
	-8=*$'2 7(5&(52 $'0,1,675$7,92 '(/ &,5&8,72 '(<23$/		5(1(/(21$5'2 38(17(6 9$5*$6	$&&,Ï1 3238/$5	6((0,7,Ï 6(17(1&,$ '(3 ,167$1&,$ (/ '($%5,/ '('21'(6($&&('($ /$6 35(7(16,21(6 '(/$ '(0$1'$ +8%2 6(17(1&,$ '(35,0(5$,167$1&,$ 3267(5,250(17(6(5(&+$=2 5(&8562 '($3(/$&,21),1$/0(17((/ ($$$< 35(6(17Ï 62/,&,78' '(&2167$1&,$ '((-(&8725,$ '(/$ 6(17(1&,$
	-8=*$'2 6(*81'2 $'0,1,675$7,92 '(/ &,5&8,72 '(<23$/		5HQp /HRQDUGR 3XHQWHV 6XDUH]	$&&,Ï1 3238/$5	6(35(6(17$521 /26 $/(*$ &21&/86,Ï1 325 3$57('(/$ ($$$< 3267(5,250(17((/ -8=*$'2 ,1)250Ï (/ 9(1&,0,(172 '(/$ (7$3$ 325 /2 48(6((1&8(175$ $/ '(63$&+2 3$5$ 6(17(1&,$
	-8=*$'2 35,0(52 $'0,1,675$7,92		-26($/)2162 68$5,48($17,3$5$	$&&,Ï1 3238/$5	6((9,'(1&,$ (1 /$ 3/7)250$ '(6$0$, 48((/ '(2&78%5('(6(35(6(17Ï 81 0(025,$/ '(/ 6(f25 +80%(572 52'5,*8(= 7$0%,(1 6(2%6(59$ 48((/ '(63$&+2 12 6(+$ 352181&,$'2)5(17(6, 6(68%6$12 (/ 352&(62
	-8=*$'2 35,0(52 $'0,1,675$7,92 '(/ &,5&8,72 '(<23$/		'HIHQVRUtD GHO 3XHEOR 5HJLRQDO &DVDQDUH	$&&,Ï1 3238/$5	6(//(92 $ &$%2 $8',(1&,$ '(3$&72 (/ '(129,(0%5('(< 6((67$ $ /$ (63(5$ '(/$ $8',(1&,$ '(358(%$6
	-8=*$'2 6(*81'2 $'0,1,675$7,92 '(/ &,5&8,72 '(<23$/		2520$,52 $9(1,'$ %$//(67(52	$&&,Ï1 3238/$5	6(35(6(17$521 $/(*$726 '(&21&/86,Ï1 6((1&8(175$ $/ '(63$&+2 3$5$ 6(17(1&,$

	, 1) 2 5 0 (6			
	)HFKD GH (ODERUDFLyQ	)HFKD 8OWLPD 0RGLILFDFLyQ	7LSR GH 'RFXPHQWR &yGLJR 9HUVLyQ	

3iJLQD GH

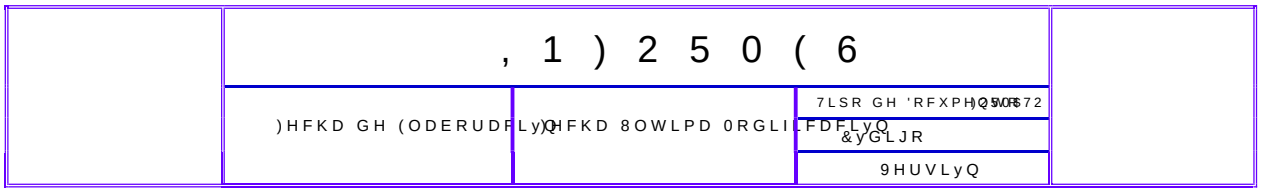
1R 3URFH	'HVSDFKR -X	5DGLFDG &RPSOHW	'HPDQGDQ	0HGLI GH FRQW	(VWDGR DFWXDO GHO SURFHVR
	-X]JDGR &XDUWR $GPLQLVWUDWLYR GH &DVDQDUH		-25*(/(21$5'2 $FFLyQ,1)$17(729$5	SRSXODU&	6((1&8(175$ $/ '(63$&+2 3$5$)$//2 6(35(6(17$521 $/(*$726 '(&21&/86,Ï1 '(1752 '(/ 7e50,12 /(*$/
	-8=*$'2 &8$52 $'0,1,675$7,92 '(/ &,5&8,72 '(<23$/		352&85$'85Ë$ -8',&,$/ ,, 3$5$ $681726 $0%,(17$/(6 $*5$5,26	$&&,Ï1 3238/$5 <	/$ '(0$1'$)8(5(&+$=$'$ 325 $*27$0,(172 '(-85,6',&&,21

/$%25$/(6

1R 3URFH	'HVSDF -XGLFL	5DGLFDGI &RPSOHW	'HPDQGDQ	0HGLR &RQWU	(VWDGR DFWXDO GHO SURFHVR
	-8=*$'2 6(*81'2 /$%25$		5266, 1$7$/$ *$5&(6 *(5(1$	2UGLQDULR /DERUDO	-81,2 '(6(',&7$ 6(17(1&,$ '(35,0(5$,167$1&,$ 1,(*$ /$6 35(7(16,21(6 '(/$ '(0$1'$ &21'(1$ (1 &267$6 $ /$ '(0$1'$17(6(&21&('((/ 5(&8562 '($3(/$&,Ï1
	-8=*$'2 6(*81'2 /$%25$		021,&$ -8/,(7+ &58= 52'5,*8(=	2UGLQDUIR /DERUDO	(/ '(0$<2 6(&21&('((/ 5(& &$6$&,Ï1 6(35(6(17Ï (/ &$62 $17((/ &20,7e '(&21&,/,$&,Ï1 (/ 'Ë$ '(81,2 $352%È1'26('(6,67,5 '(/ 5(&8562 72'$ 9(= 48(12 +$< 2325781,'$'(6 '(&$6$5 /$ 6(17(1&,$ < 6(+$5Ë$ 0È6 *5$9(/$ &21'(1$ 3$5$ /$ (035(6$ 6((1&8(175$ 3(1',(17('(6,67,5 $17(/$ &257('(/ 5(&8562
	-8=*$'2 6(*81'2 /$%25$		0$5&2 $85(/,2 /(*8,=$021	2UGLQDUIR /DERUDO	(/ '(6(37,(0%5('(&21&(','2 (/ 5(&8562 '(&6&,Ï1 /$ &257(6$/$ /$%25$/ (/ '(0$<2 '($'0,Ï (/ 5(&8562 '(&6&,Ï1)5(17(6(&81È/,6,6 '(/ 352&(62 '(0$1'$ < 6(17(1&,$6 6(5($/,=$ &2168/7$ 62%5(/$ 9,$%,/,'$' '(/ 5(&8562 $17(/$ (6&6 326,%,/,'$' 6('(6,67('(/ 5(&8562 (9,7$1'2 6($ 0È6 *5$926$ /$ &21'(1$ (/ '(-81,2 '(6('(6,67('(/ 5(&8562
	-8=*$'2 6(*81'2 /$%25$/		/(,'< 0$5&(/$ 3,f(526 6$1&+(=	2UGLQDUIR /DERUDO	(O PDU]R GH HO W VHQWHQFLD GH SULPHUD LQVWDQFLD GH 6H RUGHQD HO UHLQWHJUR GHPDQGDQWH DO PLVPR FDUJR R XQR SDJR GH ORV VDODULRV \ SUHVWDFLRQ GH MXQLR VH QRWLILFD SRU HVWDGR FRVWDV SRU YDORU GH

3iJLQD GH

1R 3URFH	'HVSDF -XGLFL	5DGLFDGI &RPSOHW	'HPDQGDQ	0HGLR &RQWU	(VWDGR DFWXDO GHO SURFHVR
	-8=*$'2 6(*81'2 /$%25$/		1,1, 9,$1&+2 -$,0(	2UGLQDULR /DERUDO	6((1&8(175$ 3(1',(17((1 (/ 75,%81$/ (&,',5 62%5((/ 5(&8562 '(&6&,Ï1 35(6(17$'2 325 /$ '(0$1'$'$
	-8=*$'2 6(*81'2 /$%25$/		&58= 0(5<6 0$'(5$	2UGLQDULR /DERUDO	129,(0%5('((/ 75,%81$/ &21),50$ 6(17(1&,$ (/ '(-81,2 '(6($352%Ï /$ /,48,'$&,Ï1 '(&267$6 325 9$/25 '(
	-8=*$'2 6(*81'2 /$%25$/		0,5(<$ -,0(1(= 85587,$	2UGLQDULR /DERUDO	(/ '(-81,2 '(6($358(%$ /$ /,48,'$&,Ï1 '(&267$6 325 9$/25 '(
	-8=*$'2 6(*81'2 /$%25$/		6$1'5$ 3$75,&,$ &8%,//26	2UGLQDULR /DERUDO	(/ '(-81,2 '((/ '(63$&+2 /,48,'$ /$6 &267$6 $)$925 (/$ (0$1'$17(325 9$/25 '(
	-8=*$'2 6(*81'2 /$%25$/		20$,5$ &$5'(1$6 *87,(55(=	2UGLQDULR /DERUDO	(/ 'Ë$ '( )(%5(52 '(6(/,48,'$ &267$6 325 9$/25 '($)$925 '(/$ 3$57('(0$1'$17(
	-8=*$'2 6(*81'2 /$%25$/		+,/%(57 /$9(5'(&$5'2=2	2UGLQDULR /DERUDO	(/ '($%5,/ '(6(/,48,'$1 < $358(%$1 /$6 &267$6 325 9$/25 '($)$925 '(/$ 3$57((0$1'$17((/ 75$%$-$'25 6((1&8(175$ 5(,17(*5$'2 6,1 3$*2 '(/$ 6(17(1&,$ < 6,1 $&8(5'2 '(3$*2
	-8=*$'2 6(*81'2 /$%25$/		+(51$1'2 9(*$ 0(&+(	2UGLQDULR /DERUDO	(/ '(-81,2 '(/$ &257(6 '(-867,&,$ 6$/$ /$%25$/ $'0,7((/ 5(&8562 (;75$25',1$5,2 '(&$6$&,Ï1 (1 &20 7e '(&21&,/,$&,Ï1 '(/ 'Ë$ '(-81,2 6((;321(/$ 1(&(6,'$' '('(6,67,5 (/ 5(&8562)5(17($ /26 $/726 &26726 48(5(35(6(17$ 3$5$ /$ (035(6$ < /$6 32&$6 326,%,/,'$'(6 '(e;,72 6($8725,=$ '(6,67,5 '(/ 5(&8562
	-8=*$'2 6(*81'2 /$%25$/		(/9,6 $5$1'$ '$9,/$	2UGLQDULR /DERUDO	$%$5 '((/ -8=*$'2 $358(%$ /$6 &267$6 325 9$/25 '($)$925 '(/$ 3$57('(0$1'$17(



3iJLQD GH

1R 3URFH	'HVSDF -XGLFL	5DGLFDGI &RPSOHW	'HPDQGDQ	0HGLR &RQWU	(VWDGR DFWXDO GHO SURFHVR
	-8=*$'2 6(*81'2 /$%25$/		/(,'< .$5,1$ %(&(55$ $0$5,6	2UGLQDULR /DERUDO	0(',$17($872 '( )(&+$ ',&,(0%5('( ),-$)(&+$ 3$5$ (/ '(0$<2 $ /$6 $ 0
	-8=*$'2 35,0(52 /$%25$/		-$9,(5 $/(;$1'(5 $/$5&21	2UGLQDULR /DERUDO	(/ 'Ë$ '(0$<2 '(6(&217(67$ /$ 5()250$ '(/$ '(0$1'$ (/ '(-81,2 (/ &$%(&+2 $&(37$ /$ &217(67$&,Ï1 '(/$ 5()250$ '(/$ '(0$1'$ <),-$)(&+$ 3$5$ $8',(1&,$ '(&21&,/,$&,Ï1 3$5$ (/ '($*2672 '($ /$6 $ 0
	-8=*$'2 35,0(52 /$%25$/		/8,6)(/,3(3,5$*$87$ $&(9('2	2UGLQDULR /DERUDO	(/ 'Ë$ '(0$<2 '(6(& $8',(1&,$ '(&21&,/,$&,Ï1 '(&/$5È1'26( )$//,'$ /$ (035(6$ 35(6(17Ï)Ï508/$ '($&8(5'2 48(12)8($&(37$'$ 325 (/ (03$1'$17(6( ),-Ï)(&+$ 3$5$ (/ '(-8/,2 $ /$6 $ 0 3$5$ $8',(1&,$ '(358(%$6 < -8=*$0,(172
	-8=*$'2 6(*81'2 /$%25$/		3('52 (67(%$1 3$/$&,26 $/9$5$'2	2UGLQDULR /DERUDO	(1 6(17(1&,$ '( )(&+$ '(-81,2 '(6(&21),50$ /$ 6(17(1&,$ 25'(1$1'2 (/ 5(,17(*52 '(/ '(',&,(0%5('(
	-8=*$'2 6(*81'2 /$%25$/		/8,6 +$52/' &$032 8/%$55	2UGLQDULR /DERUDO	(/ '($%5,/ '(6($358(%$ /$ 1(*5,'$&,Ï1 '(&267$6 325 9$/25 '($)$925 '(/$ 3$57('(0$1'$17(
	-8=*$'2 6(*81'2 /$%25$/		&+,67,$0 02'(672 ',$= *21=$/(=	2UGLQDULR /DERUDO	(/ '(-81,2 (/ '(63$&+2 0(',$17($872 25'(1 2%('(&(5 < &803/,5 /2 ',638(672 3$5 (/ 75,%81$/ 683(5,25 3(1',(17(/$ /,48,'$&,Ï1 '(&267$6
	-8=*$'2 6(*81'2 /$%25$/		52%,1621 0$18(/ 52-$6 2&+2$	2UGLQDULR /DERUDO	&21&,/,$'2 (1 $8',(1&,$ (/ '($%5,/ '(325 6,(7(0,//21(6 '(3(626
	-8=*$'2 35,0(52 /$%25$/		&$50(1 +(/(1$ *$5&,$ 3$/$&,26	2UGLQDULR /DERUDO	(/ 'Ë$ '(-81,2 6( ),-$)(&+$ 3$5$ (/ '($*2672 $ /$6 $ 0 $8',(1&,$ '(&21&,/,$&,Ï1

, 1) 2 5 0 (6

)HFKD GH (ODERUDFLyQ)HFKD 8OWLPD 0RGLILFDFLyQ 7LSR GH 'RFXPHQWR 9HUVLyQ &yGLJR 9HUVLyQ

3iJLQD GH

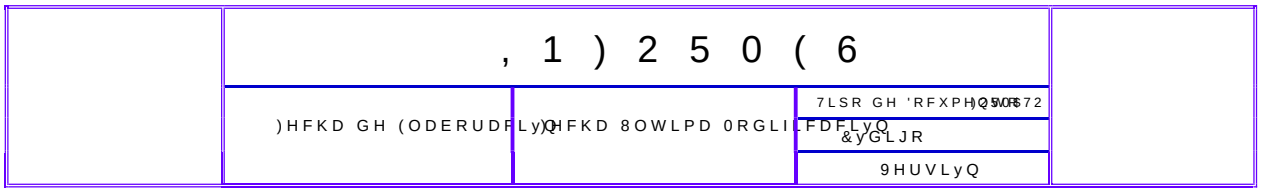
1R 3URFH	'HVSDF -XGLFL	5DGLFDGI &RPSOHW	'HPDQGDQ	0HGLR &RQWU	(VWDGR DFWXDO GHO SURFHVR
	-8=*$'2 35,0(52 /$%25$/		20$5 (15,48(7255(6 /2=$12	2UGLQDULR /DERUDO	(/ 'Ë$ '(0$<2 '(6(&217(67$ /$ 5(/250$ '(/$ '(0$1'$ (/ '(-81,2 6(7(1(325 &217(67$'$ /$ '(0$1'$ < 6( ),-$)(&+$ 3$5$ (/ '($*2672 $ /$6 35,0(5$ $8',(1&,$
	-8=*$'2 35,0(52 /$%25$/		521$/ $59(< 2&+,&$ 3(f$	2UGLQDULR /DERUDO	(/ '(0$<2 '(6(7,(1(325 &21 (67$'$ /$ '(0$1'$ 6( ),-$)(&+$ 3$5$ $8',(1&,$ 3$5$ (/ '($*2672 $ /$6 $ 0
	-8=*$'2 6(*81'2 /$%25$/		0$5,/<1 9$5*$6	2UGLQDULR /DERUDO	(/ '(',&,(0%5(6( ),-Ï)(& //(9$5 $ &$%2 $8',(1&,$ (/ 'Ë$ '(0$<2 '($ /$6 $ 0 /$ &8$/)8(5$3/$=$'$ 325 62/,&,78' '(/$ (0$1'$17(6( ),-Ï)(&+$ 3$5$ (/ '($*2672 '($ /$6 $ 0 6(&8(17$ &21 5(&20(1'$&,Ï1 '(/ &20,7e 3$5$ 352321(5 $&8(5'2 '(&21&,/,$&,Ï1
	-8=*$'2 6(*81'2 /$%25$/		0$5,$ $1721,$ 02/$12	2UGLQDULR /DERUDO	(/ '(0$<2 '(6(//(9Ï $ &$%2 $8',(1&,$ '(&21&,/,$&,Ï1 48(6((&/$5Ï)5$&$6$'$ 6('(&5(7$521 358(%$6 < 6( ),-Ï /$)(&+$ 3$5$ (/ '(129,(0%5('($ /$6
	-8=*$'2 35,0(52 /$%25$/		&$5/26 6$17,$*2 025(12 9$5*$6	2UGLQDULR /DERUDO	(/ 'Ë$ '(-81,2 '(6(&217(67Ï /$ (0$1'$ 352321,(1'2 (;&(3&,21(6 35(9,$6 < '( )21'2
	-8=*$'2 35,0(52 /$%25$		6,175$2),&27	2UGLQDULR /DERUDO	$*2672 '(6(5$',&$ &217(67$&,Ï1 '(0$1'$ 325 3$57('(/$ ($$$< 6(1&8(175$ $/ '(63$&+2 3$5$),-$5)(&+$ '($8',(1&,$
	-8=*$'2 6(*81'2 /$%25$/		(8&/,'(6 &255($ &$67,//2	2UGLQDULR /DERUDO	(/ '(0$<2 $ /$6 $ 0 6(&(/(%5Ï $8',(1&,$ '(&21&,/,$&,Ï1 48(6((&/$5Ï)5$&$6$'$ 6('(&5(7$521 358(%$6 < 6( ),-Ï)(&+$ 3$5$ (/ 'Ë$ '(129,(0%5($ /$6 $ 0

,17(538(67$6 325 /$ ($$$<

1R 3URFH	'HVSDFKR -XGLFLD	5DGLFDG &RPSOH	'HPDQGDQ	'HPDQGDG	0HGLR G FRQWUI	(VWDGR DFWXDO GHO SURFHVR
	-X]JDGR 6H $GPLQLVW		($ $ $ <		(MHFXWLYD	$87 $358(%$ /$ /,48,'$&,Ï1 '(/ &20e',72 35(6(17$'$ 325 /$ ($$$< $8148(5(&212&(81 9$/25 683(5,25 72'$ 9(=

3iJLQD GH

1R 3URFH	'HVSDFKR -XGLFLD	5DGLFDC &RPSOH	'HPDQGDQ	'HPDQGDG	0HGLR G FRQWUI	(VWDGR DFWXDO GHO SURFHVR
						48((/ 9$/ /,48,'$'2 325 (/ $8;,/,$5 '(/ '(63$&+2 $552-Ï 81 02172 0$<25
	-8=*$'2 6(*81'2 $'0,1,675$7		(035(6$ '($&8('8&72 $/&$17$5,//$ < $6(2 '(<2 (, & (		&217529(56,$ &2175$&78$/ ($$$<	(/ '(0$5=2 6((0,7,2 $872 (1 21'(6(&21&(',$ (/ 5(&8562 '($3(/$&,Ï1 ,17(538(672 325 /$ $6(*85$'25$
	-8=*$'2 7(5&(52 $'0,1,675$7		(035(6$ '($&8('8&72 $/&$17$5,//$ < $6(2 '(<2 (, & (		&217529(56,$ &2175$&78$/ ($$$<	(/ '(',&,(0%5('(6((0,7,2)$//2 (1 '21'(6(25'(12 $5&+,9$5 (/ 35(6(17(352&(62 $/ 12 (;,67,5 &267$6
	-8=*$'2 35,0(52 $'0,1,675$7,92		(035(6$ '($&8('8&72 $/&$17$5,//$ < $6(2 '(<2 (, & (		&217529(56,$ &2175$&78$/ ($$$<	6((1&8(175$ (1 (/ (63$&+2 3$5$)$//2
	-X]JDGR 3ULPHUR 3HTXHxDV FDXVDV		($$$< (,&((63		2UGLQDULR /DERUDO	$5&+,9$'2
	7ULEXQDO $GPLQLVWUDWLYR GH &DVDQDUH		($ $ $ <	',$1	1XOLGDG\ UHVWDEOHFLPLHQWR GHO GHUHFKR	(/ '(129,(0% '(6(5($/,=$ $&7$ '(&2175$',&&,21 '&7$0(1 '(&5(7$'2 $62/ & 78' '(3$57(21(6('(/&5 &(55$'$ /$ (7$3$ 352%$725,$ (/ '(129,(0%5('(/$ ',$1 $//(*$ $/(*$726
	-X]JDGR 3ULPHUR $GPLQLVWUDWLYR		($ $ $ <	'$1,(/ +(51$1'2 326$'$ 68$5(= <)5(''< 025(12 *8,2	$FFLyQ GH UHSHWLFLyQ	0(',$17($872 '(2&78%5('(6(5(48,(5($/ 683(5,17(1'(17('(6633'' '$*2%(572 48,52*$ &2//$=26 3$5$ 48('(1752 '(/26 ',$6 6,*,(17(6 $ /$ &2081,&$&,Ï1 ((67$ 3529,'(1&,$,1)250($ (67(



3iJLQD GH

1R 3URFH	'HVSDFKR -XGLFLD	5DGLFDC &RPSOH	'HPDQGDQ	'HPDQGDG	0HGLR G FRQWUI	(VWDGR DFWXDO GHO SURFHVR
						'(63$&+2 /26 '$ '(127,),&$&,21 (/(&7521,&$ < 2),6,&$ 48(5(326((1 /26 $5&+,926 '((6$ (17,'$' '(/ 6(f25 '$1,(/ +(51$1'2 326$'$ 68$5(= $872 25'(12 5(48(5,0,(172 35(9,2 $ /$ 683(5,17(1'(1&,$ '(6(59,&,26 38%/,&26 (/ '(0$5=2 '(/ 6(5(&,%, 5(638(67$ $ 75$9e6 '(&255(2 (/(&75Ï1,&2 3(52 12 6(+$ $&78$/,=$'2 (/ 352&(62 $ /$ (63(5$)(&+$ $8' ,1,&,$/
	7ULEXQDO $GPLQLVWUDWLYR GH &DVDQDUH	($ $ $ <			(MHFXWLYR	)$//2 ' 6(*81'$,167$1&,$)925%/(<$ 48(2R6'(1$ 6(*8,5 &21 (/ 0$1'$0,(172 (3$*2 $)$925 '(/$ ($$$<
	-X]JDGR 3ULPHUR /DERUDO	($$$< (,&((63			2UGLQDULR /DERUDO	6((1&8(175 '(63$&+2 3$5$ '(&,',5 62%5(&217(67$&,Ï1 '(/$ '(0$1'$ 325 3$57(6(6,175$2),&2/ 1$&,21$/ 6((19,Ï 127,),&$&,Ï1 '(/$ '(0$1'$ $ 6,175$2),&2/ <23$/ (/ 'Ë$ '(0$<2 '(
	7ULEXQDO $GPLQLVWUDWLYR GH &DVDQDUH	($ $ $ <	&25325,1248(	QXOLGDG \ UHVWDEOHFLPLHQWR	3(1',(17( )$//2 6(*81'$ 167$1&,$ &216(-2 '((67$'2	

$&78$&,21(6

$ WUDYpV GH ORV DSRGHUDGRV MXGLFLDOHV VH UHPLWHQ FRQ GHVWLQ
DFWXDFLRQHV FRPR FRQWHVWDFLRQHV UHFXUVRV PHPRULDOHV H LQIR
GLVWLQWRV SURFHVRV HQ ORV TXH OD ($$$< (,&((63 HV SDUWH VH HQFX

3iJLQD GH

MXUtGLFD ORV OLQNV GLUHFWRV D ORV H[SHGLHQWHV HQ HO TXH UHSR
UHSUHVHQWDFLyQ GH OD ($$$< SRU ORV DSRGHUDGRV MXGLFLDOHV

6H DVLVWH LJXDOPHQWH DO GH ODV DXGLHQFLDV SURJUDPDGDV
MXGLFLDOHV

352&(626 3(1$/(6

6HJ~Q OR UHSRUWDGR SRU HO SURIHVLRQDO D FDUJR HQ OR WUDQVFXU
HQFXHQWUHQ SURFHVRV SHQDOHV HQ FXUVR SRU OD 2ILFLQD -XUtGLFD
HQ HO VLJXLHQWH HVWDGR SURFHVDO

D 5DGLFDGR
,PSXWDGR 52'5*,'2 $1'5(6 6$1&+(= *,5$/'2
'(/,72 +8572 &$/,),&$'2
),6&$/),6&$/ /2&$/
$&78$&,21(6 (O GtD GH DEULO GH VH UHDOL]y OD FRUUHV
FRQFHQWUDGD DQWH HO MX]JDGR SULPHUR SHQDO PXQLFLSDO GH
FRQ OD GHIHQVD \ OD ILVFDOtD HQ $FWD &RQFHQWUDGD ± 3UHFO
HFRQyPLFD D OD (PSUHVD GH $FXHGXFWR $OFDQWDULOODGR \ $VI

6H UHDOL]y OD GHQXQFLD HQ FRQWUD GH SHUVRQDV LQGHWHUPLQ
DFXHUGR FRQ OD FRPXQLFDFLyQ RILFLDO 1R GH IH
FRQ HO ILQ GH SRQHU HQ FRQRFLPLHQWR GH OD DXWRULGDG
KHFKR FRQVWLWXWLYR GHO SUHVXQWR SXQLEOH GHO FyGLJR SU
\ FRQ HO ILQ GH TXH VH GHVSOLHJXHQ WRGDV ODV DFWXDI
HVFODUHFLPLHQWR GH ODV FLUFXQVWDQFLDV GH WLHPSR PRGR
GHWHUPLQDFLyQ GH UHVSRQVDELOLGDGHV GH ORV DXWRUHV R SDU

E '(181&,$ (1 &2175$ '(3(5621$6 '(7(50,1$'$6 (,1'(7(50,1$'$6
325 /26 '(/,726 '(,1-85,$ &$/801,$,1',5(&7$ (1 &21&855(1&,$ '(
/$ &,5&8167$1&,$ (63(&,/ '(*5$'8$&,21 '(/$ 3(1$
5$',&$'2 (1 /$),6&$/Ë$ '(/
(67$'2 6,1 5(638(67$ '(/$),6&$/Ë$
027,92 62/,&,78' '(5(75$&7$&,21 (2 $&/$5$&,21 352 ',)86,21 '(
,1)250$&,Ï1)$/6$ (55Ï1($ 2 ,1(;$&7$

F '(181&,$ (1 &2175$ '(3(5621$,1'(7(50,1$'$6 325 (/ 35(68172
'(/,72 '(+8572 &$/,),&$'2 < '$f2 (1 %,(1 $-(12 $*5$9$'2
5$',&$'2 (1 /$),6&$/Ë$ '(
(67$'2 6,1 5(638(67$ '(/$),6&$/Ë$
027,92 0$7(5,$/(6 (/(&75,&26 +857$'26 < $9(5,$'26 48(+$&,$1 3$57('
/26 &20321(17(6 ,17(*5$/(6 '(/$ 3/17 '(75$7$0,(172 '($*8$6
5(6,'8$/(6 ³(%$5´ '(9,//$ /8&,$

G '(181&,$ (1 &2175$ '(3(5621$,1'(7(50,1$'$6 325 /$ 35(6817$
&20,6,Ï1 '(/ '(/,72 '(+8572 &$/,),&$'2 < $*5$9$'2
5$',&$'2 (1 /$),6&$/Ë$ '(/
127,&,$ &5,0,1$/
(67$'2 6,1 5(638(67$ '(/$),6&$/Ë$

3iJLQD GH

027,92 %,(1(6 08(%/(6 68675$,'26 '(/$ 37$3 /$ %(1',&,Ï1

H '(181&,$ (1 &2175$ '(3(5621$,1'(7(50,1$'$6 325 /$ 35(6817$
&20,6,Ï1 '(/ '(/,72 '(+8572 &$/,),&$'2
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(1(5*,$ $ /$ 37$3 < $/ 32=2 352)81'2 '(/ (67$',2 6$17,$*2 '(/$6 7/$<$

I 352&(62 3(1$/ 325 (/ '(/,72 +8572 &$/,),&$'2
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:,/0(5 '$9,' +(51$1'(= &0&+2
(67$'2 6H DVLVWLy D OD PHGLDFLyQ D VROLFLWXG GHO DSRGHU
SUHVHQFLD GH OD)LVFDOtD ORFDO GH <RSDO FRQ HO ILQ GH
FRQRFLPLHQWR DQWHV GHO GH DJRVWR GH IHFKD HQ OD T
FDER OD FRUUHVSRQGLHQWH DXGLHQFLD FRQFHQWUDGD GH DFXHU
0,(0%526 '(/ &20,7e '(&21&,/,$&,Ï1 < '()(16$ -8',&,$/ '(/$ ($$$< (,&(
(63 HPLWHQ GH PDQHUD XQiQLPH VX&2 2 WR R,02 Y&2 2 &,/ O$ H7 25 2
HQ HO VHQWLGR GH DFHSWDU HO WtWXOR GH UHVDUFLPLHQWR GH
OD FRQGXFWD SRU H OD VXPDGH SHVRV P DV WHPiV VROLFLWD ODV GLV
S~EOLFDV \ UHVSHFWR D ORV WUDEDMRV GH EHQHILFLR SDUD OD F
DFWLYLGDGHV GH SLQWXUD OLPSLH]D JXDGDxU \ R ODV TXH VH U
SRU XQ WpUPLQR GH PHVHV TXLHQHV GHEHUiQ FRQWDU FRQ VXV
SURWHFFLyQ \ TXLHQHV FRQWDUDQ FRQ XQD VXSHUYLVLyQ GH XQ
OD HMHFXFLyQ GH ODV DFWLYLGDGHV 'H LJXDO PDQHUD VH GHM
EHQHILFLR SDUD OD FRPXQLGDG QR WLHQH QLQJXQD YLQFXODFL
(PSUHVD \ ORV ULHVJRV GH VDOXG DFFLGHQWH R VLPLODUHV Q
($$$< (,&((63

027,92 KXUWR GH WUHV HOHFWURERPEDV VXPHUJLEOHV TXH VH
LQVHUYLEOHV HQ HO PXQLFLSLO GH <RSDO GHSDUWDPHQWR GH &
(VWDFLyQ GH $JXD 5HVLGXDO GHO FRUUHJLPLHQWR GH 7LORGLUD
ORV FXDOHV IXHURQ FDSWXUDGRV FRQ ORV HOHPHQWRV T
FDPLRQHWD

1RWDHO YDORU GH QR VH SURYLVLRQD FRQWDEOHPHQWH
HV D IDYRU GH OD ($$$< (,&((63

J 352&(62 3(1$/ 325 (/ '(/,72 +8572 &$/,),&$'2
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352&(6$'26 52'5,*2 $1'5(6 6$1&+(= *,5$/'2
(67$'2 $&78$/ (/ ',$ '($%5,/ '(6(5($/,=2 /$ 5(63(&7,9$
$8',&,(1&,$ (1 (/ &8$/ 6(&21&(572 &21 /$),6&$/,$ 3$5$ /$ $3/,&$&,Ï
/$),*85$ -85,',&$ '(35(&/86,Ï1 (1 (/ 48((/ &255(6321',(17(-8(=
'(&5(72

3iJLQD GH

K 352&(62 3(1$/ 325 (/ '(/,72 &2175$72 6,1 &803/,0,(172 '(5(48,6,726 /(*$/(6 < 27526
5$',&$'2
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352&(6$'26 :,//,$0 (15,48(&(/(0,1 &$&(5(6 (':8,1 0,5$1'$ 3/$=$6
%/$',0,5 &$6752 $9(//$1('$ 20$5 $/(;$1'(5 6$/&('2 *255$,= &$5/26
$/)2162 $1'5$'(6 257,=
(67$'2 $&78$/ 6H DVLVWH D OD DXGLHQFLD-SUHVHQWH(UDWRULD HO GtD
',&,(0%5('(D ODV DP

352&(626 32/,&,926

6HJ~Q OR UHSRUWDGR SRU HO SURIHVLRQDO D FDUJR TXH SDUD OR WUDC
VH HQFXHQWUDQ 75(6 SURFHVRV SROLFLYRV HQ FXUVR SRU OD 2I
HQFXHQWUDQ HQ HO VLJXLHQWH HVWDGR SURFHVDO

1 R	5$'	'(63$&+2 -8',&,$/	48(5(// $17(	48(5(/ /$'2	+(&+2 *(1(5$ '25	7,32 '(352&(6 2	(67$'2 352&(6$/
		&255(*,'8 5,$ (/ 02552	($$$< (,&((63	-26(0,*8(/ &+,5,9 +(51$1 '(= 62),$ 6,$%$7 *21=$/ (=	SHUWX yQ D OI VHUYLC EUH	SURFHV SROLFL	0HGLDQWH UHVROXFLyQ 1R GH SRU OD FXDO OD FRUUHJLGRUD GHO PRUUR HPLWLy HO IDOOR HQ HO FXDO DPSDUD GH PDQHUD HVSHFLDO HO GHUHFKR GH OD VHUYLGXPEUH LQYRFDGD SRU HO DSRGHUDGR -XGLFLDO GH OD ($$$< (&,((63
		,163(&&,26(*81'$ '(32/,&,$	($$$< (,&((63	'(&21 2&,'26 (,1'(7(5 0,1$'26	SHUWX yQ D OI SRVHVL	SURFHV SROLFL	SRU UHVROXFLyQ QR GH GH DJRVWR GH VH FRQFHGH HO DPSDUR SROLFLYR D ($$$< (,&((63 VH HQFXHQWUD SHQGLHQWH YHULILFDU HQ HO SUHGLR HO FXPSOLPLHQWR GH

	, 1) 2 5 0 (6			
	)HFKD GH (ODERUDFLyQ	)HFKD 8OWLPD 0RGLILFDFLyQ	7LSR GH 'RFXPHQWR &yGLJR 9HUVLyQ	

3iJLQD GH

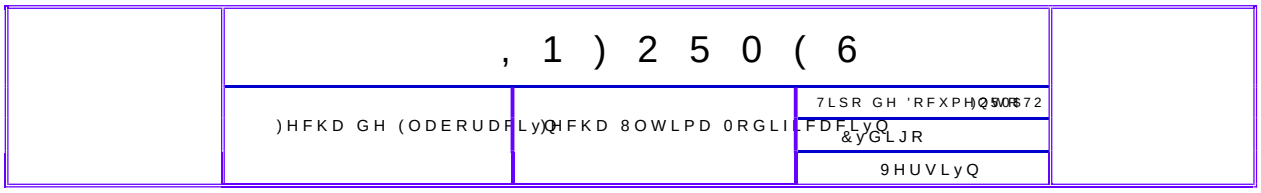
1 R	5$'	'(63$&+2 -8',&,$/	48(5(// $17(	48(5(/ /$'2	+(&+2 *(1(5$ '25	7,32 '(352&(62	(67$'2 352&(6$/
							IDOOR GH SULPHUD LQVWDQFLD
	&21&,/ ,$&,21	&6 '(-867,&,$	$55(&,) %,(1(6 5$,&(6 6 $ 6	($$$< (,&((6	SHUWX yQ D O SRVHVL	SURFHV SROLFL	HO GtD GH MXOLR GH VH UH~QHQ ODV SDUWHV HQ OD FDVD GH MXVWLFLD GHO PXQLFLSLR GH <RSDO \ VH HOHYD FRQVWDQFLD GH QR DFXHUGR

/2*526 $ '(67$&$5

3RU SDUWH GH OD 2$- GH OD ($$$< (,&((63 VH REWXYR PHGLDQWH UHVF
OD FXDO OD FRUUHJLGRUD GHO PRUUR UDWLILFR HQ HO DUWtFXOR SU
0$1(5$ (63(&,$/ HO GHUHFKR GH VHUYLGXPEUH LQYRFDGD SRU HO $SRG
$FXHGXFWR $OFDQWDULOODGR \ $VHR GH <RSDO (,&((63 ± 1,7
VHJXLPLHQWR FRQWURO \ PDQWHQLPLHQWR D ODV WXEHUtDV GH \
SHUPLWLU HO LQJUHVR GH ORV IXQFLRQDULRV SDUD HO PDQWHQLPLHQW
VREUH HO SUHGLR HVWi XELFDGR HQ OD YHUHGD OD *XDPDOHUD YtD <R
PLVPR GHFODUDURQ SDUFLDOPHQWH SUREDGRV ORV DFWRV SHUWXUE
LQGHWHUPLQDGRV

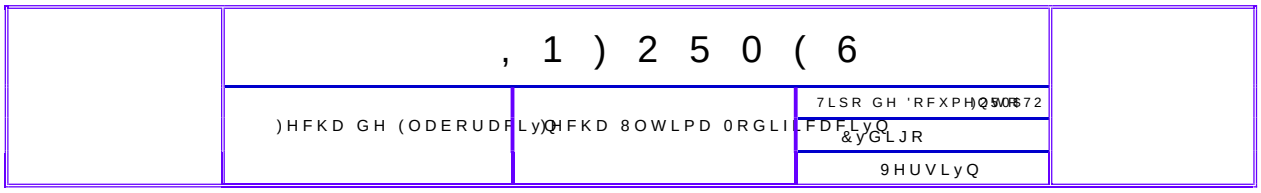
3URFHVRV VDQFLRQDWRULRV GH FDUiFWHU DPELHQWDO

(Q FXDQWR D ORV SURFHVRV VDQFLRQDWRULRV TXH VH DGHODQWD
LPSOHPHQWDGR OD FRUUHVSRQGLHQWH QRWLILFDFLyQ GH ORV GLIHUH
SUHVHQWDQ HQ ODV GLIHUHQWHV HWDSDV SURFHVDOHV $3(5785$ '(/
)2508/$&,21 '(&$5*26 35$&7,&$6 358(%$6 $/(*$726 '(&21&/86,Ï1 < $&72
'(),1('( )21'2 3RU FRQVLJXLHQWH VH KD FRQVROLGDGR XQD EDVH GI
VHJXLPLHQWR GH ORV SURFHVRV VDQFLRQDWRULRV GH FDUiFWHU DPELI
EDVHV GH LQIRUPDFLyQ GH ORV H[SHGLHQWHV



3iJLQD GH

E}X ‰Œ} }•	•‰ Z} :µ]]	E}X Æ‰]	K i š}]v µu‰o] }	š u]v]•ŠÀŒ } ‰ Œ o ‰Œ} • v]}v š	š u]v]•ŠÀŒ } (}Œuµo ŒP}• ‰Œ} • • v]}v š	š} u]v]•ŠÀŒ }• ‰ÝŒ Ç Œ ‰Œµ	š u]v]•š]À} (o P š}• }v oµ•	š u]v]•ŠÀŒ ‹µ .v (}v } o ‰Œ} • • v]}v š} u]v]•ŠÀŒ	•š } o ‰Œ} •}
í	^ Œ Œ] ' v Œ	îìì Xïô X ì o	WZ ^h KEd D/E /ME > Zíðó ò (îð , Zd U / K > ^• ‰u Œ 'h ^ E 'Z ^ zKW > z µ o • ^ H > E >]•‰}v o Œ P}• & d /ME ‰ Œš µŒ µv ‰Œ} • v]}v š} > µv ‰Œ} µ•v š ‰ ‰ Œ KZZ '/D/ ÞvÀÝP]•v u] vš oX dK u]v]•ŠÀŒ DKZ/ , > Œ š Œ u] vš o Ç • š}u v }šŒ• š Œu]v]} v •X	µš} l îìì Xñó Xíðrríôrìóóò (Z ìò îð u Œì} îìíôX W}Œ]} o ‰Œ} • • v]}v š	µš} E}: ò (Z ìò îìíôX W}Œ]} o (}Œuµo ŒP}• ‰Œ} • • v]}v š	D] v µš} E}X îìì Xòr îíXìíío Z íò }v oµ•	µš} l îìì Xòr îïXìõìò (Z íò îìíôU o îìîïU ‰}Œ o	W}Œ
î	^ Œ Œ] ' v Œ	îìì Xïô X ð o	}v •]•v Pµ • •µ š Œ Œ }š}ŒP z / ^W ‰ Œ •š Œ o µ o • µ µ š}]•‰}v ‰Œ šµŒ µ] } v ‰Œ} u] } o ‰Œ} • • v]}v š	D}Œ] Z ÞvÀÝP]•v u] vš o Ç v u]v]•ŠÀŒ :µŒ]•]]•v Œ š Œ }šŒ• o uµv]]‰µ}] vš oX š Œu]v]} z}‰ oX v •X	µš} îìì íòrîíîï ò (Z ìíìôlîìíôíï •o‰u Œ o y} îìíôX W}Œ]} o (}Œuµo ŒP}• ‰Œ} • • v]}v š	µš} E}: òríôrîíôï (Z íõXïôôí o]] u Œ o íî îìíõX W}Œ]} o (}Œuµo ŒP}• ‰Œ} • • v]}v š	µš} l îìì Xòr íõXïôôí (Z o îò}v (Z îìíôX W}ŒŒ]} o µ o • ‰ Œ o P š}• }v oµ•	W}Œ	^W Z hdK /^/ME &KE KX
ï	^ Œ Œ] ' v Œ	îìì Xïô X ì o	WŒ} µ ‹µ i ‰Œ • vš ‰}Œ o (Z o îôô u Ç}(Z îï }uµv] o s Œ E] š v u]} o]•v µ o •]‰]•‰}v o Dµv]]‰}•‰}v z}‰ oU‰ Œ šµŒ ‰Œ •µvš} µv u v i}]vÀÝP]•v u] vš oX]v µ } u]v]•ŠÀŒ o Œ oo v} Œ š Œ • v]š Œ]} u] vš oX — • i Œ— µ] } v • ì}v X	µš} l îìì Xñó Xíóòrríôríòìï (Z îò îìíôX W}Œ]} o ‰Œ} • • v]}v š	µš} E}: òríôríòìï (Z îìíôX W}Œ]} o (}Œuµo ŒP}• ‰Œ} • • v]}v š	µš} l îìì Xòr îìì Xñ ñï îò Xíñ ñï îìíôX W}Œ]} o ‰Œ} • • v]}v š	o •‰ o Æ‰] o š} u]v]•šŒ š Œµš}Œ] u] vš o	·v v} •š š ‰ ‰Œ} • o š} u]v]•ŠÀŒ ‹µ }ŒŒ šŒ •o } o • Œ]š} o P š}• }v oµ• ‰ Œ o ‰Œ • vš]•v ‰}Œ ‰ Œš o zX	•‰ Œ u]v]•ŠÀŒ ‹µ }ŒŒ šŒ •o } o • Œ]š} o P š}• }v oµ• ‰ Œ o ‰Œ • vš]•v ‰}Œ ‰ Œš o zX



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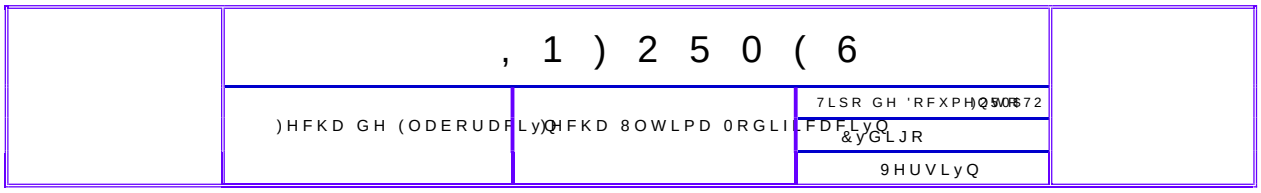
E}X ‰Œ} }•	•‰ Z} :µ]]	E}X Æ‰]	K i š}]v µu‰o] }	š u]v]•ŠÀŒ } ‰ Œ o ‰Œ} • v]}v š	š u]v]•ŠÀŒ } (}Œuµo ŒP}• ‰Œ} • • v]}v š	š} u]v]•ŠÀŒ }• ‰ŸŒ Ç Œ ‰Œµ	š u]v]•š]À} (o P š}• }v oµ•	š u]v]•ŠÀŒ ‹µ .v (}v } o ‰Œ} • • v]}v š} u]v]•ŠÀŒ	•š } o ‰Œ} •
í	^ Œ Œ] ' v Œ	îìì Xïî X(ðíô o	Wo ν ^ v u] vš} Ç D v i} s Œu] vš}• W^Ds Dµv]]‰]} z}‰ o	µš} ł îìì Xòr íõXíïï õ • îò o îìíõX } u]} µ o •]•‰}v ‰ Œšµ Œ µv]vÀŸP u]v]•ŠÀŒ Œ š Œu] vš oX	µš} ł îìì Xòr íõ0ìXíîîõ ìÀ} (Z íì } u Œ] îìîìX W} u]} µ o • (}Œuµo ŒP}• µv ‰Œ}]•v • v]}v š}Œ]}	µš} ł îìì Xòr íõñì íð (ZÆ‰] iµo]} îìîîX W} Œu]} µ o • Œ š v µš}Œ] vš}Œ}]u] vš }]•v ‰Œ}‰Œ} u]v]•ŠÀŒ } • v]}v š}Œ]} Œ š Œ u] vš oX	o •Ÿ š ‰ ‰Œ}]À} ‰ }]•v ‰Œ o	·v v} •š š ‰ ‰Œ}]•v ‰Œ o	•‰ Œ • oš} u]v]•ŠÀŒ ‹µ }ŒŒ šŒ •o } o • Œ]š} o P š}• }v oµ•]•v ‰ Œ o ‰Œ • vš]•v ‰}Œ ‰ Œš o zX
í	^ Œ Œ] ' v Œ	îìì Xïî X(ìôî o	, oo Ì •} Œ o Œ À} •µŒ•Ù •} Œ o µ•]À Œ U • } Ç o µ‰ u v U o}• šŒ u}•]•‰}v o}•](Œ v‰•Œšµ Œ v o • Ç µv À Œš Œ]v ÀŸP .v o • •} Œu]v]•ŠÀŒ o • µ šŒ} Œ š Œu] vš o v •µ‰ Œ.] o}v•šŒ v u v]•v u‰Œ • }u} }vš Œ}o z Ç • Pµ]u] vš} o}• ‰ Œu]•}• }š}ŒP }• o z / ^WX	µš} ł Œî]}Xò íõr îìì Xòr ô0ìXìðíõ ìÀ} (Z o íí Z o íó o š} u]v]•š Œ š Œ]À} ‰ }]•v ‰Œ o	µš} ł îìì Xòrîîr }víðíõ }v Æ‰] iµv]} u]v]•š Œ š Œîìîî X ‰ } Œ]À} ‰ } Œ u]} o ‰ Œš Œµš}Œ] µ o • vµv š ‰ u] vš oX	o •Ÿ š ‰ ‰Œ}]•v ‰Œ o	•‰ Œ • oš} u]v]•ŠÀŒ ‹µ }ŒŒ šŒ •o } o • Œ]š} o P š}• }v oµ•]•v ‰ Œ o ‰Œ • vš]•v ‰}Œ ‰ Œš o zX

E}X ‰Œ} }•	•‰ Z} :µ]]	E}X Æ‰]	K i š}]v µu‰o] }	š u]v]•ŠÀŒ } ‰ Œ o ‰Œ} • v]}v š	š u]v]•ŠÀŒ } (}Œuµo ŒP}• ‰Œ} • • v]}v š	š} }• ‰ŸŒ Ç Œ š ‰Œµ	š u]v]•š]À} (o P š}• }v oµ•	š u]v]•ŠÀŒ ‹µ .v (}v } o ‰Œ} • • v]}v š} u]v]•ŠÀŒ	•š } o ‰Œ} •}
(	^ Œ Œ] ' v Œ	îìì X ïîX(îõñ o	}v •]•v Pµ • •µ š ŒŒ o z (Z íõ / ^WUv}À] u Œ ‰š Œ ‰}Ì} ‰Œ}(µv } µ o • µ] } ‰}Œ]•‰}v o ŒP}• }o P]}>µ]‰ ŒšµŒ µv ‰Œ} •} Œo}• ' o vUµv • v]}v š}Œ]} ‰ Œ v .]vÀŸP]•v u] vš oX o u]v]•ŠÀŒ }uµv] Œ š Œ o vš Œ}u] vš oX ‰} o } o Z ‰ ŒŒ Œ o Dµv]]‰]} z}‰ o r µ o íòXñõ >!• PX	µš} ! îìì X òr víõ•X ïíõï ûìvíõX W}ŒEu]} o µ o • ŒP}• ‰Œ} • • v]}v š	µš} ! îìì X òrîîr ííì ð o u Ç} îìîîX W}ŒE ‰}Œ ‰ o u]v]•ŠÀŒ (}Œuµo v u] vš oX	o •‰ Æ‰]]•v š ‰ š ‰ ‰Œ} • o ‰Œ} ·v v} ·v v} •š ‰ ‰Œ} • o	o •‰ ‹µ ‰ŸŒ Ç Œ š v ‰Œµ •X
(	^ Œ Œ] ' v Œ	îìì X ïôX ñ o	Yµ }ŒŒ P]u]•v o Z ‰ ŒŒ •} Œ ‰š]•v Pµ šµ Œ_ µ µ š}	µš} ! îvšX ñór ZŒŒðŒ (v Œ} îí v Œ} îí îìíðU W}ŒE îìíðU W}Œ u]} o]•‰}v o ‰ ŒšµŒ µv]vÀŸP]•v u]v]•ŠÀŒ Œ š Œ u] vš o Çu] vš o Ç • (}Œuµo•v (}Œuµo v ŒP}•X	µš} ! íðîìì X òrîîr ZñôõZ (ìïZ iµv]}ìõ (ìZññ (îìîî îìì X òrîîr ZñôõZ (ìïZ iµv]}ìõ u ŒÌ îìîî îìì X òrîîr ZñôõZ (ìïZ iµv]}ìõ u ŒÌ îìîî hdK ! îìì X òrîîr • Œ]š} o ŒP}• îìíðU W}ŒE îìíðU W}Œ u]} o]•‰}v o ‰ ŒšµŒ µv]vÀŸP]•v u]v]•ŠÀŒ Œ š Œ u] vš o Çu] vš o Ç • (}Œuµo•v (}Œuµo v ŒP}•X	^ Œ o Æ‰] ~‰}Œ }v.Œu }v oµ•]•vu]v]•ŠÀŒ ‰}Œ ‰ Œš µŒ Œ•µš}Œ] u] vš o	o •‰]•vo š} u]v]•ŠÀŒ ‹µ .v (}v o} o ‰Œ} •} u] vš o• v]}v š}Œ]}

E}X ‰Œ} }•	•‰ Z} :µ]]	E}X Æ‰]	K i š}]v µu‰o] }	š u]v]•ŠÀ } ‰ Œ o ‰Œ} • v]}v š	š u]v]•ŠÀ } (}Œuµo Œ P}• ‰Œ} • • v]}v š	š} u]v]•ŠÀ }• ‰ŸŒ Ç Œ š ‰Œµ	š u]v]•š]À} (o P š}• }v oµ•	š u]v]•ŠÀ ‹µ .v (}v } o ‰Œ} • • v]}v š} u]v]•ŠÀ	•š } o ‰Œ} •}
í	^ Œ Œ] ' v Œ	îìì X ï ô X ñ o	W Œu]• Æ‰o}Œ P µ • •µ š Œ Œ ‰ Œ o }v•šŒµ]•uv]} o u]} o ‰}Ì}• µ o • ‰Œ}(µv o ‰ Œ šµŒ •š]u] vš µv } o •]•š]uvÀŸP]•v• v]}v š} µ µ š}u]v]•ŠÀ u] vš o X o Dµv]]‰]} Œ š Œ z}‰ o X u] vš o X	µš} E}› ò]r•íôrïïñí (Z íì ìõíõ (îï iµo]} íò îìíô rW}ŒîìîíîU ‰}Œ µš} Œ P}• ‰Œ} • • v]}v š	µš} ł îìì X òrîír ìõíõ (îï iµo]} íò îìíô rW}Œ]] u Œ µš} o u]} o µ o • E}X îìì X òrîír]} vš Œ ‰ Œ •o }v oµ•]•v X]} µ o • Œ •µ oÀ µv Œ µ Œ•} Œ ‰}•]]•v Ç •] š v }šŒ •]•‰}•]]}v •X	hdK ł îìì X òrîír E}X îìì X òrîír (Z µ o • šŒ •o } ‰ Œ P š}•	o •‰ Æ‰]]•vo š} u]v]•ŠÀ ‹µ .v (}v } o ‰Œ} • • v]}v š} u]v]•ŠÀ	o •‹ o ‰Œ} •}]}v š}Œ]}X
í	^ Œ Œ] ' v Œ	îìì X ï ô X ì o	^}o]]šµ ‰ Œš W Œ} µŒ îï :µ]] u] vš o Ç îìíôU P Œ Œ] u]} o À oµ]•v r µ o •]u‰}•]]•v]•‰}v o µ o • u] ‰ Œ šµŒ •o }µš}Œ] ‰Œ} • • v]}v š}Œ]} /v(}Œu Œ š Œu] vš o X d v] } E}X u] vš o X ñìì X íì X íX íñr íí ó ñ (Z îð v}À] u Œ îìíñU À]•]š À Œ].]•v o }‰ Œ]•v o Œ o o v} • v]š Œ]} u }v }X	µš} E}› òrîôrîôôí (íí íõX ï ïíí (Z îï íõíõU ‰}Œ} •š} îìíõU ‰}Œ u]} o u]} o µ o • (}Œuµo Œ P}• µv ‰Œ} • • v]}v š}Œ]} Œ š Œu] vš o X u]v]•ŠÀ } • v]}v š}Œ]} Œ š Œ u] vš o	µš ï ñìì X òrîír E}X îìì X òrîír (ïì v}À] u Œ o µ o ‰}Œ u]}u]v]•ŠÀ ‹µ .v (}v } o ‰Œ} • • v]}v š} u]v]•ŠÀ	o •‰ Æ‰]]•vo š} u]v]•ŠÀ ‹µ .v (}v } o ‰Œ} • • v]}v š}Œ]}X



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E}X ‰Œ} }•	•‰ Z} :µ]]	E}X Æ‰]	K i š}]v µu‰o] }	š u]v]•ŸÀŒ } ‰ Œ o ‰Œ} • v]}v š	š u]v]•ŸÀŒ } (}Œuµo ŒP}• ‰Œ} • • v]}v š	š} u]v]•ŸÀŒ }• ‰ŸŒ Ç Œ ‰Œµ	š u]v]•š]À} (o P š}• }v oµ•	š u]v]•ŸÀŒ ‹µ .v (}v } o ‰Œ} • • v]}v š} u]v]•ŸÀŒ	•š } o ‰Œ} •}
íì	^ Œ Œ] ' v Œ	îìì Xïô X õ	>] v u] vš o ‰ Œ o }v•šŒµ]•vv}À} u Œ Œ oo v} îìíñU ‰}Œu]} o u]} o D }v } o µ o • D µv]]‰]}]•‰}v o µ o • z}‰ oX	hdK Ł îìì Xñóríñrîìì Xñóríòrîìì Xñóríórîìì Xòr íì Xíñïõ (íñ iµo]}ìò u Œ} îìíóU ‰}Œu]} o u]} o µ o • (}Œuµo v š ‰ ‰ŸŒ} š}Œ] ‰ Œ • v]}v š}Œ]}]•v u] vš oX ‰ Œ šµŒ µv]vÀŸP]•v u] vš oX u]v]•ŸÀŒ Œ š Œ u] vš oX	hdK Ł îìì Xñóríòrîìì Xñóríórîìì Xòr íì Xíñïõ (íñ iµo]}ìó u Œ} îìíóU ‰}Œu]} o u]} o µ o • ‰ŸŒ} š}Œ] ‰ Œ • v]}v š}Œ]}]•v u] vš oX	hdK Ł îìì Xïô X íì Xíñïõ (íñ iµo]}ìò u Œ} îìíóU ‰}Œu]} o u]} o µ o • (}v } µv]vš Œ‰ Œ • v]}v š}Œ]}]•v u] vš oU v ‹µ o • Œ š Œ] P v Œ o }Œ‰}Œ]v}‹µ] Œ •µ oÀ W Zd/ h>K WZ/D ZKX r > Z Z D / Ed >D Ed Z ^WKE^ > > zU >K^ Z'K^ &KZDh> K^ dZ s ^ > dK D/E/^dZ d/ sK E}X îìì XñóXíòXíðõ ì (Z íñ iµo]} îìíñU • P·v o • Œ Ì}v • • Œ]š • v o ‰ Œš }v•] ŸŒ o ‰Œ • vš Œ •}oµ]•vX Zd/ h>K ^ 'hE KX r /DWKE Z KDK ^ E /ME Dh>d > zU z E & sKZ KZWKZ/EKY h/ U KE^/^d Ed E > W 'K ^ d Ed z ^/ d	o •‰ ñð Æ‰]]•v í (Z îì o š} u]v]•ŸÀŒ ‹µ Œ Z Ì Œ µŒ•}] Œ ‰}•]]•v µv]vš Œ‰µ •š} o Œ z

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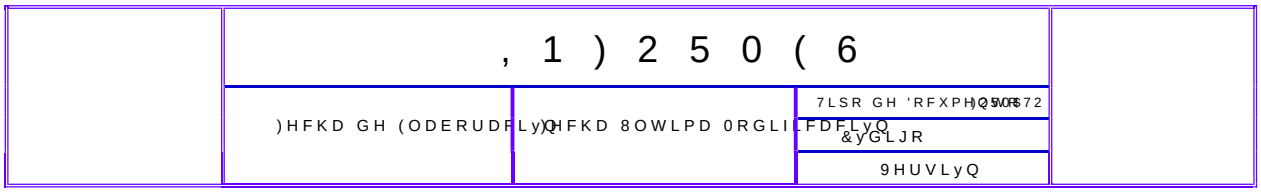
E}X ‰Œ} }•	•‰ Z} :µ]]	E}X Æ‰]	K i š}]v µu‰o] }	š u]v]•ŸÀŒ } ‰ Œ o ‰Œ} • v]}v š	š u]v]•ŸÀŒ } (}Œuµo ŒP}• ‰Œ} • • v]}v š	š} u]v]•ŸÀŒ }• ‰ŸŒ Ç Œ ‰Œµ	š u]v]•š]À} (o P š}• }v oµ•	š u]v]•ŸÀŒ ‹µ .v (}v } o ‰Œ} • • v]}v š} u]v]•ŸÀŒ	•š } ‹ o ‰Œ} •}
								D/>>K EKs E / EdK ^ s Ed/ /E K D/> EKs / EdK^ dZ /Ed z K ,K W ^K^ Dl d ~¨óóXõîñXõïô•	
íí	^ Œ Œ] ' v Œ	îìì Xïî X‹ ìòó	Yµ š ‹ Œ }o • ‹ Œ Œ }v oo Œ Œ]} } } }• • •š v š o v} o}• Œ }o • µ o • o ‰ Œ‹µ]•‰}v o	hdK ‰ ví ìì ròr Œ ïX Œ ðó ï(Z îî o}• Œ Ì} îì îïU ‰ }Œ ‰]} o o ‰Œ •µvš]v(Œ]•vX Œ š Œ u] vš oX	o •‰ Æ‰ o š} ‰Œ} • u]v]•ŸÀŒ } ‹µ (}Œuµo Œ}• ŒP}•]v(Œ]•vX	·v v}]]•w š ‰ ‰Œ} •	·v v} v š ‰ o‰Œ}	·v v} •š v š ‰ š ‰ ‰Œ} • o	o •‰ o Æ‰]]•v o š} u]v]•ŸÀŒ ‹µ (}Œuµo o}• ŒP}• o ‰Œ •µvš]v(Œ]•vX
íî	^ Œ Œ] ' v Œ	îìì Xïô X‹ ô o	}v •]•v P µ • •µ‰ Œ.] ‰ Œu]•} À Ÿ Œ] vš}• ‰ Œ ‰Œ} Ç š} ‰o vš u} µo Œ }š}ŒP } z v o À Œ 'µ Ç ‹µ]š}	µš} ‰ îìì Xñóríòr íõ Xïñ ñï o• ‰u Œ îì íòX W}Œ ‰o vš u]} o µ o • q•‰}v o ‰ Œ šµ Œ µv]vÀŸP]•v u]v]•ŸÀŒ Œ š Œ u] vš oX	µš} ‰ îìì Xòr íõ Xïñ ñï o ‰Œ ‰ îì íõ	o •‰ o š} u]v]•ŸÀŒ } ‹µ }Œ Œ šŒ •o } ‰ Œ o ‰ŸŒ ‰Œµ •X	·v v} v š ‰ š ‰ ‰Œ} • o	o •‰ o Æ‰ • o š} u]v]•ŸÀŒ ‹µ }Œ Œ šŒ •o } ‰ Œ o ‰ŸŒ ‰Œµ •X



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E}X ‰Œ} }•	•‰ Z} :µ]]	E}X Æ‰]	K i š}]v µu‰o] }	š u]v]•ŠÀŒ } ‰ Œ o ‰Œ} • v]}v š	š u]v]•ŠÀŒ } (}Œuµo ŒP}• ‰Œ} • • v]}v š	š} u]v]•ŠÀŒ }• ‰ŸŒ Ç Œ ‰Œµ	š u]v]•š]À} (o P š}• }v oµ•	š u]v]•ŠÀŒ ‹µ .v (}v } o ‰Œ} • • v]}v š} u]v]•ŠÀŒ	•š } o ‰Œ} •}
íì	^ Œ Œ] ' v Œ	îìì Xïî X‹ ìñî o	/v µu‰o } o ‰ Œ } µ‰ µ ‰ Œš µš}Œ] u] vš]u‰}v µv u] }u‰ v• X	µš} ł îìì]•(v Z o]Œ i µo]} ôìíôX W}Œ u]} o µ o •]•‰}v ‰ Œšµ Œ]•v µv]vÀŸP]•v u]v]•ŠÀŒ • v]}v š}Œ] u] vš oX	µš} ł îìì Xòrîîr (Z o ï íííñí }v (Z o îìîîX W}Œ u]} o µ o • (}Œuµo ŒP}• µv ‰Œ} • • v]}v š}Œ] u] vš oX	µš} ł îìì Xòrîîr (ïíòï (Z Œ š ‰Œµ îìîîX W}Œ u]} o µ o • v š ‰Œ} ••}] š v Œ š Œu] vš oX	µš} ł îìì ròr (ZîïXìõíó }v (Z íò u Ç} îìîî Œ îìîî •]]}v •X	o •‰ š} u]v]•ŠÀŒ ‹µ .v (}v } o ‰Œ} • • v]}v š}	o •‰ š} u]v]•ŠÀŒ ‹µ .v (}v } o ‰Œ} •} • v]}v š}Œ]}
íí	^ Œ Œ] ' v Œ	îìì Xïô X õ	/v µu‰o } µv}• Œ ‹µ Œ]u • }v Œ • o}• ‰ Œu]•}•u]} o u] vš o •]•‰}v o µ o • o z / ‰ Œšµ Œ ^W ‰ Œ µv • Œ Œ}o]}v ‰Œ}Ç š} u]v]•ŠÀŒ }v•šŒµ]•v Œ š Œu] vš oX .v o o •]•š u šŒ š u] vš} Pµ • Œ •] µ o • o uµv]]‰]}X	µš} ł îìì Xñórí (îìíóU ‰}Œ ôìíóU ‰}Œ o • u]} o	µš} ł îìì Xñórí (ôìîï (îìíóU ‰}Œ v}À] u Œ ‰Œµ o • u]} o µ o • (}Œuµo v ŒP}• µv ‰Œ} • • v]}v š}Œ] u] vš oX	^ µu‰ ór š ‰ Z Œ š Œ	• µu‰ o š ‰ o P š}	Z •}oµ]• îìì Xïòríõr (Z íì v Œ} u] vš ou îìíõU ‰}Œ vš u]} o Œ •‰}v• o µ o • ‰Œ}. Œ z o µv]•]•v ŒP} ·v] } (}v } µv}Œuµo } ‰Œ} •} u] vš š} • v]}v š}Œ]u}v]•ŠÀŒ u] vš oX	W}Œ ‰ }Œ‰}Œ]v}‹µ] Œ}Œ]v}‹µ] îìíX ïòríõr }Œ‰}Œ]v}‹µ] (Z o Œ} u] vš ou îìíõU ‰}Œ vš u]} o Œ •‰}v• o µ o • ‰Œ}. Œ z o µv]•]•v ŒP} ·v] } (}v } µv}Œuµo } ‰Œ} •} u] vš š} • v]}v š}Œ]u}v]•ŠÀŒ u] vš oX E}X îìì Xñó XíóX ðìî ï o íì v}À] u Œ îìíóX /u‰µ•} }u} • v]•v µv uµoš }v•]•š vš v o ‰ P} (À}Œ KZWKZ/EKY h/ óïXôõõXîíïU D ^ > KD/^/KE E Z/ r W}Œ ‰ Œš iµŒ_] • } • ŒÀ• ‹µ v} •] } }vš •š]•v o • šµ]}v • ‰Œ} • o • vš Œ} o ‰Œ} •} u v Œ ‹µ

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E}X ‰Œ} }•	•‰ Z} :µ]]	E}X Æ‰]	K i š}]v µu‰o] }	š u]v]•ŠÀŒ } ‰ Œ o ‰Œ} • v]}v š	š u]v]•ŠÀŒ } (}Œuµo ŒP}• ‰Œ} • • v]}v š	š} u]v]•ŠÀŒ }• ‰ŸŒ Ç Œ ‰Œµ	š u]v]•š]À} (o P š}• }v oµ•	š u]v]•ŠÀŒ ‹µ .v (}v } o ‰Œ} • • v]}v š} u]v]•ŠÀŒ	•š } o ‰Œ} •}
									• Œ o µ Œ } ‰ P} }v o vŸ X
íí	^ Œ Œ] ' v Œ o	îìì X ïîX‹ îñì	Yµ i]v µ } u v i} Ç îìXíóñì]•‰}•]]•v ïí .v o Œ •] µ}• •}o] } v ‰µvš} vš Œ P o vš Œ]o‰ ‰ŒoÀ] o oµv Gµ vš]vÀŸP]•v — y} ^ }–u]v]•ŠÀŒ o uµv]]‰]} Œ š Œ z}‰ oX u] vš oX	µš E}X îìXòrîìXòXîír íóïì (ð } šµ îìîíX W}Œu]} o µ o • ‰Œ} • • v]}v š} µ o •]} o ‰Œ} • • v]}v š}	µš} l Zíîð }v íñíñ o ò u]v]•ŠÀŒ ‹µ .v (}v } o ‰Œ} • • v]}v š}	µš} l Zíîð }v íñíñ o ò u]v]•ŠÀŒ ‹µ .v (}v } o ‰Œ} • • v]}v š}	µš} l Zíîð }v íñíñ o ò u]v]•ŠÀŒ ‹µ .v (}v } o ‰Œ} • • v]}v š}	o •‰ š} o š} u]v]•ŠÀŒ ‹µ .v (}v } o ‰Œ} •}]}v X]}v š} Œ]}X
íí	^ Œ Œ] ' v Œ o	îìì X ïôX‹ õ	Pµ • v o }Œ Œ P]u]ñvšíš} (o u}Œ] Zîò Ùµo]} •µ•‰ v] Œ}‰ îU ‰ o }u } ou]} o šµ } o}• µ o • š v‹µ • }Œ v o ‰Ç Œ šµ Œ šŒ š u] vš}‰ o • Pµ • µv v PŒ • •]vÀŸP]•v •š v u] vš oX Œ }Ì v } ‰}Œ o • } • o šµ Œ_ }vš u]v v } y}•U Pµ • ‰ Œ o P v } Ç o}• u • PŒ À • o}• oi] • ‰ Œ o }v•µu}X	µš} l ìì X ñóX íîñìì X ñóríðr Zíì ñ (îí v Œ} ìíðX W}Œ]} o u]} o µ o (}Œ ŒP}• z / ^W	µš} l ìì X ñóríðr Zíñ X íìì ñ (Z íó o P š}• µ o • š ‰Œ} š]	}Œ šŒ •o o}• o P š}	Z •}oµ]• } îìì X ïòr íõX ìì ïò (Z íì v Œ} îìíðU Œ Œ} ‰}Œ u]} o µ o • u]} o ‰Œ}. Œ (oo} vš Œ}]•‰}v o µv ‰Œ} •ŠE Z]À} µv • v]}v š} Œ]Æ‰] vš u] vš oX	µš} l ìì X òr ìì X ìì îô (Z íó îìíðU Œ Œ} ìì îU ‰}Œ o µ o • u]} o µv µ o • ‰Œ} š]

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E}X ‰Œ} }•	•‰ Z} :µ]]	E}X Æ‰]	K i š}]v µu‰o] }	š u]v]•ŠÀŒ } ‰ Œ o ‰Œ} • v]}v š	š u]v]•ŠÀŒ } (}Œuµo ŒP}• ‰Œ} • • v]}v š	š} u]v]•ŠÀŒ }• ‰ŸŒ Ç Œ š ‰Œµ	š u]v]•š]À} (o P š}• }v oµ•	š u]v]•ŠÀŒ ‹µ .v (}v } o ‰Œ} • • v]}v š} u]v]•ŠÀŒ	•š } o ‰Œ} •}
í(	^ Œ Œ] ' v Œ	îìì Xïô X í o	s Œu] vš} o vš Œ]o ì Pµ • ìïõò (ooµÀ] • Ç î u Œ Ì} ìð }o ‰•} v P Œ • Œ Œ]}• K Œ] vš o •}Œ ^ š}Œ }o ‰ Œ µo] } µv '}v Ì o •U Dµv]]‰]} z}‰ oX	µš} ł oîì Xñó Xíî ñì Xñóríî (Z ïõô (Pµ • îìíîU ‰ }Œ E}Œ µro • }Œ v o µ o • (}Œ uµo ŒP}• µv ‰Œ v]}v š u] vš	µš} ł îì Xñóríî (Z ïõô (Pµ • îìíîU ‰ }Œ E}Œ µro • }Œ v o µ o • (}Œ uµo ŒP}• µv ‰Œ v]}v š u] vš	µš} ł îì Xñóríî (Z íó (íµv]} îì íñU ‰ u]} o µ o • š ‰ ‰Œ} š}	}Œ šŒ •o o P š}•	Z •}oµ]• }îì Xïríõríïðîì Xòrîîr (Z ìòîîì (Z íõ iµo]} îì íõU ‰ }Œ îì îîU ‰ }Œ u]} o u]} o µ o •] µ o • (}v } µv Œ Z]À µv ‰Œ} •} Æ‰] vš • v]}v š}Œ]} v]}v š}Œ]} u] vš oX Œ š Œ u] vš oX	µš} ł îì Xñóríî (Z ìòîîì (Z íõ iµo]} îì íõU ‰ }Œ îì îîU ‰ }Œ u]} o u]} o µ o •] µ o • (}v } µv Œ Z]À µv ‰Œ} •} Æ‰] vš • v]}v š}Œ]} v]}v š}Œ]} u] vš oX Œ š Œ u] vš oX	•š } o ‰Œ} •}
í(	^ Œ Œ] ' v Œ	îìì Xïîõ ïðõ o	/v µu‰o } u] vš	µš} ł oîì Xòríðr ðíïõ (Z îò]] u Œ(îì íôU — W}Œ u]} o — W}Œ u µ o •]•‰}v o (}Œuµo v ‰ Œšµ Œ ŒP}• µv ‰Œ} •}]vÀŸP]•v• v]}v š}Œ]} u]v]•ŠÀŒ u] vš o—X Œ š Œ u] vš o—	µš} ł îì Xòr ZìXìïôî íî Z ìîçU Œ š • o } ‹µ ‰ŸŒ ‰Œµ •X o µ o • (}Œuµo v ŒP}• µv ‰Œ} •} všŒ}]vÀŸP]•v• v]}v š}Œ]} u] vš o—X	o •‹ o š} u]v]•ŠÀŒ ‹µ ‰ŸŒ ‰Œµ •X	·v v} v š ‰ ‰Œ} • o	·v v} •š ‰ š ‰ ‰Œ} • o	o •‹ o š} u]v]•ŠÀŒ ‹µ }Œ Œ šŒ •o } ‰ Œ o ‰ŸŒ ‰Œµ •X
í(	^ Œ Œ] ' v Œ	îìì Xïîõ íîð o	E} Z i µš } u] }u‰ v•]•š vš • v }v•]•š o Œ (}Œ •š íñ Z š Œ • Œ }o • v ŸÀ}• •]Pµ] v } o}• Œ š Œu] vš}u] vš o v o]•‰µ •š}•}vš Œ z ‰}Œ‰}Œ]•vV]v µu‰o]u] vš } }v o}• š}• u]v]•ŠÀŒ • Æ‰] }• ‰}Œ o µš}Œ]	µš} ł oîì Xòr Xîì Xìðîì Xòrîîr õ (Z íõñð (Zu]v]•ŠÀŒ íð iµo]} íð iµo]} îì îîU ‰ }Œ Ç Œ š • o ‰Œµ •X]•v ‰ u Œ ‰ŸŒ îì îìU • u]} o µ o • (}Œuµo v ŒP}• µv ‰Œ} •} všŒ}]vÀŸP]•v• v]}v š}Œ]} u]v]•ŠÀŒ u] vš o v o	o •‹ o š} u]v]•ŠÀŒ ‹µ ‰ŸŒ ‰Œµ •X	·v v} v š ‰ ‰Œ} • o	·v v} •š ‰ š ‰ ‰Œ} • o	o •‹ o š} u]v]•ŠÀŒ ‹µ }Œ Œ šŒ •o } ‰ Œ o ‰ŸŒ ‰Œµ •X

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E}X ‰Œ} }•	•‰ Z} :µ]]	E}X Æ‰]	K i š}]v µu‰o] }	š u]v]•ŸÀ } ‰ Œ o ‰Œ} • v]}v š	š u]v]•ŸÀ } (}Œuµo ŒP}• ‰Œ} • • v]}v š	š} u]v]•ŸÀ }• ‰ŸŒ Ç Œ ‰Œµ	š u]v]•š]À} (o P š}• }v oµ•	š u]v]•ŸÀ ‹µ .v (}v } o ‰Œ} • • v]}v š} u]v]•ŸÀ	•š } o ‰Œ} •}
			u] vš }u‰ š vš						
îì	^ Œ Œ] ' v Œ	îìì Xïô X õ o	SRU DOOHJDU LQIRUPH HV WDEOHFLGR HQ HO DUWtFXOR GH OD UHVROXFLyQ GHO MXQLR REOLJDFLRQHV TXH IXHURQ UHLWHUDGDV HQ HO DUWtFXOR SULPHUR DFWR DGPLQLVWUDWLYR R Qƒ GHO MXQLR SRU QR GDU FXPSOLPLHQWR D OD PHGLGD GH FRPSHQVDFLyQ FRQVLVWHQWH HQ HO HVWDEOHFLPLHQWR GH KHFWiUHDV HQ ODV iUHDV GH LQIOXHQFLD GLUHFWD GH ORV FDxRV 8VLYDU \ 8SDPHQD	µš} ‰]vÀŸP]•v IRUPXODGR SRU HO FDUJRV]vÀŸP]•v IRUPXODGR SRU HO FDUJRV u] vš o vQ DQFLRQDGR R DPELHQWDO	$X\ vIRUPXODGR SRU HO FDUJRV	$XWF SUyXHEDV VRU SDUD SRUHDOL	$XWR SRU VODGR	5HVRO GH	$ OD H GH DFWR DGPLQLVWUDWLY R TXH GHILQH UHFXUVR LQWHUSXHVWR

3URFHVRV GH FREUR FRDFWLYR

3RU PHGLR GH OD RILFLQD GH MXUtGLFD GH OD ($$$< (,&((63 VH LP ORV SURFHVRV GH FREUR FRDFWLYR TXH HVWiQ YLJHQWHV SDUD SURFHVDO

D (MHFXWDGR /8,6 ,65$(/ $9(1'$f2
& &

3iJLQD GH

'LUHFFLyQ &DUUHUD E 1R
&XDQWtD
7LWXOR (MHFXWLYR 6HQWHQFLD -XGLFLDO
1R ([SHGLHQWH
(VWDGR GHO SURFHVR 6H HIHFWXy HO $XWR GH 0DQGDPL
HQ HO TXH VH GHWHUPLQy HQ HO UHVXHOYH OR VLJX
³35,0(52 /LEUDU 0DQGDPLHQWR (MHFXWLYR D IDYRU GH OD (P
$OFDQWDULOODGR \ $VHR GH <RSDO (,&((63 HQ FRQWUD GHO
$9(1'$f2 LGHQWLILFDGR FRQ QXPHUR & & 325 680$ '(
'26&,(1726 &8$5(17$ < '26 0,/ &,(172 6(6(17$ < &8$752 3(626 0 &
PiV ORV LQWHUHVHV PRUDWRULRV \ FRUUHVSRQGHV TXH VE
VH KL]R H[LJLEOHV OD REOLJDFLyQ \ KDVWD FXDQGR VH FDQFHO
DUWtFXOR \ GHO (VWDWXWR 7ULEXWDULR DGHPiV GH O

E (MHFXWDGR %/$',0,5 &$6752 $9(//$1('$
& &
'LUHFFLyQ
&XDQWtD
7LWXOR (MHFXWLYR)DOOR 'LVFLSOLQDULR
1R ([SHGLHQWH
(VWDGR GHO SURFHVR 6H HIHFWXy PDQGDPLHQWR TXH OLEUD P
GH IHFKD GH VHSWLHPEUH GH 5HVROXFLyQ HI
FXDO VH RUGHQD HO HPEDUJR GH ELHQHV SRU HO QR SDJR GH RE
GH SULPHUD LQVWDQFLD SURIHULGR SRU OD RILFLQD GH FRQWURO
(,&((63 GH IHFKD GH HQHUR GH GHQWUR GHO UDGLFDGR 1R

(V GH VXPD UHOHYDQFLD HQIDWL]DU DFODUDU \ UHVDOWDU TXH OD LQIR
SRU ORV DSRGHUDGRV H[WHUQRV \ SURIHVLRQDOHV HQFDUJDGRV GHO iU

$VLPLVPR DOXGLU TXH HO SURIHVLRQDO TXH OOHYDED ORV SURFHVRV
SHQDOHV VH OH WHUPLQR HO FRQWUDWR 1R HO GtD GH QRYLHPE
KD KDELGR XQD SHUVRQD GHGLFDGD R DVLJQDGD D HOORV

LL -85,6',&&,21 &2$&7,9$ < 5(&83(5$&,21 '(&$57(5$

(Q HO PHV GH PD\R GH VH OOHYDURQ D FDER JHVWLRQHV VLJQLIL
DGPLQLVWUDWLYRV FRDFWLYRV $ FRQWLQXDFLyQ VH SUHVHQWD XQ UH
GH OD JHVWLyQ GH FREURV GXUDQWH HVWH SHULRGR

7RWDO YDORU UHFDXGDGR GH FDUWHUD YHQFLGD GH VX $GPLQLVWUDWLYRV &RDFWLYRV ±		
9DULDEOHV 3HULRGR	0$<2	-81,2
7RWDO PHWD FDUWHUD YHQFLGD		
7RWDO YDORU UHFDXGDGR GH FDUW		

3iJLQD GH

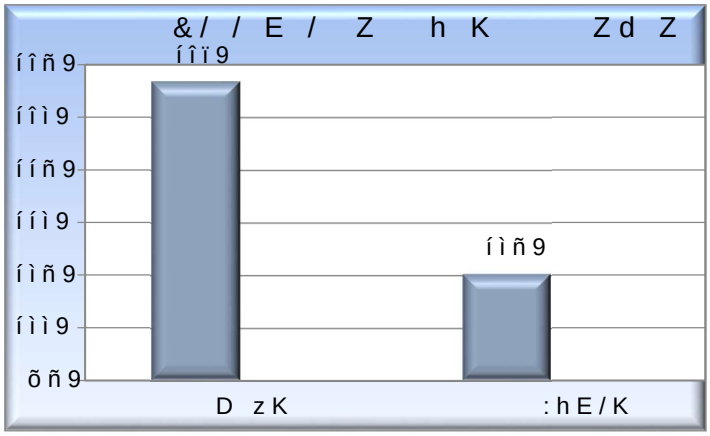
5HVXOWDGR

&iOFXORV SURSLRV HVWLPDGRV D SDUWLU GH OD YHULILFDFLyQ GH ORV H[SHGLHQWHV FRDFWLYRV HQ HO VLVWHPD GH LQIRUPDFLyQ FRPHUFLDO H[LVWHQWH

(Q PD\R GH OD JHVWLyQ GH FREURV FRDFWLYRV VXSHUy VLJQLILFDWLYDPHQWH UHFDXGDURQ OR TXH UHSUHVHQWD XQ GH OD PHWD SRU GHVHPSHxR SXHGH DWULEXLUVH D XQD HIHFWLYD HVWUDWHJLD GH FREURV DGPLQLVWUDWLYRV FRDFWLYRV OR FXDO SHUPLWLy DOFDQ]DU GHO REMHWLYR SURSXHVWR

(Q MXQLR GH OD JHVWLyQ GH FREURV WDPELpQ ORJUy VXSHUDU OD XQ PDUJHQ PiV PRGHVWR HQ FRPSDUDFLyQ FRQ PD\R 6H UHFDXGDURQ GH OD PHWD \ VXSHUiQGROD HQ XQ (VWR VLJXH VLHQGR XQ L HIHFWLYLGDG GH ODV HVWUDWHJLDV GH FREUR LPSOHPHQWDGDV

7RWDO YDORU UHFDXGDGR GH FDUWHUD YHQFLGD GH VXVFULSFLR
$GPLQLVWUDWLYRV &RDFWLYRV ±



&iOFXORV SURSLRV HVWLPDGRV D SDUWLU GH OD YHULILFDFLyQ GH OR PyGXOR GH FREURV FRDFWLYRV HQ HO VLVWHPD GH LQIRUPDFLyQ

(67$'2	727$/ (;3(',(17(6	'(8'$,1,&,$/	'(8'$ 5(&83(5$'$	3520(',2 '(&827$6
$&7,926 9,1&8/$&,21 '(62/,'$5,2	2			
6863(1','2				
5($18'$'2				
7(50,1$'2				

(O WRWDO GH H[SHGLHQWHV \ HO YDORU GH OD GHXGD UHFXSHUDGD VH
GH OD EDVH GH GDWRV DQWH OD DXVHQFLD GHO PyGXOR GH FREURV
LQIRUPDFLyQ FRPHUFLDO H[LVWHQWH

7RWDO H[SHGLHQWHV JHVWLRQDGRV

([SHGLHQWHV $FWLYRV R FRQ 9LQFXODFLyQ GH 'HXGRU 6ROLGDULR

6H JHVWLRQDURQ H[SHGLHQWHV DFWLYRV LQFOX\HQGR DTXHOORV
VROLGDULR /D GHXGD LQLFLDO GH HVWRV H[SHGLHQWHV DVFHQGLy D
PRQWRV GXUDQWH HVWH PHV \D TXH HVWRV FDVRV HVWiQ HQ XQD HWDS
YLQFXODFLyQ GH GHXGRU VROLGDULR GHVWDFD OD LPSRUWDQFLD GH
FREUR $XQTXH QR VH KD UHFXSHUDGR GHXGD HQ HVWD IDVH OD YLQ
SXHGH VHU FUXFLDO SDUD IXWXUDV UHFXSHUDFLRQHV

([SHGLHQWHV 6XVSHQGLGRV

9HLQWH H[SHGLHQWHV IXHURQ VXVSHQGLGRV FRQ XQD GHXGD LQLFLD
HVWRV FDVRV VH UHFXSHUy XQ WRWDO GH /RV H[SHGLHQW
SRPHGLR GH FXRWDV OR TXH VXJLHUH TXH HVWRV GHXGRUHV HVWiQ
GH SDJR D SOD]RV

([SHGLHQWHV 5HDQXGDGRV

6H UHDQXGDURQ H[SHGLHQWHV GHELGR DO LQFXPSOLPLHQWR HQ
H[SHGLHQWHV WHQtDQ XQD GHXGD LQLFLDO GH GH OD FXDO VH
SRPHGLR GH FXRWDV HQ HVWRV FDVRV IXH GH LQGLFDQGR TXH
GHXGRUHV D~Q WLHQHQ REOLJDFLRQHV SHQGLHQWHV TXH VH HVWiQ JHV

([SHGLHQWHV 7HUPLQDGRV

8Q WRWDO GH H[SHGLHQWHV IXHURQ WHUPLQDGRV \D VHD SRU HO FX
R SRU HO SDJR WRWDO GH OD GHXGD (Q HVWRV FDVRV VH ORJUy UHF
(O SRPHGLR GH FXRWDV SDUD ORV H[SHGLHQWHV WHUPLQDG
TXH HVWRV GHXGRUHV ORJUDURQ FRPSOHWDU VXV SDJRV HQ XQ SHULRG

,,, $63(&726 $'0,1,675$7,926

,QIRUPH GH SHUVRQDO

&RQWUDWRV ODERUDOHV YLJHQWHV SHUVRQDO RSHUDWLYR \ DGPLQLV
0D\R GH

	, 1) 2 5 0 (6		
	)HFKD GH (ODERUDFLyQ	7LSR GH 'RFXPHQWR &yGLJR 9HUVLyQ	

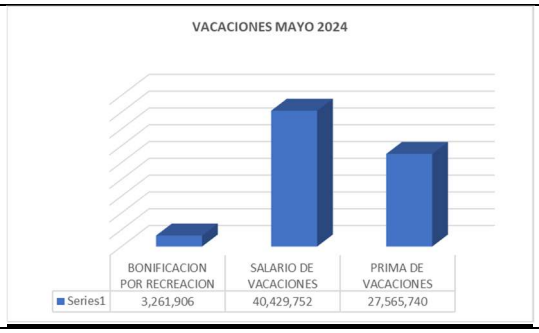
3iJLQD GH

Tabla 1 Valor nómina mes de Mayo 2024

EKD/E D zK		
/d D	KE WdK^	dKd > ' E Z >
í	^h > K	¨ õõòUíóîUðõò
î	,KZ ^ ydZ ^	¨ íîõUôõìUõíò
ï	^h ^/ /K >/D Ed /KE	¨ ïðUóíóUõðñ
ð	hy/>/K dZ E^WKZd	¨ ïìUôôôUììì
ñ	KE/&/ /KE WKZ ^ Zs/ WZ ^d	/K^ ¨ îóUðîôUðïì
ò	WKZd ^ W E^/KE	¨ íðôUìõòUôìì
ó	WKZd ^ ^ >h	¨ ìUôðïUìì
ô	WKZd ^ : KDW E^ /KE & D/>	¨ ðõUîôñUõìì
õ	WKZd ^	¨ îòõU
íì	/	¨ ðìïU
íí	WKZd ^ Z>	¨ îìUññîUôìì
íî	KEK hDW> HK^ ^/E /	¨dK íUôíõUõôò
íï	/E W / ^ Z'K >	¨ z ïUóðíUñìî
dKd > K^dK EKD/E z		íUððñUíìì Uóóñ

Tabla 2 variaciones nómina - Vacaciones

9$&$&,21(6 0$<2	
%21,),&$&,21 325 5(&5($&,21	
6$/$5,2 '(9$&$&,21(6	
35,0$ '(9$&$&,21(6	
727$/	



5HODFLRQ GH SHUVRQDO GH /LEUH 1RPEUDPLHQWR \ 5HPRFLR

,7(0	1Ò0(52 ,'(17,),&$&,Ï1	120%5(6	)(&+$ 9,1&8/$&,Ï1	'(3(1'(1&,$	&$5*2	7,32 (03/($'2	7,32 &2175$72	1,9(/
		$UL]D %RUMD -XOLR	2UODQGR	6(&5(7$5,$ *(1(5$/	,'(5 *(67,21	(PSOHDGR\ 3XEOLFRV	/LEL 1RPEUDPLHQWR 5HPRFLRQ	352)(6,21$/
		&RRUGLQDGRU 3HGUD]D $GULDQD	&ODXGLD	*(5(1&,$ *(1(5$/	'H &RQWURO QWHUQRV	(PSOHDGR\ 3XEOLFRV	/LEL 1RPEUDPLHQWR 5HPRFLRQ	352)(6,21$/
		'LD] =DPEUDQR /LQD 0DUJDULWD		6(&5(7$5,$ *(1(5$/	'HSDUWDPHQWR)LQDQFLHUR	(PSOHDGR\ 3XEOLFRV	/LEL 1RPEUDPLHQWR 5HPRFLRQ	352)(6,21$/
		(VSLWLD &DUGHQDV	&DUORV $OEHUWR	$&8('8&72 < &20(5&,$/,=$&,Ï1	6HUYLFLRV 7$5,//$	(PSOHDGR\ 3XEOLFRV	/LEL 1RPEUDPLHQWR 5HPRFLRQ	',5(&7,92
		)DPERD *RQ]DOH] /LGD =DUHW		*(5(1&,$ *(1(5$/	&RQWURO ,QWHUQR 'H *HVWLRQ	(PSOHDGR\ 3XEOLFRV	/LEL 1RPEUDPLHQWR 5HPRFLRQ	3(5,2'2),-2
		)DUFHV $UDQGD 2PDU		6(&5(7$5,$ *(1(5$/	/LGHU -XUtGLFR 7DOHQWR +XPDQR	(PSOHDGR\ 3XEOLFRV	/LEL 1RPEUDPLHQWR 5HPRFLRQ	352)(6,21$/
		*R\HV 2FDPSR +HUPDQ $GROIR		868$5,26 < &20(5&,$/,=$&,Ï1	$681726 &25325$7,926	(PSOHDGR\ 3XEOLFRV	/LEL 1RPEUDPLHQWR 5HPRFLRQ	',5(&7,92
		+HUUHUD %DUUHUD)HUQDQGR		$&8('8&72 < $/&$17$5,//$	'HSDUWDPHQWR 7HFQLFR	(PSOHDGR\ 3XEOLFRV	/LEL 1RPEUDPLHQWR 5HPRFLRQ	352)(6,21$/
		0DGKUR 3HUH] ,YDQ	3DYHO	*(5(1&,$ *(1(5$/	/LGHU -XUtGLFR 7DOHQWR +XPDQR	(PSOHDGR\ 3XEOLFRV	/LEL 1RPEUDPLHQWR 5HPRFLRQ	352)(6,21$/
		0DULQ 5HQGRQ <H\PP\	'D\DQD	*(5(1&,$ *(1(5$/	/LGHU -XUtGLFR	(PSOHDGR\ 3XEOLFRV	/LEL 1RPEUDPLHQWR 5HPRFLRQ	352)(6,21$/
		3DQWDOHRQ 3DQ /LHWK *XLOOHUPLQD		6(&5(7$5,$ *(1(5$/	'H &RQWURO ,QWHUQR	(PSOHDGR\ 3XEOLFRV	/LEL 1RPEUDPLHQWR 5HPRFLRQ	352)(6,21$/
		3ULHWR &DVWLOOR &RQVXHOR	3LHGDG	6(&5(7$5,$ *(1(5$/	$SOPDFHQLVWD	(PSOHDGR\ 3XEOLFRV	/LEL 1RPEUDPLHQWR 5HPRFLRQ	352)(6,21$/
		5DPLUH] 3UHFLDGR (VSHUDQ]D	0DULD	6(&5(7$5,$ *(1(5$/	6HFUHWDULD (MHFXWLYD	(PSOHDGR\ 3XEOLFRV	/LEL 1RPEUDPLHQWR 5HPRFLRQ	352)(6,21$/
		5REOHV =DUDWH &DUPHQ &ODXGLD		*(5(1&,$ *(1(5$/	/LGHU 7DOHQWR +XPDQR	(PSOHDGR\ 3XEOLFRV	/LEL 1RPEUDPLHQWR 5HPRFLRQ	352)(6,21$/
		6DOGDUULDJD (ORtD -XQ %HUQDUGR		868$5,26 < &20(5&,$/,=$&,Ï1	8VXDULRV &RPHUFLDOL]DFLyQ	(PSOHDGR\ 3XEOLFRV	/LEL 1RPEUDPLHQWR 5HPRFLRQ	',5(&7,92

3HUVRQDO RSHUDWLYR \ DGPLQLVWUDWLYR GXUDQWH HO PHV GH 0D\R G

Tabla 3 Distribución de personal por área

PERSONAL POR DIRECCIONES	
DEPENDENCIA	**CANTIDAD**
GERENCIA GENERAL	10
SECRETARIA GENERAL	38
SUB GERENCIA DE ASUNTOS CORPORATIVOS (COMERCIAL)	76
SUB GERENCIA DE ASUNTOS PUBLICOS (ASEO - TECNICA)	219
TOTAL	**343**

Tabla 4 Distribución de personal por tipo contrato

ROTACION DE PERSONAL	
TIPO DE CONTRATO	**CANTIDAD**
REMOCION	15
TERMINO INDEFINIDO	249
TERMINO FIJO	79
TOTAL	**343**

Tabla 5 Sindicatos Activos En La EAAAY

,1)250$&,21 '(6,1',&$726	
6,1',&$726	&$17,'$' '( )81&,21$5,26
6,175$(06'(6	
6,175$2),&2/	
12 $),/,$'26 $ 6,1',&$72	
727$/	

&RQWUDWRV ODERUDOHV YLJHQWHV SHUVRQDO RSHUDWLYR \ DGPLQLV -XQLR GH

	, 1) 2 5 0 (6		
	)HFKD GH (ODERUDFLyQ	7LSR GH 'RFXPHQWR &yGLJR 9HUVLyQ	

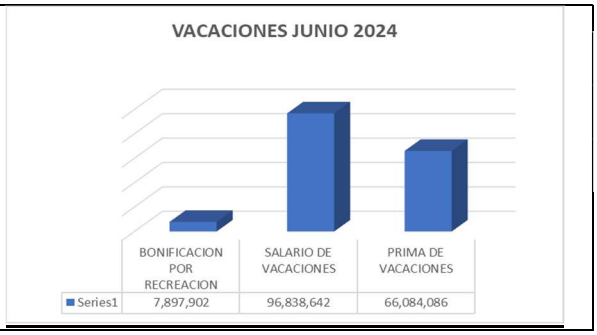
3iJLQD GH

Tabla 6 Valor nómina mes de junio 2024

EKD/E :hE/K		
/d D	KE WdK^	dKd > ' E Z >
í	^h > K	¨ õòîUìðîUôïó
î	,KZ ^ ydZ ^	¨ íïîUðòôUôìñ
ï	^h ^/ /K >/D Ed /KE	¨ ïïUòïòUóðð
ð	hy/>/K dZ E^WKZd	¨ ïìUìðñUòìì
ñ	KE/&/ /KE WKZ ^ Zs/ /K^ WZ ^d	¨ îìUôíðUìíî
ò	WKZd ^ W E^/KE	¨ íðõUóïòUñìì
ó	WKZd ^ ^ >h	¨ ôðñUïìì
ô	WKZd ^ : KDW E^ /KE & D/>	¨ ðõUôîíUôìì
õ	WKZd ^	¨
íì	/	¨
íí	WKZd ^ Z>	¨ îìUïíîUóìì
íî	KEK hDW> HK^ ^/E /	¨ ďK îUðòòUõôí
íï	/E W / ^ Z'K >	¨ z ðUôòõUðñó
dKd > K^dK EKD/E z		íUðìóUìòîUóïò

Tabla 7 variaciones nómina - Vacaciones

9$&$&,21(6 -81,2	
%21,),&$&,21 325 5(&5($&,21	
6$/$5,2 '(9$&$&,21(6	
35,0$ '(9$&$&,21(6	
727$/	



5HODFLRQ GH SHUVRQDO GH /LEUH 1RPEUDPLHQWR \ 5HPRFLR

/d D	EjD ZK / Ed/&/	/ME EKD Z ^	/Z /KE	& , s/E h>	/ME Z'K	d/WK DW>	K d/WK KEdZ dK	E/s >
í	õòñðíôô	Œ]Ì }Œi :µo	^ Z dZ/ 'Z E / 'E Z >	ìÌíîÌîîì	>] Œ í '}] Œv}	u‰o }•	>] Œ E}u Œ u]vš} Ç WŒ}(•]}v o	
î	ïõòðíìôì	}o}Œ } W Œ Ì o µ]	^ Z dZ/ 'Z E / 'E Z >	ìÌíîðÌïîì	}vš Œ}o /vš Œv}•	u‰o }•	>] Œ E}u Œ u]vš} Ç WŒ}(•]}v o	
ï	íìðïìíîõðð	] Ì • u Œ v} >]v	^ Z dZ/ 'E Z >	ííìòÌîìîðð	: (‰ Œš u vš}	u‰o }•	>] Œ E}u Œ u]vš} Ç WŒ}(•]}v o	
ð	ïóñðóóíõ	' u } '}vÌ o Ì >] • Œ š	'Z E / 'E Z >	ìÌíîðÌîîì	}vš Œ}o /vš Œv}	u‰o }•	>] Œ E}u Œ u]vš} Ç W Œ]} } &]i}	
ñ	íïñðíìõï	' Œ • Œ v Ku	^ Z dZ/ Œ Z >	îìÌìñÌîÌîì	>] Œ :µŒ]] } d o vš}	u‰o }•	>] Œ E}u Œ u]vš} Ç WŒ}(•]}v o	
ò	íóïðñîîñ	'}Ç • K u‰} , Œu	^ Z/K^ z KD Z / >/•	/K íïìîÌîîì	^µ P Œ vš }Œ‰}Œ š]À}•	•µvš}• u‰o }•	>] Œ E}u Œ u]vš} Ç]Œ' š]À}	
ó	íìñóñóíõõò	, Œ Œ Œ Œ Œ	h hdKz Œ Ed Z Z Z >	K ìÌíîñÌîÌîì	:(‰ Œš u vš} d }	u‰o }•	>] Œ E}u Œ u]vš} Ç WŒ}(•]}v o	
ô	õíîõóíóò	.,}oPµ]v] Ì &Œ	/Z /KE ^QK:}À vvÇ	íóÌìòÌîìîð	]Œ š}Œ K‰ Œ š]À} • }	u‰o }•	>] Œ E}u Œ u]vš} Ç]Œ' š]À}	
õ	íóïðóõõðí	D Œ} W Œ Ì /À v W À o	'Z E / 'E Z >	íóÌìñÌîÌîð	• •}Œ :µŒ]	u‰o }•	>] Œ E}u Œ u]vš} Ç • ' J Œ :µŒ]	
íì	ñîõòðòíõ	D Œ]v Z]v z Çuu Ç v	'Z E /	'E Z > îÌíìñÌîìîð	>] Œ í :µŒ]	u‰o }•	>] Œ E}u Œ u]vš} Ç WŒ}(•]}v o	
íí	óíõíóõõó	E]y} D v]À o•}	^ Z dZ/ 'E Z >	ìñÌìòÌîÌîð	]v •š Œ ^}] o v vš} ,µu v}	u‰o }•	>] Œ E}u Œ u]vš} Ç WŒ}(•]}v o	
íî	íííõñõïõñµ	W vš o }v W v >]Ì	^ Z dZ/ 'E Z >	ìÌíìðÌîìîð	}vš Œ}o /vš Œv}	u‰o }•	>] Œ E}u Œ u]vš} Ç WŒ}(•]}v o	
íï	îïóíñóðõ	WŒ] š} •š]oo} W	^ Z dZ/ 'E Z >	íÌíìíÌîìîï	ou v]•š	u‰o }•	>] Œ E}u Œ u]vš} Ç WŒ}(•]}v o	
íð	õóðïíõðì	Z u]Œ Ì WŒ] } D	Œ Z d Z/ 'E Z >	ìÌíìíÌîìîï	^ Œ š Œ] i µš]À	u‰o }•	>] Œ E}u Œ u]vš} Ç WŒ}(•]}v o	
íñ	õõóíòññ	Z} o • • Œ š Œ u v	'Z E / 'E Z >	ìõÌìñÌîìîð	>] Œ i d o vš} ,µu v}	u‰o }•	>] Œ E}u Œ u]vš} Ç WŒ}(•]}v o	
íò	íññïìíóõ	^ o Œ Œ] P o}	Œh^hµZ/K^ z KD Z / >/•	/K íïìîÌîîì	h•µ Œ]} • z]Œ o]Ì]}v	u‰o }•	>] Œ E}u Œ u]vš} Ç]Œ' š]À}	

Tabla 8 Distribución de personal por área

PERSONAL POR DIRECCIONES	
DEPENDENCIA	**CANTIDAD**
GERENCIA GENERAL	10
SECRETARIA GENERAL	40
CORPORATIVOS (COMERCIAL)	76
PUBLICOS (ASEO - TECNICA)	215
TOTAL	**341**

Tabla 9 Distribución de personal por tipo contrato

ROTACION DE PERSONAL	
TIPO DE CONTRATO	**CANTIDAD**
REMOCION	16
TERMINO INDEFINIDO	250
TERMINO FIJO	75
TOTAL	**341**

Tabla 10 Sindicatos activos en la EAAAY

,1)250$&,21 '(6,1',&$726	
6,1',&$726	&$17,'$' '( )81&,21$5,26
6,175$(06'(6	
6,175$2),&2/	
12 $),/,$'26 $ 6,1',&$72	
727$/	

Tabla 11 Aumentos variables de nóminas durante el año 2024

(QHURD QRPLQD PHQVXDO GH HQHUR DXPHQWR SRUTXH SDUD HVWH PHV FHVDQWLDV

)HEUHURPDUHO PHV GH)HEUHUR GH OD QRPLQD VXUJLR QRUPDOPHQ VLQ HPEDUJR VH GHEH WHQHU HQ FXHQWD TXH SDUD HVWH PHV DXQ Q VDODULDO

0DU]R3DUD HVWH PHV OD QRPLQD DXPHQWR QRWRULDPHQWH SXHVWR TX VDODULDO GH XQ SDUD WRGRV ORV HPSOHDGRV

$EULO3DUD OD QRPLQD GHO PHV GH DEULO GHO SUHVHQWH DxR VH SDJR HQHUR \ IHEUHUR SRU WRGRV ORV FRQFHSWRV SRU HVWD UD]RQ HO DX QRWRULR

0D\R8QD GH ODV SULQFLSDOHV QRYHGDGDGHV HQ OD QRPLQD GHO PHV
ERQLILFDFLRQ SRU VHUYLFLRV SUHVWDGRV IXH OD PDV DOWD SXHVWR
GHO SHUVRQDO GH OD 'LUHFFLRQ GH $VHR LQJUHVR HQ PD\R GH
-XQLR3DUD OD QRPLQD GHO PHV GH -XQLR VH SDJR OD WRWDOLGDG GH O
HPHUJHQFLD SUHVHQWDGD HQ OD HDDD\

,1&3&,'$'(6 $f2

3DUD OD YLJHQFLD GHO DxR HO WUiPLWH GH LQFDSDFLGDGHV KD
GHWDOOD D FRQWLQXDFLyQ

,1&3&,'$'(6 5$',&$'$6 $&808/$'$6 '(0$<2 $ -81,2 325)81&,21$5,26 $
/$ 2),&,1$ '(7$/(172 +80$12

(36	,1&3&,'$'(6 5$',&$'$6 $ /$ ($$$<
6$1,7$	
&$35(62	
18(9$ (3	
326,7,9$ 9	
)$0,6$1$	
727$	

Tabla 12 Total de incapacidades acumuladas radicadas en la oficina de talento humano asumidas por la EAAAY - mayo a junio:

(36	,1&3&,'$'(6 $680,'$6 325 /$ ($$$<
6$1,7$	
&$35(62	
18(9$ (3	
326,7,9$ 9	
727$	

Tabla 13 Incapacidades acumuladas radicadas para realizar el recobro en sus respectivas eps - mayo a junio:

(36	,1&3&,'$'(6 5$',&$'$6
6$1,7$	
&$35(62	
18(9$ (3	
326,7,9$ 9	
)$0,6$1$	
727$	

727$/ '(,1&$3$&,'$'(6 $&808/$'$6 325 &/$6(

- (1)(50('$' *(1(5$/
- $&&,'(17('(75$16,72
- /,&(1&,$ '(3$7(51,'$'

➢ /$%25$/

Tabla 14 Total de incapacidades acumuladas de mayo a junio:

(36	&/$6(6 '(,1&$3$&,'$'(6			
	(1)(50('$' *(1(5$/	$&&,'(17('(75$16,72	/,&(1&,$ '(3$7(51,'$'	$&&,'(17(/$%25$/
6$1,7$				
&$35(62				
18(9$ (3				
326,7,9$ 9				
)$0,6$1$				
727$				

727$/ '(,1&$3$&,'$'(6 $&808/$'$6 3$*$'$6 325 (36

Tabla 15 Incapacidades acumuladas de mayo a junio:

(36	,1&3&,'$'(6 3$*$'$6
6$1,7$	
18(9$ (3	
326,7,9$ 9	
727$	

727$/ '(,1&$3$&,'$'(6 $&808/$'$6 3(1',(17(6 '(3$*2 325 (36

Tabla 16 Incapacidades acumuladas de mayo a junio:

(36	,1&3&,'$'(6 3(1',(17(6 '(3$*2
6$1,7$	
&$35(62	
18(9$ (3	
326,7,9$ 9	
)$0,6$1$	
727$	

9$/25(6 *,5$'26 $ /$ ($$$< 325 &21&(372 '(,1&3&,'$'(6

Tabla 17 Valores acumulados pagados incapacidades de mayo a junio:

(36	9$/25(6 3$*$'26
6$1,7$	
18(9$ (3	
326,7,9$ 9	
727$	

(VWDGR GHO VLVWHPD GH &RQWURO ,QWHUQR

(Q OD FDUSHWD $QH[R &RQWURO ,QWHUQR VH DGMXQWD HO LQIRU
³(YDOXDFLyQ LQGHSHQGLHQWH HVWDGR GHO VLVWHPD GH FRQWURO LQW

,QIRUPH GH RUJDQLVPRV GH FRQWURO ILVFDO

(Q OD FDUSHWD $QH[R &RQWURO ,QWHUQR VH DGMXQWD HO LQIRU
³(YDOXDFLyQ LQGHSHQGLHQWH HVWDGR GHO VLVWHPD GH FRQWURO LQW

,QIRUPH FDUJXHV GH 68,

(Q HO DQH[R ³68,´ VH DGMXQWD HO LQIRUPH 1R HQ HO FX
LQWHUQR SUHVHQWD HO VHJXLPLHQWR GHO FXPSOLPLHQWR DO UHSRUW
FRUWH D GH MXOLR GH

5HVSHFWR GH ODV FRPXQLFDFLRQHV SUHVHQWDGDV DO JUXSR 68, VH R

- 5HYHUVLyQ IRUPDWRV GH SUHVLRQHV $FXHGXFWR 1HJDURQ OD UHY
RSHUDWLYD VH HQFXHQWUD WUDEDMDQGR HQ ODV PDWULFHV H[S
FRQWLQXLGG FRQ HO SURFHVR
- 5HWLUR IRUPDWRV WRQHODGDV SURYHQLHQWHV GHO iUHD GH SUHV
D OD SHWLFLyQ \ VRQ UHWLUDGRV ORV IRUPDWRV GH PD\R \ MXQLR
- 3UREOHPDV HQ FDUJXH GH IRUPDWR iUHD SUHVWDFLyQ VHUYLFLR D
SURFHGLPLHQWR GH FDUJXH \ H[SOLFDQ TXH VL SHUVLVWH HO SUR
GH SDQWDOOD GH FDGD SDVR UHDOL]DGR SDUD TXH HO JUXSR 68, SX
- 0HVD GH D\XGD %& $FWLYDFLyQ IRUPXODULR UHJLVWUR GH Y
UHVSXHVWD

'HQWUR GH ODV DFWLYLGDGHV GHVDUUROODGDV SDUD FDUJXH GH LQIR
/LGHU GH ODERUDWRULR GH DJXDV DFWXDOPHQWH WUDEDMD HQ OD DFW
GH ULHVJR GH FDOLGDG GH DJXD SDUD GLOLJHQFLDPLHQWR GH IRUPD
GHSDUWDPHQWR WpFQLFR $GLFLRQDOPHQWH VH HVSHUDQ ORV UHVX
UHDOL]DGRV D ILQDOHV GHO PHV GH MXOLR SDUD SRGHU FDUJDU OD
LQIRUPDFLyQ

(V GH UHVDOWDU TXH HO iUHD GH WHVRUHUtD GHVDUUROOR DFFLRQHV
FDUJXH WRWDO GH OD LQIRUPDFLyQ GH YLJHQFLDV DQWHULRUHV \ TX
SURYLVLyQ FLHUUH FODXVXUD \ SRVW FODXVXUD WUDVODGR GH UHFX
UHFXUVRV GHO LQFHQWLYR DO DSURYHFKDPLHQWR \ WUDWDPLHQWR GH

,9 $63(&726 7(&1,&26 < 23(5$7,926

$ 6(59,&,2 '($&8('8&72

&37&,Ï1

/$ 7$%/21$

/D ERFDWRPD DQWLJXD WLHQH FRPR IXHQWH GH FDSWDFLyQ OD TXHUD
HVWUXFWXUD HV GH FDSWDFLyQ VXSHUILFLDO FRQ UHMLOOD GH IRQ
DUHQDFLyQ FRPR SURFHVR GH SUH WUDWDPLHQWR \ GRV OtQHDV GH VD
HV GLULJLGD D OD 3ODQWD $OWHUQD \ 3ODQWD &RQFLOLDGD D XQD GLV

	, 1) 2 5 0 (6		
	)HFKD GH (ODERUDFLyQ	)HFKD 8OWLPD 0RGLILFDFLyQ	7LSR GH 'RFXPHQWR &yGLJR 9HUVLyQ

3iJLQD GH

/D RSHUDFLyQ GH OD %RFDWRPD /D 7DEORQD HQ HO PHV GH PD\R \ MXQL GLDULDV FRQ IOXMR GH DJXD PtQLPD SRU OD OtQHD GH FRQGXFFLyQ GH FRQGXFWRV \ HVWUXFWXUDV KLGUiXOLFDV \ UHDOL]DU ODV ODERUHV FRQGXFFLyQ GH ´ VH GLVPLQX\y HO IOXMR SDUD HYLWDU VREUHSUHVLR

&5$92 685

/D ERFDWRPD QXHYD WLHQH FRPR IXHQWH GH FDSWDFLyQ HO 5tR &UD FDSWDFLyQ VXSHUILFLDO ODWHUDO FRPSUHQGH GH FDQDO GH HQWUDGD VHFFLRQHV GH UHMLOODV GH UHWHQFLyQ GH VyOLGRV \ XQ HTXLSR GH H VLQ IXQFLRQDPLHQWR \ ILQDOPHQWH OtQHD GH DGXFFLyQ GH ´ HO FX DO SURFHVR GH GHVDUHQDFLyQ

(O VLVWHPD GH FDSWDFLyQ HV YXOQHUDEOH D ODV FRQGLFLRQHV FOLP GHELGR D TXH HO DXPHQWR GH FDXGDO JHQHUD HO WUDQVSRUWH DU WURQFRV SLHGUDV DUHQDV DQLPDOHV FDXVDQGR OD VHGLPHQWDFLy HQWUDGD \ OD ERFDWRPD 3RU OR DQWHULRU HO IOXMR KLGUiXOLFR HQ VH YH DIHFWDGR JHQHUDQGR OD VXVSHQVLyQ HQ OD RSHUDFLyQ GHO SRWDEOH

/D RSHUDFLyQ HQ HO PHV GH PD\R \ MXQLR IXH GH KRUDV GLDULDV SRWDEOH 6LQ HPEDUJR GHELGR D ODV DOWDV WXUELHGDGHV \ HO DXP SUHFLSLWDFLRQHV JHQHUy OD FROPDWDFLyQ GH OD HVWUXF DUHQDV SLHGUDV UDPDV iUEROHV DQLPDOHV

(O GtD GH PD\R \ GH MXQLR GHO DxR V JUDQ FDQWLGDG GH VHGLPHQWDFLyQ \ DFXPX HQ OD ERFDWRPD GHELGR DO DXPHQWR GHO DOWDV SUHFLSLWDFLRQHV HQ OD FXHQFD &R JHQHUy OD VXVSHQVLyQ GH OD RSHUDFLyQ GH \ OD DFWLYDFLyQ GHO SODQ GH FRQWLQJH WHQLHQGR HQ FXHQWD TXH SRU SDUWH GH OD VH GHFUHWy DOHUWD URMD SRU IHQyPHQR GH OD FLXGDG GH <RSDO OR FXDOHV IXHURQ D VLVWHPDV GH DOHUWDV WHPSUDQDV GHO ,'($0 HVWDEOHFLGDV SRU ORV QLYHOHV TXH VXS HVWDFLRQHV

$ FRQWLQXDFLyQ VH SUHVHQWD HYLGHQFLD DXPHQWR HQ HO QLYHO GHO UtR &UDYR 6XU HQ GH PD\R

3iJLQD GH

Ilustración 1 Aumento del nivel del Río Cravo Sur en la bocatoma el día 29 mayo/2024

(O GtD GH PD\R VREUH ODV 30 HO UtR &UDYR 6XU VH HYLGHQFL
GHO UtR GHMDQGR D OD YLVWD OD DFXPXODFLyQ VHGLPHQWDFLyQ GH D

Ilustración 2 Sedimentación/colmatación de material en bocatoma el día 29 de mayo/2024

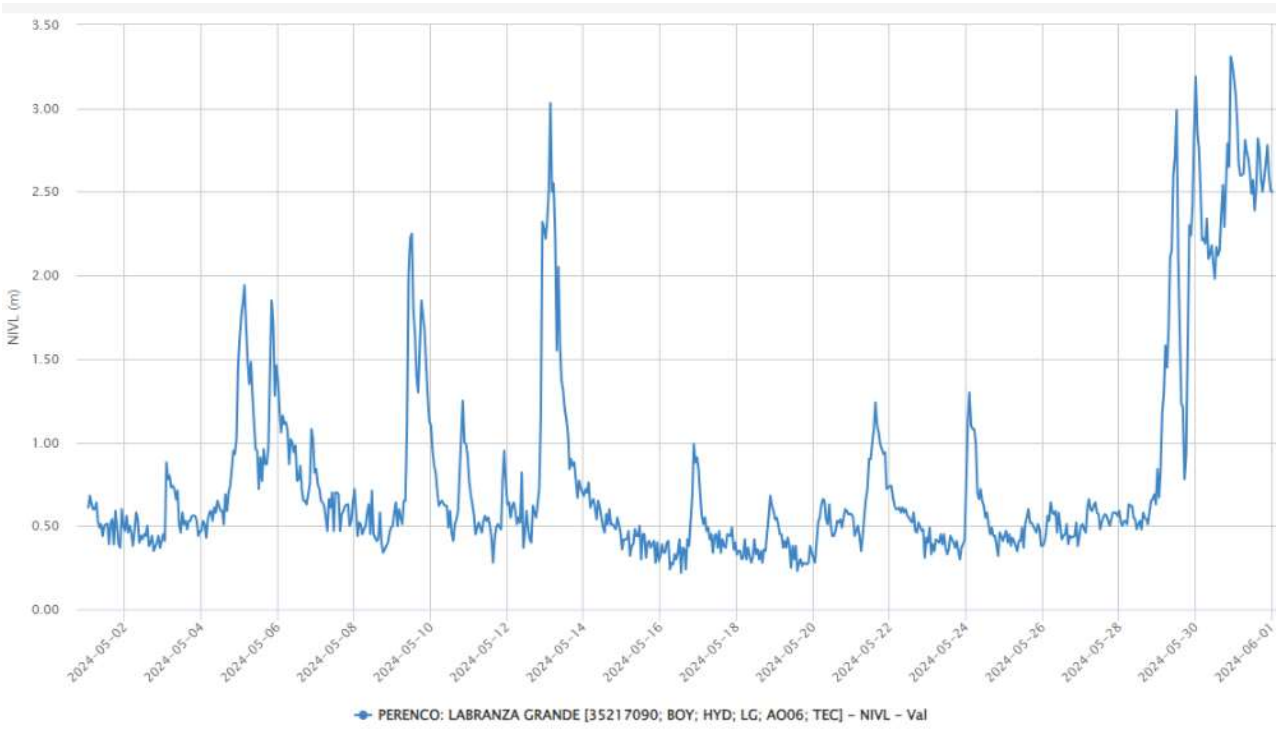
6REUH ODV 30 GHO GtD GH PD\R LQJUHVy XQD PiTXLQD UHWUR
HQ OD H[WUDFFLyQ GHO PDWHULDO DFXPXODGR HQ OD ERFDWRPD $ FR
IRWRJUiILFR

Ilustración 3 Extracción de material en bocatoma

(VWH LQFUHPHQWR VH RULJLQy GHELGR D ODV DOWDV WXUELHGDGHV \
SUHVHQFLD GH OOXYLDV HQ HO VHFWRU \ ]RQD DOWD GH OD FXHQFD GH
WLHQH HO UpJLPHQ GH OOXYLDV 8QLPRGDO OR FXDO HO LQLFLR GH O
PHVHV GH DEULO PD\R \ MXQLR

(VWR LQFUHPHQWR VH RULJLQy GHELGR D ODV DOWDV WXUELHGDGHV \
SUHVHQFLD GH OOXYLDV HQ HO VHFWRU \ ]RQD DOWD GH OD FXHQFD GH
WLHQH HO UpJLPHQ GH OOXYLDV 8QLPRGDO OR FXDO HO LQLFLR GH O
PHVHV GH DEULO \ PD\R

3iJLQD GH



)XHQWH ,'($0

(O GtD GH MXQLR HQ KRUDV GH OD QRFKH VH UHJLVWUy SUHFLSLWDF
KLGURJUiILFD 5tR &UDYR 6XU JHQHUDQGR HQ HO VHFWRU GH OD YHUHGD
DIOXHQWH $ FRQWLQXDFLyQ VH SUHVHQWD HYLGHQFLD IRWRJUiILFD UH

Ilustración 4 Aumento del nivel del Río Cravo Sur en la bocatoma día 15 de junio/2024

(Q OD PDxDQD GHO GtD GH MXQLR ORV QLYHOHV GHO FDXFH GLVPLQX\H
OD VHGLPHQWDFLyQ GH PDWHULDO GH UtR HQ HO FDQDO GH HQWUDGD
SUHVHQWD HYLGHQFLD IRWRJUiILFD UHJLVWUDGR VREUH ODV $0

Ilustración 5 Sedimentación/colmatación de material en bocatoma el día 16 de junio/2024

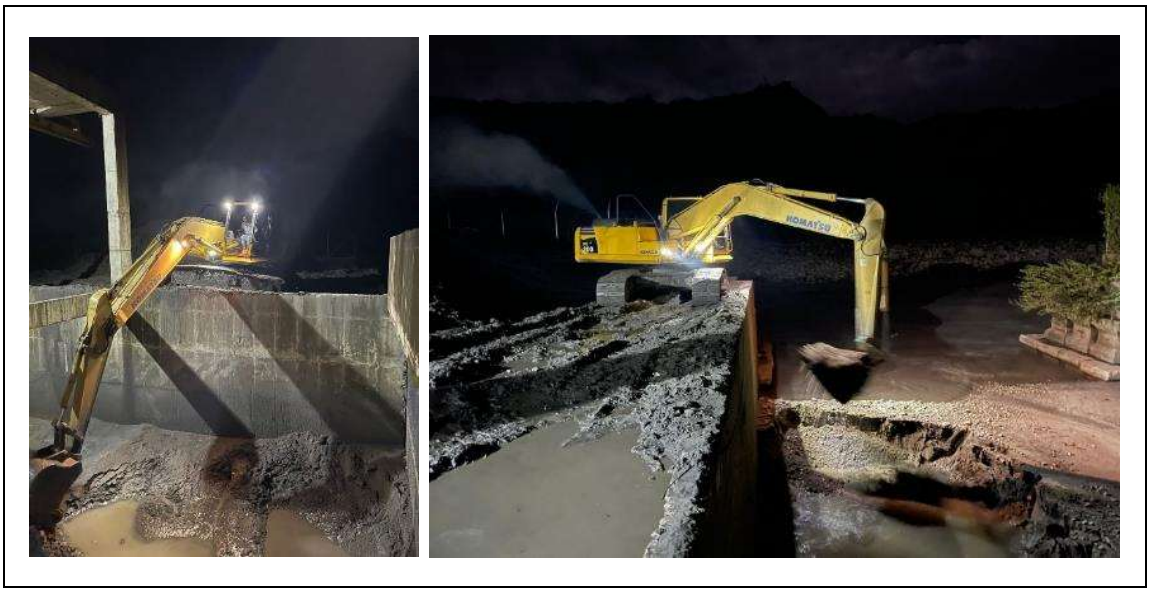
Ilustración 6 Sedimentación/colmatación de material en bocatoma el día 16 de junio/2024

&RPR VH SXHGH REVHUYDU HQ OD ,OXVWUDFLyQ \ OD VHGLPHQWDFLyQ HO FRODSVR GH OD ERFDWRPD DIHFWDQGR HO IOXMR GH DJXD HQ OD H GH OD RSHUDFLyQ GH OD 3ODQWD 'HILQLWLYD

Ilustración 7 Extracción de material de río en bocatoma el día 16 de junio/2024

(Q OD ,OXVWUDFLyQ VH SUHVHQWD OD DFWLYLGDG GH H[WUDFFLyQ GH 5tR &UDYR 6XU HO FXDO FRPR VH SXHGH REVHUYDU OD HVWUXFWXUD Q

'HELGR D OD HPHUJHQFLD SRU OD VXVSHQVLyQ GH OD RSHUDFLyQ GH OD FRQ XQD PiTXLQD UHWURH[FDYDGRUD FRPR DSR\R HQ OD H[WUDFFLyQ G HO PHGLR GtD \ FRQWLQXy KDVWD ODV KRUDV GH OD QRFKH 30 HYLGHQFLD IRWRJUiILFD GHO WUDEDMR UHDOL]DGR



3iJLQD GH

Ilustración 8 Extracción de material de río en bocatoma. Jornada noche.

$GHPiV GH ORV HYHQWRV GH HPHUJHQFLD HQ ORV SHUtRGRV GH UHSRU
FRQWLQXDU FRQ HO PDQWHQLPLHQWR GH OD ERFDWRPD FRQ PiTXLQD U
SUHVHQWy PD\RU IUHFXHQFLD GH DOWDV SUHFLSLWDFLRQHV DOWRV QL
SRU HQGH OD VHGLPHQWDFLyQ DFXPXODFLyQ GH PDWHULDO HQ HO VLV

$ FRQWLQXDFLyQ VH SUHVHQWD HO UHJLVWUR IRWRJUiILFR GH OD VHGL
\ ODV DFWLYLGDGHV GH PDQWHQLPLHQWR UHDOL]DGRV HQ HO PHV GH P

3iJLQD GH

Ilustración 9 Sedimentación de material en bocatoma en el mes de mayo/2024

&RPR VH SXHGH REVHUYDU HQ OD ,OXVWUDFLyQ GXUDQWH HO PHV GH GH VHGLPHQWRV DFXPXODGRV HQ HO FDQDO GH HQWUDGD \ ERFDWRPD FDSWDFLyQ \ IOXMR GH DJXD 3RU HQGH IXH QHFHVDULR OD LQWHUYHQF SDUD OD H[WUDFFLyQ GH VyOLGRV WDO FRPR VH PXHVWUD HQ OD LOXVW

Ilustración 10 Mantenimientos realizados en el mes de mayo/2024 con máquina retroexcavadora para la extracción de material

$ FRQWLQXDFLyQ VH SUHVHQWD OD VHGLPHQWDFLyQ GH PDWHULDO HQ PDQWHQLPLHQWR UHDOL]DGRV HQ HO PHV GH MXQLR

Ilustración 11 Acumulación de material en bocatoma en el mes de junio/2024

&RPR VH SXHGH REVHUYDU HQ OD ,OXVWUDFLyQ GXUDQWH HO PH VHGLPHQWDFLyQ GH PDWHULDO DUHQD SLHGUD SDORV UDPDV GLVPI FDSWDFLyQ \ IOXMR GH DJXD OR FXDO IXH QHFHVDULR OD LQWHUYHQFL GH VyOLGRV WDO FRPR VH PXHVWUD HQ OD LOXVWUDFLyQ

3iJLQD GH

Ilustración 12 Mantenimientos realizados en el mes de mayo/2024 con máquina retroexcavadora para la extracción de material

(Q OD 7DEOD VH SUHVHQWD ODV IHFKDV GH ORV PDQWHQLPLHQWR UHWURH[FDYDGRUD HQ OD ERFDWRPD SDUD OD H[WUDFFLyQ GH PDWHULD

7DEOD)HFKD GH ORV PDQWHQLPLHQWRV UHDOL]DGRV HQ ERFDWRPD FRQ PiTXL GH PD\R \ MXQLR GHO DxR

0$<2	-81,2

0$<2	-81,2

(Q FRQGLFLRQHV FOLPiWLFDV GH DOWDV \ EDMDV SUHFLSLWDFLRQHV HV
XQD PiTXLQD UHWURH[FDYDGRUD GHELGR D TXH HO DIOXHQWH HV VXVFH
\ QLYHOHV GHO 5tR HQ QLYHOHV DOWRV VH SUHVHQWD JUDQ DFXPXODF
H[WUDHU HO PDWHULDO VHGLPHQWDGR \ HQ QLYHOHV EDMRV VH GH
HQFDX]DPLHQWR GHO IOXMR GH DJXD KDFLD OD HVWUXFWXUD GH FDSWD

6,67(0$6 '(327$%,/,=$&,Ï1

/D 8QLGDG GH 3RWDELOL]DFLyQ RSHUD \ VXSHUYLVD GRV VLVWH
GHQRPLQDGDV /D 7DEORQD \ &UDYR 6XU WUHV SODQWDV GH WUDV
'HILQLWLYD 3ODQWD $OWHUQD \ 3ODQWD &RQFLOLDGD \ GRFH SR]R
8UEDQR ,, 0DQJD GH &ROHR &HQWUDO GH $EDVWRV ,, 9LOOD 'DYLG 9
$PpULFDV 7ULDGD 0DWHUQR ,QIDQWLO 9LOOD 0DUtD , %UDXOLR &HQW

(O VXPLQLVWUR GH DJXD SRWDEOH D OD FLXGDG GH <RSDO HQ HO PHV PI
OD 3ODQWD 7UDWDPLHQWR 'HILQLWLYD FRQ XQ FDXGDO SURPHGLR
UHVSHFWLYDPHQWH SDUD ORV VHFWRUHV KLGUiXOLFRV $ % & '
% $ % & $ $ % $ $ % ±

/RV SR]RV SURIXQGRV 0DQJD GH &ROHR OSV %UDXOLR &DPSHVWUH
\ 7ULDGD OSV RSHUDURQ FRPR DSR\R HQ HO HYHQWR GH HPHUJHQFLD
\ GH MXQLR GHO DxR GHELGR D OD FROPDWDFLyQ GH PDWHULDO
&UDYR 6XU \ GHVDUHQDGRUHV GH OD 3ODQWD 'HILQLWLYD

/RV SR]RV SURIXQGRV 1~FOHR 8UEDQR ,, \ %HQGLFLyQ RSHUDURQ
UHVSHFWLYDPHQWH FRPR DSR\R DO VXPLQLVWUR GH DJXD SRWDEOH
SUHVLyQ HQ HO VHFWRU KLGUiXOLFR \ VHFWRU &LXGDGHOD /D %HQGL

(O SR]R SURIXQGR 0DQJD GH &ROHR RSHUy HQ SURPHGLR KRUD GtD HQ
HQ HO PHV GH MXQLR FRPR DSR\R D ODV FRQGLFLRQHV GH SUHVLyQ HQ

(O VXPLQLVWUR DEDVWHFLPLHQWR GH DJXD SRWDEOH D OD FLXGDG G
RSHUDFLyQ GH OD 3ODQWD 'HILQLWLYD HO FXDO LQLFLR RSHUDFLyQ H
$OWHUQD \ 3ODQWD &RQFLOLDGD VRQ PyGXORV DOWHUQRV GH WUDWD
&RQWLQJHQFLD HQ HYHQWRV GH VXVSHQVLyQ \ R GH HPHUJHQFLD GH OD

(Q HO PHV GH PD\R \ HQ HO PHV GH MXQLR OD 3ODQWD 'HILQLV
HPHUJHQFLD SRU FROPDWDFLyQ GH DUHQDV HQ WDQTXHV GH GHVDUHQ
PD\R \ GH MXQLR VH DFWLYy HO 3ODQ GH &RQWLQJHQFLD FRQ O
DOWHUQRV GH WUDWDPLHQWR GH DJXD SRWDEOH

3iJLQD GH

3/17 '(),1,7,9$

/D 3ODQWD 'HILQLWLYD HV XQD SODQWD GH WUDWDPLHQWR FRQYHQFLR
HO FXDO FRPSUHQGH GH ODV VLJXLHQWHV HVWUXFWXUDV GH WUDWDPLH
GH GHVDUHQDFLyQ VLVWHPD GH UH ERPEHR GH DJXD FUXGD FRQ WUHV
XQD GH KS .Z WUHV FDQDOHWDV SDUVKDOO SURFHVR GH
HVWUXFWXUDV GH IORFXODFLyQ FXDWUR HVWUXFWXUDV GH VHGLP
ILOWUDFLyQ XQ WDQTXH GH UHWRUQR GRV WDQTXHV GH DOPDFH
XQR GH PXQ WDQTXH GH VHUYLFLR FHOGDVPSDUD HO WUDWDPLHQW
FHOGDV SDUD HO VHFDGR GH DUHQDV HGLILFLR GH FORUDFLyQ iUH
TXtPLFR HGLILFLR DGPLQLVWUDWLYR \ iUHD GH ODERUDWRULR

(Q HO PHV GH PD\R \ MXQLR OD RSHUDFLyQ GH OD 37$3 'HILQLWL
FRQ XQ FDXGDO GH SURGXFFLyQ SURPHGLR GH O V \ O V UHVS
HVWXYR D FDUJR GH XQ RSHUDGRU \ XQ RSHUDULR DX[LOLDU FRQ WXUQ

/RV LQVXPRV TXtPLFRV XVDGRV HQ HO SURFHVR GH SRWDELOL]DFLyQ IX
\ &ORUR *DVHRVR [NJ

$ FRQWLQXDFLyQ VH SUHVHQWD HO FRQVXPR GH ORV LQVXPRV TXtPLFRV
&/ HQ HO SULPHU VHPHVWUH GHO DxR

7DEOD &RQVXPR GH ORV LQVXPRV TXtPLFRV HQ HO SULPHU VHPHVWUH

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	&2$*8/$17(3$&	&/252 *$6(26 &/
	.*	.*
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)(%5(52		
0$5=2		
$%5,/		
0$<2		
-81,2		

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	)HFKD GH (ODERUDFLyQ	7LSR GH 'RFXPHQWR &yGLJR 9HUVLyQ	

3iJLQD GH

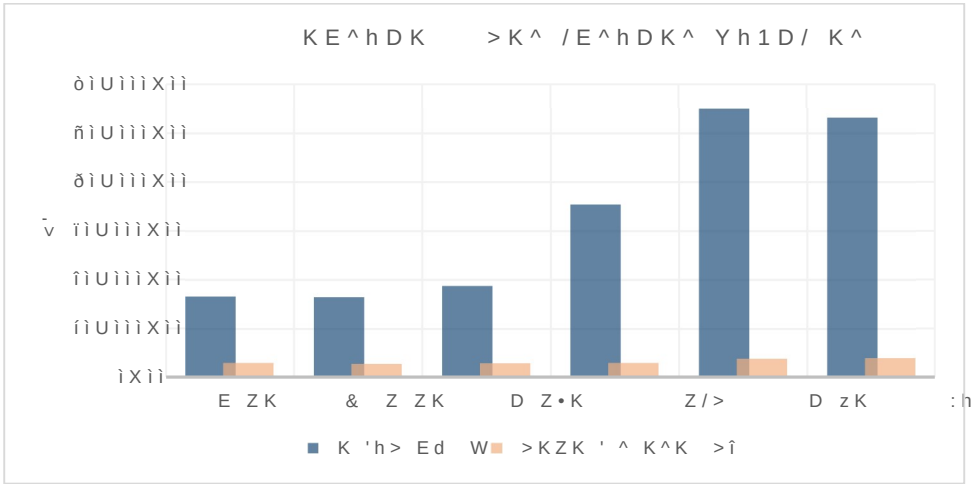


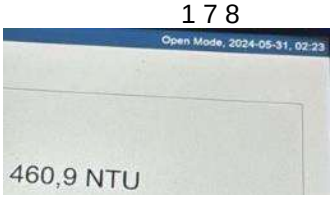
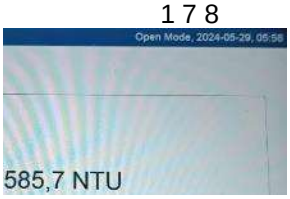
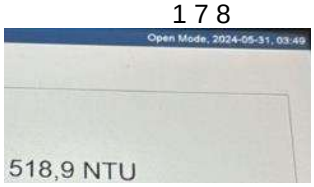
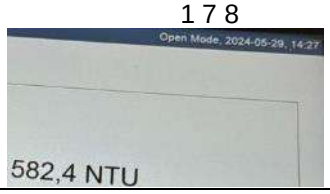
Ilustración 13 Consumo de los insumos químicos en el primer del año 2024

&RPR VH SXHGH REVHUYDU HQ OD *UiILFD HQ ORV PHVHV GH PD\R \ FRQVXPR GH FRDJXODQWH UHVSHFWR D ORV PHVHV DQWHULRUHV (VWH DOWDV WXUELHGDGHV SRU SUHVHQFLD GH OOXYLDV HQ HO VHFWRU \ ]RQ /D FLXGDG GH <RSDO \ OD]RQD KLGURJUiILFD GH OD FXHQFD SUHVHQWD OR FXDO HO LQFLR GH ODV SUHFLSLWDFLRQHV VRQ HQ ORV PHVHV GH PLQLPL]DURQ ODV SDUDGDV OR FXDO LPSOLFDED TXH QR VH VXVSHQG FRQWDU FRQ DJXD HQ HO PXQLFLSLR GH <RSDO PiV VLQ HPEDUJR VH Y GH LQVXPRV TXtPLFRV \D TXH VH KDQ WUDEDMDGR FRQ WXELHGDGHV P RSHUDFLyQ HQ DxRV DQWHULRUHV

(O FRQVXPR GH FORUR JDVHRVR IXH PD\RU GHELGR DO LQFUHPHQWR D O NK K FRQ FDXGDO GH SURGXFFLyQ GH OSV FRQ HO ILQ GH PDQWHQHU D OD VDOLGD GHO VLVWHPD GH WUDWDPLHQWR

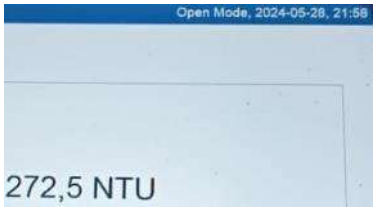
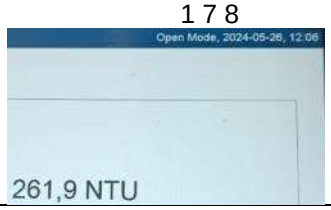
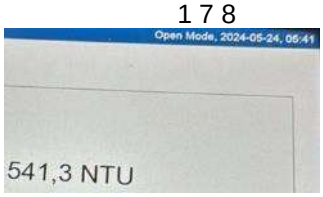
$ FRQWLQXDFLyQ VH SUHVHQWDQ ODV DOWDV WXUELHGDGHV HQ HO PH PXHVWUDV GH DJXD FUXGD IXH UHDOL]DGR FRQ GLOXFLyQ DO

7DEOD $OWDV WXUELHGDGHV HQ HO PHV GH PD\R

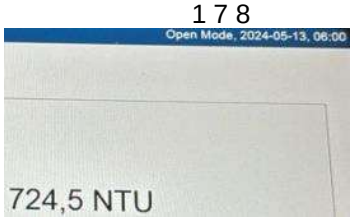
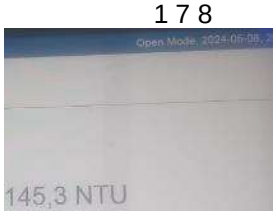
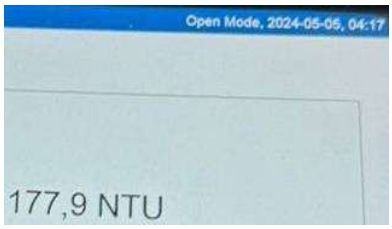
'(0$<2	'(0$<2	'(0$<2
178 	178 	178 
178 	178 	178 

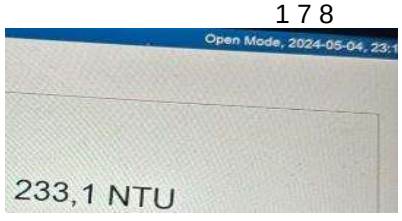
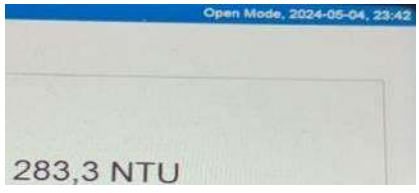
	, 1) 2 5 0 (6		
	)HFKD GH (ODERUDFLyQ	7LSR GH 'RFXPHQWR &yGLJR 9HUVLyQ	

3iJLQD GH

'(0$<2	'(0$<2	'(0$<2
178 	178 178 	178 178 

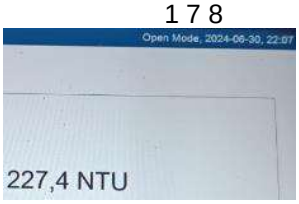
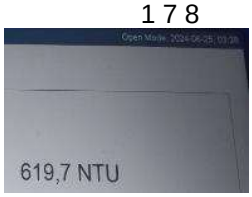
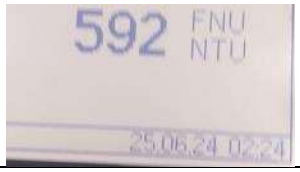
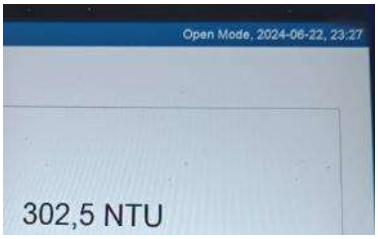
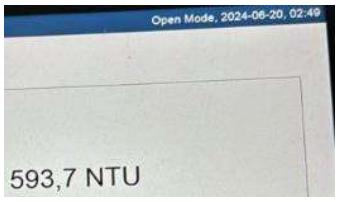
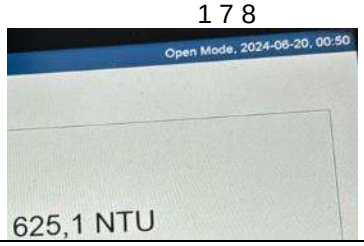
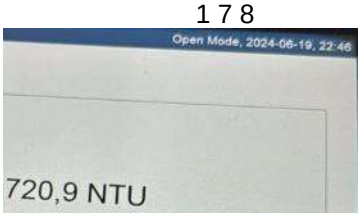
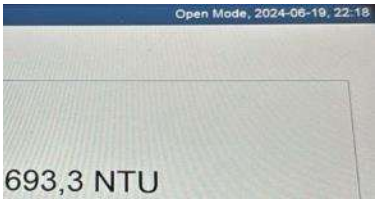
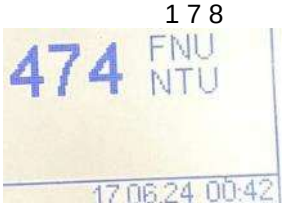
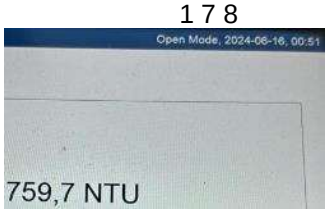
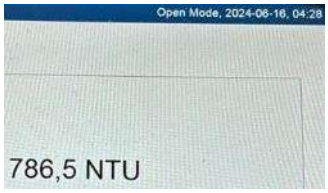
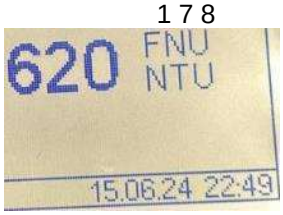
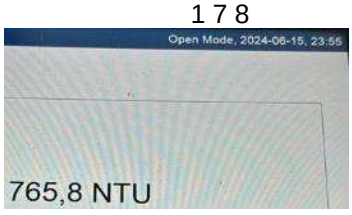
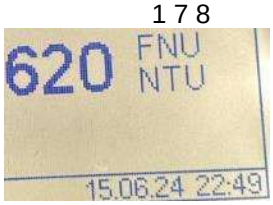
7DEOD $OWDV WXUELHGDGHV HQ HO PHV GH PD\R &RQWLQXDFL

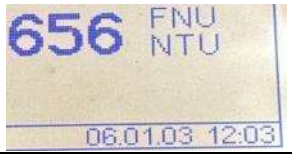
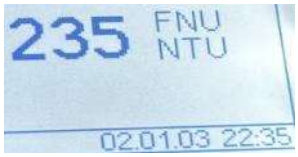
'(0$<2	'(0$<2	'(0$<2
178  178 	178  178 	178 

'(0$<2
178  178 

$ FRQWLQXDFLyQ VH SUHVHQWDQ ODV DOWDV WXUELHGDGHV HQ HO PH
PXHVWUDV GH DJXD FUXGD IXH UHDOL]DGR FRQ GLOXFLyQ DO

Tabla 22 Altas turbiedades en el mes de junio/2024.

'(-81,2	'(-81,2	'(-81,2
178  178 	178  178 	178 
'(-81,2	'(-81,2	'(-81,2
 178 	178  178 	178  178
'(-81,2	'(-81,2	'(-81,2
178  178 	178  178 	178 178 

'(-81,2	'(-81,2
178 178  	178  178

7HQLHQGR HQ FXHQWD OD 7DEOD ORV GtDV FRQ DOWDV SUHFLSLWDFLR
\ (V GHFLU GLH] GtDV FRQ DOWDV FDUJ
GH WUDWDPLHQWR \ PD\RU FRQVXPR GH FRDJXODQWH
7HQLHQGR HQ FXHQWD OD 7DEOD ORV GtDV FRQ DOWDV SUHFLSLWDFLR
\ (V GHFLU RQFH GtDV FRQ DOWDV
SURFHVRV GH WUDWDPLHQWR \ PD\RU FRQVXPR GH FRDJXODQWH

(Q OD JUiILFD VH SUHVHQWD OD YDULDEOH GH RSHUDFLyQ WXUELH
&RDJXODQWH 3$& SDUD HO PHV GH PD\R

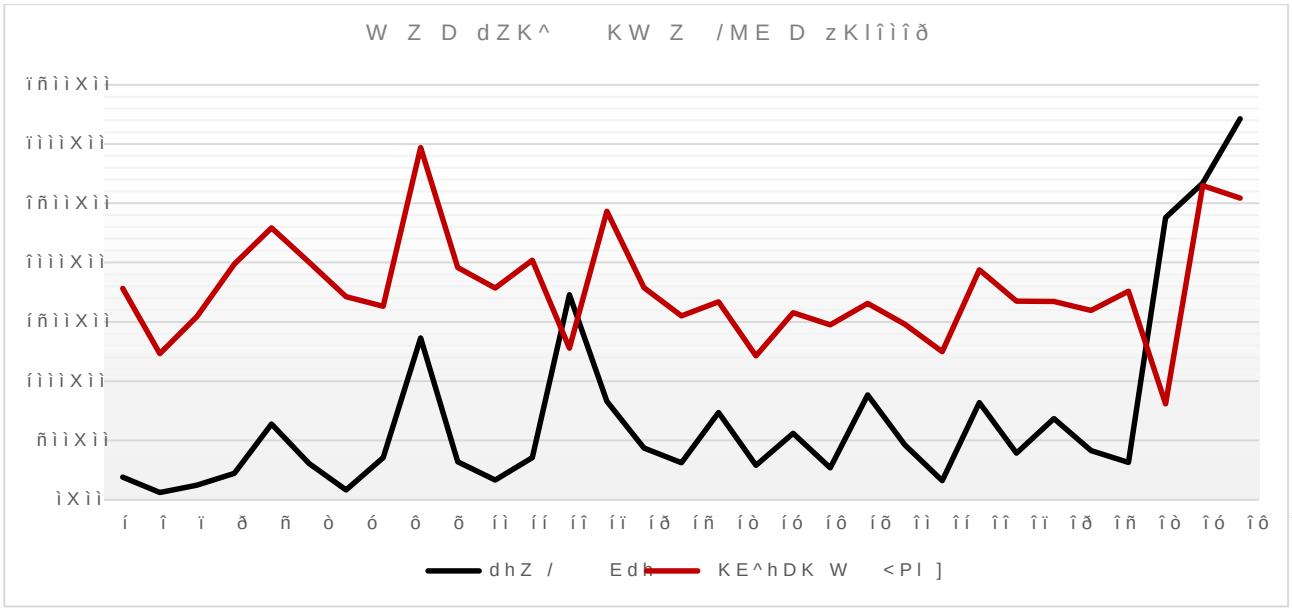


Ilustración 14 Turbiedad de entrada vs consumo de coagulante – Mes de mayo/2024

&RPR VH SXHGH REVHUYDU HQ OD JUiILFD DQWHULRU ORV SLFRV Pi
SUHVHQWDURQ HQ ORV GtDV \ FRQ YDORUHV SURPHGLRV GH WXU
\ 178 UHVSHFWLYDPHQWH 'HELGR D ODV DOWDV SUHFLSLWDFLRQHV
&UDYR 6XU

3iJLQD GH

/RV SLFRV GH WXUELHGDG JHQHUDURQ XQ PD\RU FRQVXPR GH FRDJXODQ
VH SUHVHQWDURQ HQ ORV GtDV \ FRQ FDQWLGDGHV GH
NJ GtD UHVSHFWLYDPHQWH (O GtD OD SODQWD RSHUy ODV
WXUELHGDG GH DJXD FUXGD GH 178 \ GLDO GH GRVLILFDFLyQ GH
O K (O GtD OD SODQWD RSHUy KRUDV FRQ XQ SURPHGLR GH W
GH GRVLILFDFLyQ GH FRDJXODQWH GH PJ O ± O K (O GtD OD S
SURPHGLR GH WXUELHGDG GH 178 \ GLDO GH GRVLILFDFLyQ GH FRDJ

(Q OD JUiILFD VH SUHVHQWD OD YDULDEOH GH RSHUDFLyQ WXUELH
&RDJXODQWH 3$& SDUD HO PHV GH MXQLR

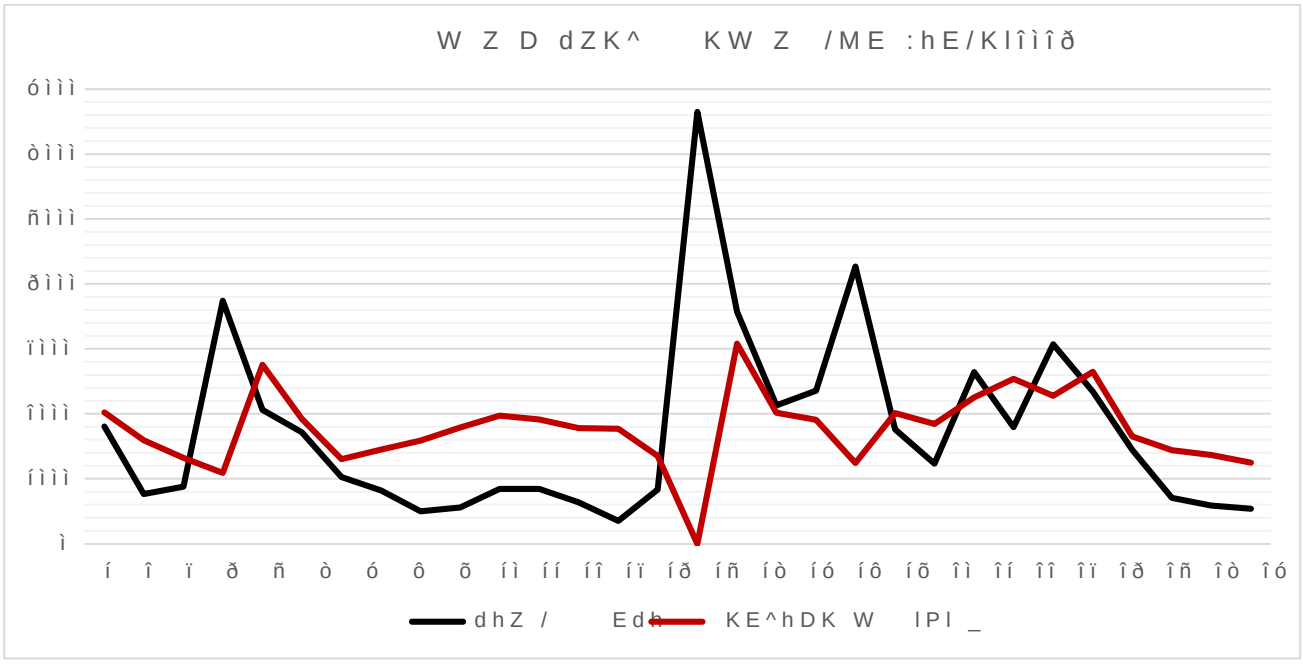


Ilustración 15 Turbiedad de entrada vs consumo de coagulante – Mes de junio/2024

&RPR VH SXHGH REVHUYDU HQ OD JUiILFD DQWHULRU ORV SLFRV Pi
SUHVHQWDURQ HQ ORV GtDV \ FRQ YDORUHV SURPHGLRV GH WXU
\ 178 UHVSHFWLYDPHQWH 'HELGR D ODV DOWDV SUHFLSLWDFLRQHV
&UDYR 6XU

/RV GtDV GH PD\RU FRQVXPR GH FRDJXODQWH 3$& VH SUHVHQWDURQ H
FDQWLGDGHV GH NJ GtD NJ GtD \ NJ GtD UHVSHFWLYDPH
RSHUy KRUDV FRQ XQ SURPHGLR GH WXUELHGDG GH DJXD FUXGD GH
GRVLILFDFLyQ GH FRDJXODQWH GH PJ O ± O K (O GtD OD SOD
SURPHGLR GH WXUELHGDG GH 178 \ GLDO SURPHGLR GH GRVLILFDFLy
± O K (O GtD OD SODQWD RSHUy KRUDV FRQ XQ SURPHGLR GH W
SURPHGLR GH GRVLILFDFLyQ GH FRDJXODQWH GH PJ O ± O K

/RV SLFRV DOWRV GH WXUELHGDG GH ORV GtDV \ QR SUHVHQWDUR
GHELGR D TXH ODV KRUDV GH RSHUDFLyQ IXHURQ PHQRU D KRUDV /DV
K K \ K UHVSHFWLYDPHQWH

(O FRQVXPR GH ORV LQVXPRV TXtPLFRV GHSHQGH GH OD FDOLGDG GH DJ RSHUDFLyQ FDXGDO GH ERPEHR WLHPSR GH RSHUDFLyQ GRVLILFDFLyQ FDXGDO GH ERPEHR HO WLHPSR GH RSHUDFLyQ \ HO GLDO SURPHGLR GH GtD GHO PHV GH 0$<2

Tabla 23 Caudal de bombeo, Tiempo de operación, Dosis coagulante – Mayo/2024

'Ë$	&$8'$/ '(%20%(2	7,(032 '(23(5$&,Ï1	'26,),&$&,Ï1		2%6(59$&,Ï1
	O V	+56	PJ O	O K	
					6XVSHQVLyQ SRU DOWD WXUELHGD
					6XVSHQVLyQ SRU DFWLY
					6XVSHQVLyQ SRU DOWD WXUELHGD
					6XVSHQVLyQ SRU DOWD WXUELHGD
					6XVSHQVLyQ SRU DOWD WXUELHGD
					6XVSHQVLyQ SRU DO±(PHUJHQ
					6XVSHQVLyQ SRU DOWD WXUELHGD

'Ë$	&$8'$/ '(%20%(2	7,(032 '(23(5$&,Ï1	'26,),&$&,Ï1		2%6(59$&,Ï1
	O V	+56	PJ O	O K	
					6XVSHQVLyQ SRU DOWD WXUELHGD

$ FRQWLQXDFLyQ VH UHODFLRQD HO FDXGDO GH ERPEHR HO WLHPSR G
OD GRVLILFDFLyQ GH FRDJXODQWH SRU GtD GHO PHV GH -81,2

Tabla 24 Caudal de bombeo, Tiempo de operación, Dosis coagulante – JUNIO/2024

'Ë$	&$8'$/ '(%20%(2	7,(032 '(23(5$&,Ï1	'26,),&$&,Ï1		2%6(59$&,Ï1
	O V	+56	PJ O	O K	
					6XVSHQVLyQ SRU DOWD WXUELH
					6XVSHQVLyQ SRU DOWD WXUELH
					6XVSHQVLyQ SRU DOWD WXUELH
					6XVSHQVLyQ SRU DOWD WXUELH (PHUJHQFLD
					6XVSHQVLyQ SRU DOWD WXUELH
					)DOOD GH IOXLGR HOpFWULFR
					6XVSHQVLyQ SRU DOWD WXUELH
					6XVSHQVLyQ SRU DOWD WXUELH
					6XVSHQVLyQ SRU DOWD WXUELH

	, 1) 2 5 0 (6		
	)HFKD GH (ODERUDFLyQ	7LSR GH 'RFXPHQWR &yGLJR 9HUVLyQ	

3iJLQD GH

'Ë$	&$8'$/ '(%20%(2	7,(032 '(23(5$&,Ï1	'26,),&$&,Ï1		2%6(59$&,Ï1
	O V	+56	PJ O	O K	

(Q OD *UiILFD VH UHJLVWUD ODV WXUELHGDGHV GHO PHV GH HQHUR MXQLR (O PHV GH PD\R VH SUHVHQWy PD\RU WXUELHGDG SURPHGLR PD\RU FRQVXPR GHO FRDJXODQWH UHVSHFWR DO PHVHV DQWHULRUHV

7DEOD7XUELHGDG GH DJXD FUXGD HQ HO SULPHU VHPHVWUH GHO Dx

'Ë$	(1(52	)(%5(52	0$5=2	$%5,	0$<2	-81,2

3iJLQD GH

3520						
0$;						
0,1						

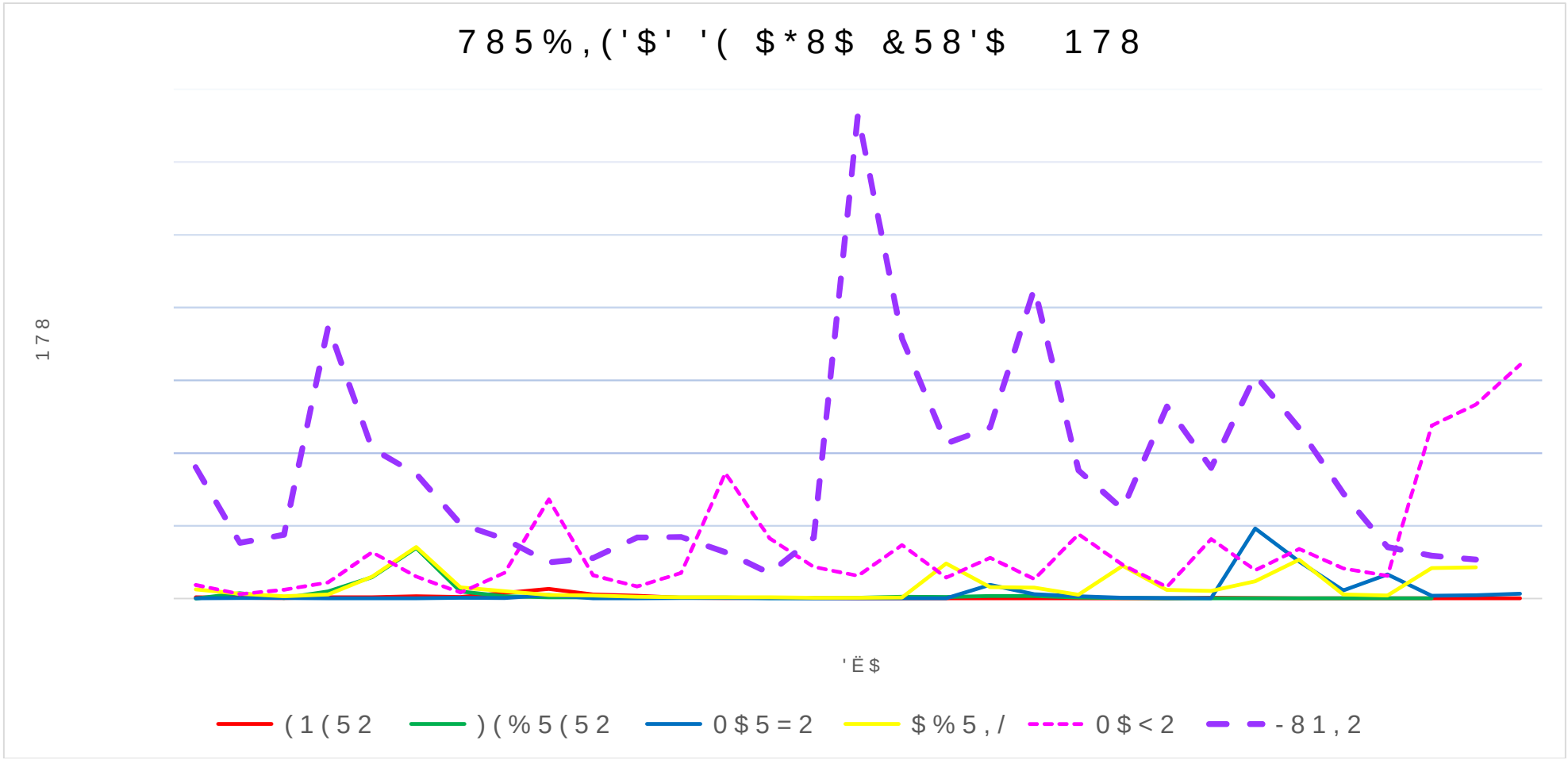


Ilustración 16 Turbiedad de agua cruda en el primer semestre del año 2024

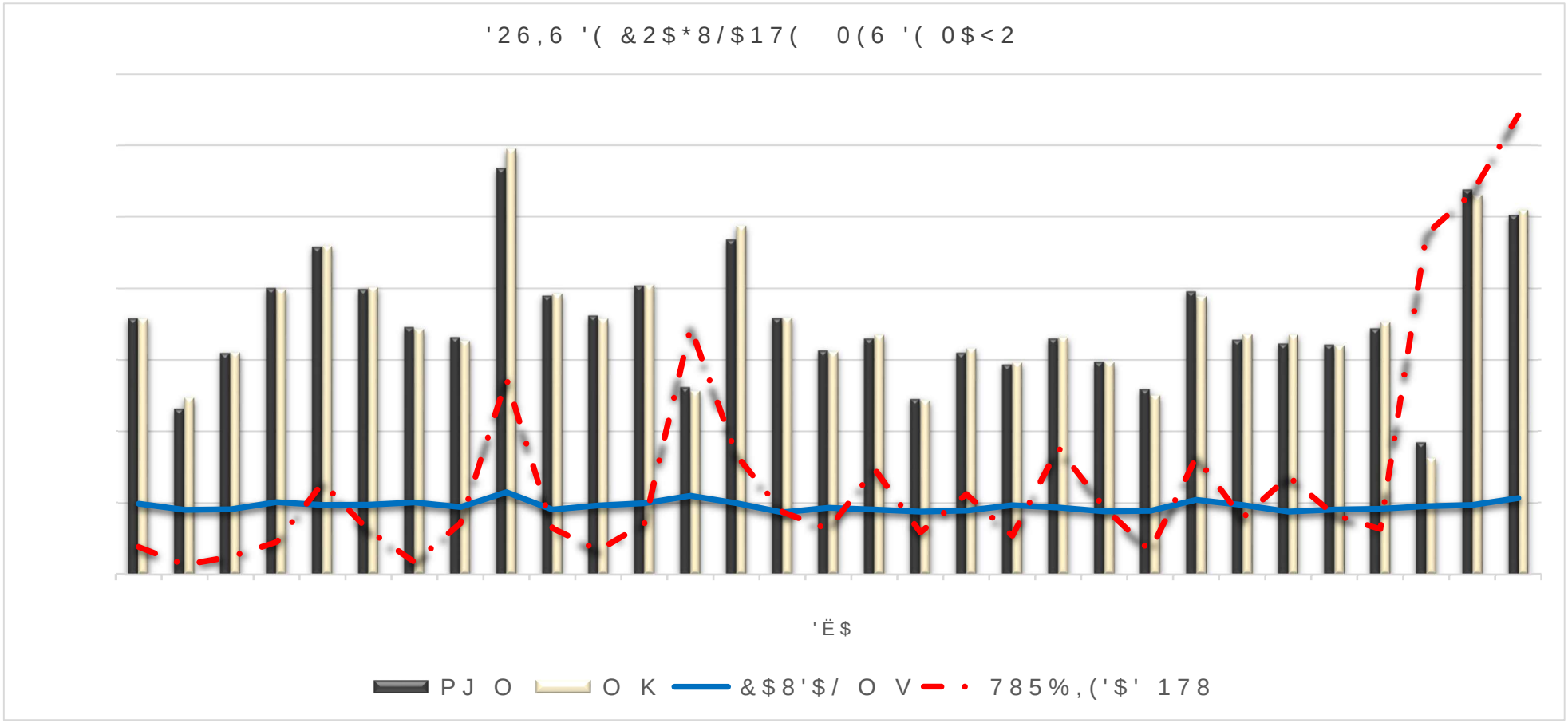


Ilustración 17 Turbiedad de entrada, caudal en canaleta parshall y dosis consumo de coagulante – Mes de mayo/2024

/RV GtDV TXH VH SUHVHQWDURQ PD\RU GLDO GH GRVLILFDFLyQ SRU DOWDV WXUELHGDGHV IXHURQ PJ O O K \ PJ O ± O K UHVSHFWLYDPHQWH (O SURPHGLR GHO GLDO GH GRVLILFD PJ O O K

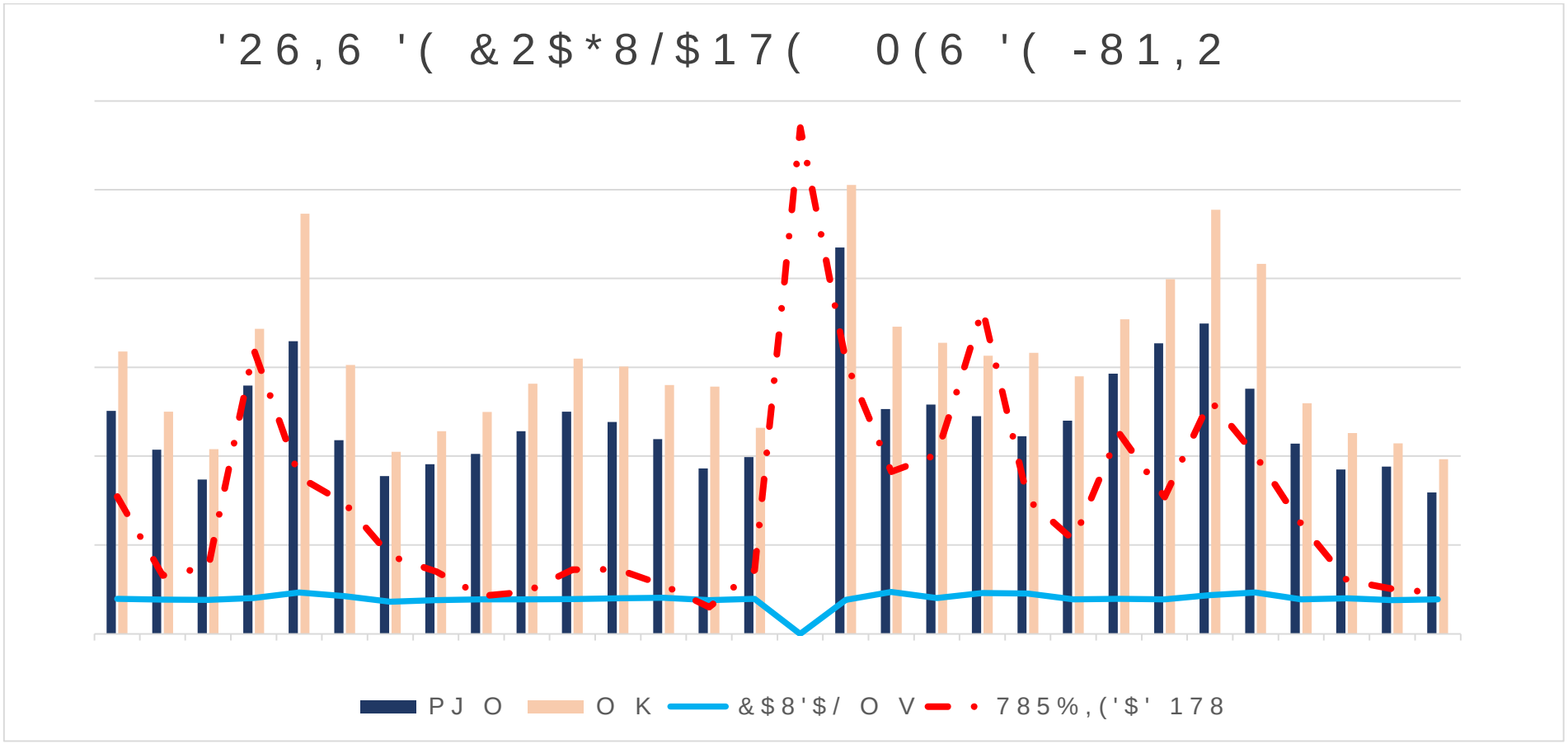


Ilustración 18 Turbiedad de entrada, caudal en canaleta parshall y dosis consumo de coagulante – Mes de Junio/2024

/RV GtDV TXH VH SUHVHQWDURQ PD\RU GLDO GH GRVLILFDFLyQ SRU DOWDV WXUELHGDGHV IXHURQ PJ O ± O K \ PJ O ± O K UHVSHFWLYDPHQWH (O SURPHGLR GHO GLDO GH GRVLILFDFLyQ O K

(Q OD *UiILFD VH SUHVHQWD ODV KRUDV GH RSHUDFLyQ HQ HO PHV

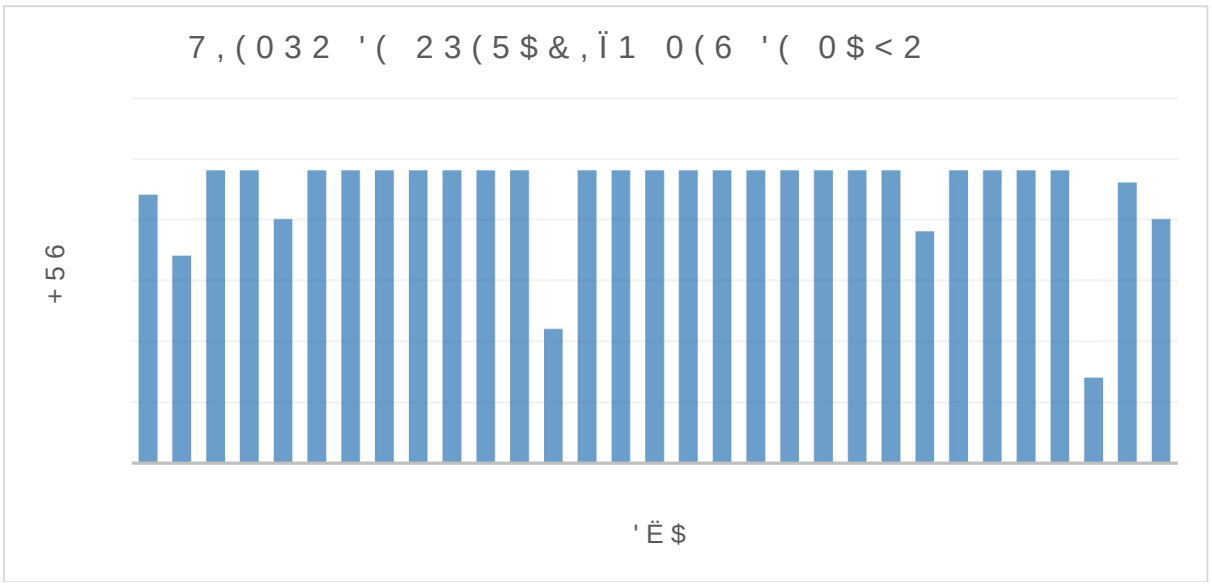


Ilustración 19 Horas de operación – Mes de mayo/2024

(O GtD GH PD\R VH LQLFLy RSHUDFLyQ VREUH ODV $0 FRQ WXE
178 (O GtD DQWHULRU GH DEULO VH VXVSHQGLy D ODV
DOWDV WXELHGDGHV GH DJXD FUXGD 178 ± 178

(O GtD GH PD\R VH VXVSHQGLy RSHUDFLyQ VREUH ODV $0 GHELGR
GH WUDWDPLHQWR GHQRPLQDGR DJXDV FODUDV HO FXDO FRUUHVSR
GH XQLGDGHV GH ILOWUDFLyQ /D DFWLYLGDG IXH SURJUDPDGD FRQ
GHVLQIHFFLyQ LQWHUQD GHO FDQDO 6H UHLQLFLR RSHUDFLyQ VREUH

(O GtD GH PD\R D ODV $0 VH VXVSHQGLy RSHUDFLyQ SRU DOWD
FUXGD 178 ± 178 ± 178 6H UHLQLFLy RSHUDFLyQ D ODV

(O GtD GH PD\R D ODV $0 VH VXVSHQGLy RSHUDFLyQ SRU DOWD
FUXGD 178 ± 178 ± 178 ± 178 ± 178 ± 178
178 ± 178 ± 178 ± 178 6H UHLQLFLy RSHUDFLyQ D ODV

(O GtD GH PD\R D ODV $0 VH VXVSHQGH RSHUDFLyQ SRU DOWD
FUXGD 178 ± 178 ± 178 ± 178 6H UHLQLFLy RSHUDFLyQ
$0

(O GtD GH PD\R D ODV $0 VH VXVSHQGH RSHUDFLyQ SRU DOWD
FUXGD 178 ± 178 ± 178 ± 178 \ VH UHLQLFLy RSHUD
$0 6REUH ODV 30 VH VXVSHQGH QXHYDPHQWH RSHUDFLyQ SR
178 ± 178 ± 178 ± 178 ± 178 ± 178 ± ±
178 ± 178 6H UHLQLFLy RSHUDFLyQ D ODV $0 GHO GtD GH

(O GtD GH PD\R VH UHLQLFLD RSHUDFLyQ D ODV $0 GHELGR D WXUELHGDG GH DJXD FUXGD QWX

(O GtD GH PD\R D ODV $0 VH VXVSHQGH RSHUDFLyQ SRU DOWD FUXGD 178 ± 178 ± 178 178 ± 178 ± 178 6H UHLQ RSHUDFLyQ D ODV $0

(Q OD *UiILFD VH SUHVHQWD ODV KRUDV GH RSHUDFLyQ HQ HO PHV

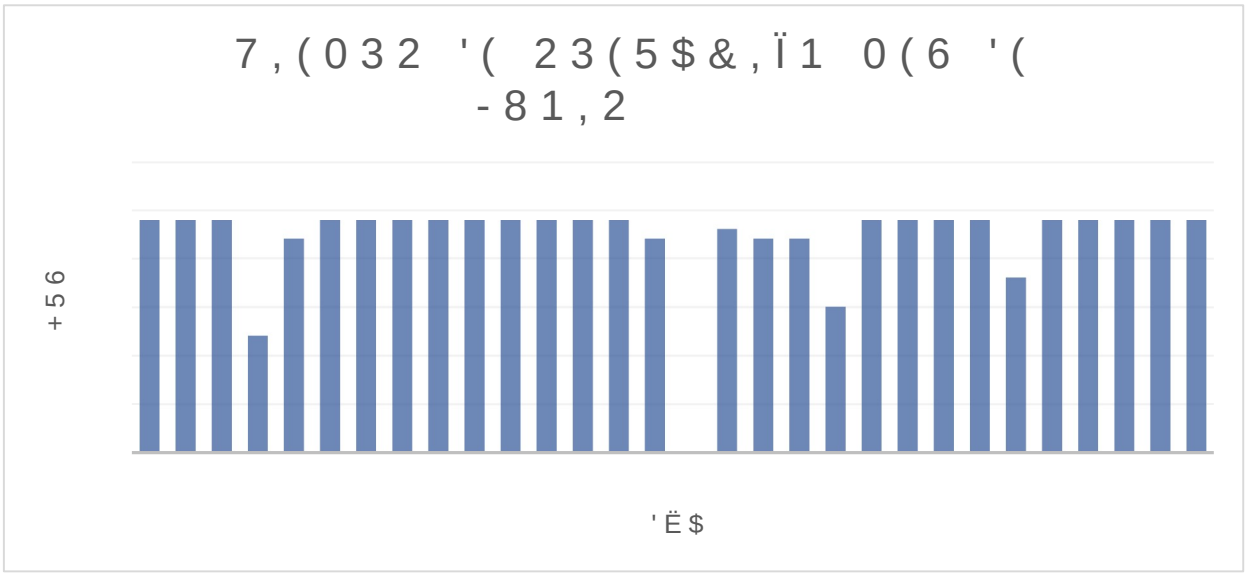


Ilustración 20 Horas de operación – Mes de junio/2024

(O GtD GH MXQLR VH VXVSHQGLy OD RSHUDFLyQ VREUH ODV WXUELHGDGHV 178 GH DJXD FUXGD 6H UHLQLFLy RSHUDFLyQ D O GH 178

6REUH ODV 30 GHO GtD GH MXQLR VH VXVSHQGLy QXHYDPHQWH WXUELHGDGHV 178 GH DJXD FUXGD (O UHLQLFLR GH OD RSHUD $0 GHO GtD GH MXQLR FRQ WXUELHGDG GH 178

(O GtD GH MXQLR VH VXVSHQGLy OD RSHUDFLyQ VREUH ODV WXUELHGDGHV 178 GH DJXD FUXGD 6H UHLQLFLy RSHUDFLyQ D GH MXQLR FRQ WXUELHGDGHV GH 178 \ 178

(O GtD GH MXQLR VH VXVSHQGLy OD RSHUDFLyQ GH OD 3ODQWD 'HL ODV DOWDV WXUELHGDGHV 178 'XUDQWH WRGR HO GtD VH S PtQLPDV GH 178 \ 178 OR FXDO SRU ODV FRQGLFLRQHV GH FD \ OD FROPDWDFLyQ SRU PDWHULDO HQ OD ERFDWRPD \ ORV GHVDUHQ GH OD RSHUDFLyQ 6REUH OD $0 GHO GtD GH MXQLR VH UHL WXUELHGDGHV GH 178 \ 178

3iJLQD GH

(O GtD GH MXQLR VH VXVSHQGLy OD RSHUDFLyQ VREUH OD $0 HOpFWULFR FRPHUFLDO \ IDOOD HQ HO DUUDQTXH GHO JHQHUDGRU H WpFQLFD GH OD XQLGDG GH HOHFWURPHFiQLFD VH UHLQLFLy RSHUDF

(O GtD GH MXQLR VH VXVSHQGLy OD RSHUDFLyQ VREUH ODV WXUELHGDGHV 178 GH DJXD FUXGD 6H UHLQLFLy OD RSHUDFLyQ GtD GH MXQLR FRQ WXUELHGDG GH 178

(O GtD GH MXQLR GHO GtD VH VXVSHQGLy OD RSHUDFLyQ VREUH OD WXUELHGDGHV 178 GH DJXD FUXGD 6H UHLQLFLy OD RSHUDFLyQ WXUELHGDG GH 178

(O WRWDO GH KRUDV GH RSHUDFLyQ HQ HO PHV GH PD\R IXH GH MXQLR IXH GH K

$ FRQWLQXDFLyQ VH SUHVHQWD ORV SDUiPHWURV GH FDOLGDG HQ H

Tabla 25 Parámetros de calidad de agua tratada Planta Definitiva

3/17 '(),1,7,9$					
3$5È0(7526 '(&$/,'$'	(175$'$		6$/,'$		9$/25 0È;,02 $&(37$%/(5(62/8&,Ï1 '(
	0$<2	-81,2	0$<2	-81,2	
785%,('$' 817					
S+					
&/252 5(6,'8$/ /,%5(PJ /					

/RV SDUiPHWURV GH FDOLGDG GHO DJXD WUDWDGD VDOLGD GH OD 3 PD\R \ PHV GH MXQLR GHO DxR FXPSOHQ FRQ ORV YDORUHV Pi[L UHVROXFLyQ GH

(Q OD 7DEOD VH SUHVHQWDQ ORV SDUiPHWURV SURPHGLR GH FDOL \ DJXD WUDWDGD VDOLGD SRU GtD GHO PHV GH PD\R

Tabla 26 Parámetros de calidad entrada y salida – Mes de mayo/2024

0(6	'Ë$	(175$'$			6$/,'$			
		785%,('$' 178	3+	7(03(5$785$	&/252 5(6,'8$/	785%,('$'	S+	7(03(5$785$
		178		ƒ&	PJ O	178		ƒ&
0$<2								

0(6	'Ë$	(175$'$			6$/,'$			
		785%,('$' 178	3+	7(03(5$785$	&/252 5(6,'8$/	785%,('$'	S+	7(03(5$785$
		178		ƒ&	PJ O	178		ƒ&

(Q OD 7DEOD VH SUHVHQWDQ ORV SDUiPHWURV SURPHGLR GH FDOL \ DJXD WUDWDGD VDOLGD SRU GtD GHO PHV GH MXQLR

Tabla 27 Parámetros de calidad entrada y salida – Mes de junio/2024

0(6	'Ë$	(175$'$			6$/,'$			
		785%,('$' 178	3+	7(03(5$785$	&/252 5(6,'8$/	785%,('$'	S+	7(03(5$785$
		178		ƒ&	PJ O	178		ƒ&
-81,2								

$ FRQWLQXDFLyQ VH UHODFLRQD HO YROXPHQ \ FDXGDO SURPHGLR VHPHVWUH GHO DxR

Tabla 28 Volumen y caudal suministrado por la Planta Definitiva en el primer semestre del año 2024.

0(6	92/80(1 680,1,675$'2 P PHV	&$8'$/ 3520(',2 O V
(1(52		
)(%(5(52		
0$5=2		
$%5,/		
0$<2		
-81,2		

/RV PDQWHQLPLHQWRV JHQHUDOHV UHDOL]DGRV HQ OD SODQWD GHI DUHQDV HQ ORV WDQTXHV GH GHVDUHQDFLyQ H[WUDFFLyQ GH DUHQDV GH HVWUXFWXUDV GH WUDWDPLHQWR

$ FRQWLQXDFLyQ VH SUHVHQWD ODV SULQFLSDOHV DFWLYLGDGHV GXUDQWH HO PHV GH PD\R

Tabla 29 Mantenimientos realizados en el mes de mayo/2024

)(&+$	'(6&5,3&,Ï1	(9,'(1&,$)272*5$)Ì&$
	(;75$&&,Ï1 '($5(1$6 (1 7$148(6 '('(6$5(1$&,Ï1 &21 $32<2 '(0È48,1$5(752(;&9'25$	
	(;75$&&,Ï1 '($5(1$ $&808/$'$6 (1 /(&+2 '(6(&$'2	

	/9'2 (;7(512 '(6(',0(17$'25(6	

'XUDQWH HO PHV GH PD\R VH UHDOL]y GRV DFWLYLGDGHV GH JXDG GH OD 3ODQWD 'HILQLWLYD FRQ HO ILQ GH UHPRYHU HO PDWHULDO SDVWR \ PDOH]D (VWD DFWLYLGDG HV LPSRUWDQWH GHELGR D TXH V YHFWRUHV \ DQLPDOHV TXH SXHGDQ DIHFWDU OD FDOLGDG GHO DJXD WUDWDPLHQWR

Ilustración 21 Actividad de guadaña en Planta Definitiva

$ FRQWLQXDFLyQ VH SUHVHQWD ODV SULQFLSDOHV DFWLYLGDGHV GXUDQWH HO PHV GH MXQLR

Tabla 30 Mantenimientos realizados en el mes de junio/2024

)(&+$	'(6&5,3&,Ï1	(9,'(1&,$)272*5È),&$
ViEDGR GH MXQLR GH	(;75$&&,Ï1 '(0$7(5,$/ (1 '(6$5(1$'25(6	
PDUWHV GH MXQLR GH	(;75$&&,Ï1 '(0$7(5,$/ (1 '(6$5(1$'25	
PDUWHV GH MXQLR GH	(;75$&&,Ï1 '(0$7(5,$/ (1 %2&$720$	

)(&+$	'(6&5,3&,Ï1	(9,'(1&,$)272*5È),&$
PLpUFROHV GH	/,03,(=$ '(0$1(5$ 3/17 '(),1,7,9$	
PLpUFROHV GH	(;75$&&,Ï1 '(0$7(5,$/ (1 '(6$5(1$'25(6	
PLpUFROHV GH	(;75$&&,Ï1 '(0$7(5,$/ (1 %2&$720$	

)(&+$	'(6&5,3&,Ï1	(9,'(1&,$)272*5È),&$
MXHYHV GH MXQLR GH	(;75$&&,Ï1 '(0$7(5,$/ (1 '(6$5(1$'25(6	
MXHYHV GH MXQLR GH	(;75$&&,Ï1 '(0$7(5,$/ (1 %2&$720$	
YLHUQHV GH MXQLR GH	(;75$&&,Ï1 '(0$7(5,$/ (1 %2&$720$	

)(&+$	'(6&5,3&,Ï1	(9,'(1&,$)272*5È),&$
YLHUQHV GH MXQLR GH	/,03,(=$ '(5(-,//$6 (1 %2&$72$	
ViEDGR GH MXQLR GH	(;75$&&,Ï1 '(0$7(5,$/ (1 %2&$72$	
ViEDGR GH MXQLR GH	(;75$&&,Ï1 '(0$7(5,$/ (1 '(6$5(1$'25(6	

)(&+$	'(6&5,3&,Ï1	(9,'(1&,$)272*5È),&$
PDUWHV GH MXQLR GH	(;75$&&,Ï1 '(0$7(5,$/ (1 %2&$720$	
PLpUFROHV GH	GH MXQLR '(6(',0(17$'25(6	
PLpUFROHV GH	/,03,(=$ '(21 9(5'(6 (3/17 '()(&7,9$	

)(&+$	'(6&5,3&,Ï1	(9,'(1&,$)272*5È),&$
PLpUFROHV GH	(;75$&&,Ï1 '(0$7(5,$/ (1 '(6$5(1$'25(6	
PLpUFROHV GH	(;75$&&,Ï1 '(0$7(5,$/ (1 %2&$720$	
MXHYHV GH MXOLR GH	(;75$&&,Ï1 '(0$7(5,$/ (1 '(6$5(1$'25(6	

)(&+$	'(6&5,3&,Ï1	(9,'(1&,$)272*5È),&$
YLHUQHV GH	GH=M2X6R /,03,(=$ '(9(5'(6 (1 3/17 '(),1,7,9$	
ViEDGR GH	GH MXQLR (;75$&&,Ï1 '(0$7(5,$/ (1 '(6$5(1$'25(6	
GRPLQJR GH	GH MXQLR (;75$&&,Ï1 '(0$7(5,$/ (1 %2&$720$	

)(&+$	'(6&5,3&,Ï1	(9,'(1&,$)272*5È),&$
GRPLQJR GH MXQLR	(;75$&&,Ï1 '(0$7(5,$/ (1 '(6$5(1$'25(6	
PDUWHV GH MXQLR	(;75$&&,Ï1 '(0$7(5,$/ (1 /(&+26 '(6(&$'2	
PLpUFROHV GH MXQLR	(;75$&&,Ï1 '(0$7(5,$/ (1 '(6$5(1$'25(6	

)(&+$	'(6&5,3&,Ï1	(9,'(1&,$)272*5È),&$
PLpUFROHV GH	5(3$5$&,Ï1 '(GHÑMXQLR 385*$ '('(6$5(1$'25(6	
MXHYHV GH	(;75$&&,Ï1 '(0$7(5,$/ (1 %2&$720$	
MXHYHV GH	(;75$&&,Ï1 '(0$7(5,$/ (1 '(6$5(1$'25(6	

)(&+$	'(6&5,3&,Ï1	(9,'(1&,$)272*5È),&$
YLHUQHV GH MXQLR	(;75$&&,Ï1 '(0$7(5,$/ (1 /(&+26 '(6(&$'2	
YLHUQHV GH MXQLR	(;75$&&,Ï1 '(0$7(5,$/ (1 '(6$5(1$'25(6	
VáEDGR GH MXQLR	/,03,(=$ '(9(5'(6 (1 3/17 '(),1,7,9$	

)(&+$	'(6&5,3&,Ï1	(9,'(1&,$)272*5È),&$
VíEDGR GH MXOLR	(;75$&&,Ï1 '(0$7(5,$/ (1 '(6$5(1$'25(6	
OXQHV GH MXQLR	(;75$&&,Ï1 '(0$7(5,$/ (1 /(&+26 '(6(&$'2	
PDUWHV GH	/,03,(=$ '(0$1*26 9(5'(6 (1 3/$17$ '(),1,7,9$	

)(&+$	'(6&5,3&,Ï1	(9,'(1&,$)272*5È),&$
PDUWHV GH	MXQLR '(6(',0(17$'25(6	
PDUWHV GH	MXQLR (;75$&&,Ï1 '(0$7(5,$/ (1 %2&$720$	
PDUWHV GH	MXQLR /9'2 '(&1/(7$ 3$56+$//	

)(&+$	'(6&5,3&,Ï1	(9,'(1&,$)272*5È),&$
PLpUFROHV GH	(;75$&&,Ï1 '(GH 0$7(5,$/ (1 /(&+26 '(6(&$'2	
PLpUFROHV GH	(;75$&&,Ï1 '(GH MXOLR 0$7(5,$/ (1 %2&$720$	
PLpUFROHV GH	(;75$&&,Ï1 '(GH MXOLR 0$7(5,$/ (1 '(6$5(1$'25(6	

)(&+$	'(6&5,3&,Ï1	(9,'(1&,$)272*5È),&$
MXHYHV GH MXQLR GH (;75$&&,Ï1 '(0$7(5,$/ (1 %2&$720$		
MXHYHV GH MXQLR GH (;75$&&,Ï1 '(0$7(5,$/ (1 '(6$5(1$'25(6		
MXHYHV GH MXQLR GH)80,*$&,Ï1 &21 +(5%,&,'$ (1 =21$6 9(5'(6		

)(&+$	'(6&5,3&,Ï1	(9,'(1&,$)272*5È),&$
YLHUQHV GH	GH MXOLR (;75$&&,Ï1 '(0$7(5,$/ (1 %2&$720$	
YLHUQHV GH	GH MXOLR (;75$&&,Ï1 '(0$7(5,$/ (1 '(6$5(1$'25(6	
ViEDGR GH	GH MXOLR (;75$&&,Ï1 '(0$7(5,$/ (1 %2&$720$	

)(&+$	'(6&5,3&,Ï1	(9,'(1&,$)272*5È),&$
ViEDGR GH MXQLR GH	(;75$&&,Ï1 '(0$7(5,$/ (1 '(6$5(1$'25(6	

3/17 $/7(51$

/D SODQWD DOWHUQD PyGXOR FXHQWD FRQ FXDWUR KLGURFL VLVWHPD GH PLFURIORFXODFLyQ FLQFR XQLGDGHV GH FODULILF PH]FOD IORFXODGRU GH IOXMR DVFHQGHQWH \ XQ VHGLPHQWDGRU G WDQTXH GH HTXLOLEULR \ GRV WUHQHV GH ILOWUDFLyQ FDGD RSHUDQ FRQ IOXMR GHVFHQGHQWH D SUHVLyQ D OD VDOLGD GH C PDFURPHGLGRU TXH UHJLVWUD HO YROXPHQ GH DJXD WUDWDGD DOPDFHQDPLHQWR GH DJXD HO PyGXOR FXHQWD FRQ FXDWUR W P FDGD XQR

/D 3ODQWD $OWHUQD IXH GLVHxDGD SDUD VXPLQLVWUDU XQ FDXGDO SRWDEOH 6X RSHUDFLyQ LQLFLy HO GtD GH VHSWLHPEUH GHO DxR UHDOL]y DFWLYLGDG GH JXDGDxD HQ OD 3ODQWD $OWHUQD FRQ HO IL GH ODV]RQDV \ iUHDV GH UHFRUULGR GHO SHUVRQDO RSHUDWLYR

Ilustración 22 Actividad de guadaña en Planta Alterna

(O GtD \ GH PD\R VH UHDOL]y ODYDGR LQWHUQR GH WDQTXHV GH HTXLOLEULR FRQ HO ILQ GH PDQWHQHU ODV HVWUXFWXUDV HQ EX HPHUJHQFLD

$ FRQWLQXDFLyQ VH SUHVHQWD HYLGHQFLD IRWRJUiILFD GH ORV OD GH PD\R

Ilustración 23 Lavado interno de tanques clarificadores

Ilustración 24 Actividad de lavado de tanque de equilibrio

$ FRQWLQXDFLyQ VH SUHVHQWDQ ORV PDQWHQLPLHQWRV UHDOL]DGR

Ilustración 25 Lavado externo de tanques clarificadores. 17 de Junio/2024

Ilustración 26 Lavado externo de tanques clarificadores. (continuación)

Ilustración 27 Limpieza de maleza en áreas de tanques de tratamiento. 17 de Junio/2024

Ilustración 28 Lavado externo de unidades de filtración. 17 de Junio/2024

Ilustración 29 Reparación de tubería de 10 pulgadas de hidrociclones. 26 de Junio/2024.

Ilustración 30 Mantenimiento de líneas de dosificación de químicos y limpieza de sala de dosificación. 26 de Junio/2024.

3/17 &21&,/,$'$

/D 3ODQWD &RQFLOLDGD PyGXOR FXHQWD FRQ XQ SURFHVR FRQ
FRPSXHVWD SRU XQLGDGHV GH FODULILFDFLyQ SURFHVR GH KRP
PHGLDQWH XQ YHUWHGHUR WULDQJXODU FRDJXODFLyQ IORFXODFLy
XQLGDGHV \ GHVLQIHFFLyQ $ GLIHUHQFLD GHO PyGXOR HO PyG
DWPRVIpULFD \ QR FXHQWD FRQ OD SRVLELOLGDG GH WUDWDU \ HQY
ILOWUDFLyQ FXDQGR ORV SDUiPHWURV VRQ EDMRV /D SODQWD FRQF
GH DOPDFHQDPLHQWR SURSLRV VLQ HPEDUJR VH FRQHFWD FRQ ORV
GHO PyGXOR

(O FDXGDO GH GLVHxR HV GH O V VLQ HPEDUJR ODV GRV OtQHDV
QR SHUPLWHQ HO IOXMR KLGUiXOLFR WRWDO SRU OR WDQWR HO FD
O V (O LQLFLR RSHUDFLyQ IXH HO GtD GH DJRVWR GHO DxR

(O GtD GH PD\R VH UHDOL]y DFWLYLGDG GH JXDGDxD HQ OD 3ODQ
UHPRYHU HO PDWHULDO YHJHWDO GH ODV]RQDV \ iUHDV GH UHFRUUL

Ilustración 31 Actividad de guadaña en Planta Conciliada

32=26 352)81'26

(Q HO PHV GH PD\R \ MXQLR VH RSHUDURQ ORV SR]RV SURIXQGRV 0DQ
KRUDV 1~FOHR 8UEDQR ,, OSV KRUDV %HQGLFLyQ OSV
&DPSHVWUH OSV 0DWHUQR ,QIDQWLO OSV \ 7ULDGG OSV

/RV SR]RV SURIXQGRV 0DQJD GH &ROHR %UDXOLR &DPSHVWUH 0DW
RSHUDURQ FRPR DSR\R HQ HO VXPLQLVWUR GH DJXD SRWDEOH HQ
SUHVHQWDGR HO GtD GH PD\R \ GH MXQLR HQ OD ERFDWR
3ODQWD 'HILQLWLYD SRU OD FROPDWDFLyQ GH PDWHULDO DUHQDV

/RV SR]RV SURIXQGRV 1~FOHR 8UEDQR ,, \ %HQGLFLyQ VH RSHUDURQ
ODV FRQGLFLRQHV GH FDOLGDG FRQWLQXLGDG \ SUHVLyQ HQ HO VH
/D %HQGLFLyQ

(O SR]R SURIXQGR 0DQJD GH &ROHR HQ HO PHV GH PD\R RSHUy P
GtDV GHELGR D ODV EDMDV SUHVLRQH
KLGUiXOLFR % \ &

(O SR]R SURIXQGR 0DQJD GH &ROHR HQ HO PHV GH MXQLR RSHU
\ /RV GHPiV GtDV GHO PHV VH RSHUy PiV GH KRUDV KDVWD
VLVWHPD FRQ HO ILQ VH PDQWHQHU SUHVLRQHV HVWDEOHV HQ HO V

(O SR]R SURIXQGR %UDXOLR &DPSHVWUH HQ HO PHV GH PD\R LQ
SRWDEOH KDFLD OD UHG GH GLVWULEXFLyQ GHVGH HO GtD GH PD\

FRQGLFLRQHV GH SUHVLyQ HQ ORV VHFWRUHV KLGUiXOLFRV $ \ %
HO VHUYLFLR GH FDUJXH D FDUURWDQTXHV ORV FXDOHV VH HQFXHQV
SDUD OD GLVWULEXFLyQ GH DJXD SRWDEOH HQ ODV]RQDV UXUDOHV
XUEDQDV LOHJDOHV

(O SR]R SURIXQGR %UDXOLR &DPSHVWUH HQ HO PHV GH MXQLR RS
HO FRQ HO ILQ GH PDQWHQHU ODV FRQGLFLRQHV GH SUHVLyQ HQ OR
% 'H LJXDO IRUPD VH PDQWXYR HO VHUYLFLR GH FDUJXH D FDUU
HQFXHQWUDQ DXWRUL]DGRV SRU OD ($$$< SDUD OD GLVWULEXFLyQ
UXUDOHV FRQ GHVDEDVWHFLPLHQWR \ iUHDV XUEDQDV LOHJDOHV

(O 3R]R 3URIXQGR 0DWHUQR ,QIDQWLO HQ HO PHV GH PD\R LQI
VREUH ODV 30 FRQ XQ FDXGDO SURPHGLR GH SURGXFFLyQ GH O
HVWDEOHV ODV SUHVLRQHV HQ OD UHG GH GLVWULEXFLyQ SRU VXVS
)LQDOL]y RSHUDFLyQ HO GtD GH PD\R D ODV 30 SRU DOWDV SUH

(O 3R]R 3URIXQGR 0DWHUQR ,QIDQWLO HQ HO PHV GH MXQLR LQ
VREUH ODV $0 FRQ XQ FDXGDO SURPHGLR GH SURGXFFLyQ GH O
HVWDEOHV ODV SUHVLRQHV HQ OD UHG GH GLVWULEXFLyQ SRU VXVS
)LQDOL]y RSHUDFLyQ HO GtD D ODV 30 SRU DOWDV SUHVLRQHV

(O 3R]R 3URIXQGR =DUDQGD WULDGD HQ HO PHV GH PD\R LQLFLy
PD\R D ODV 30 FRQ XQ FDXGDO SURPHGLR GH SURGXFFLyQ GH
PDQWHQHU HVWDEOHV ODV SUHVLRQHV HQ OD UHG GH GLVWULEXFLy
'HILQLWLYD)LQDOL]y RSHUDFLyQ HO GtD GH PD\R D ODV 30 SR
UHG

(O 3R]R 3URIXQGR =DUDQGD WULDGD HQ HO PHV GH MXQLR LQLFLy
ODV $0 FRQ XQ FDXGDO SURPHGLR GH SURGXFFLyQ GH O V FR
HVWDEOHV ODV SUHVLRQHV HQ OD UHG GH GLVWULEXFLyQ SRU VXVS
)LQDOL]y RSHUDFLyQ HO GtD VREUH ODV 30 SRU DOWDV SUHVLR
SURIXQGRV &HQWUDO GH $EDVWRV ,, 9LOOD 0DULD , \ ,, \ 9LOOD 'DY
PD\R

$ FRQWLQXDFLyQ VH UHODFLRQD HO YROXPHQ VXPLQLVWUDGR SRU
GLVWULEXFLyQ HQ HO SULPHU VHPHVWUH GHO DxR

Tabla 31 Volumen suministrado por los pozos profundos en el primer semestre del año 2024.

0(6	92/80(1 680,1,675$'2 P PHV
(1(52	
)(%5(52	
0$5=2	
$%5,/	
0$<2	
-81,2	

/RV LQVXPRV TXtPLFRV GH FRQVXPR SDUD HO SURFHVR GH SRWDE
3URIXQGRV VRQ &ORUR *UDQXODGR [NJ \ &ORUR *DVHRVR [NJ
NJ SDUD HO SR]R SURIXQGR 1~FOHR 8UEDQR ,, (O &ORUR *UDQXO
SURIXQGRV 0DQJD GH &ROHR %HQGLFLyQ %UDXOLR &DPSHVWUH 0DV
GtD GH PD\R VH UHDOL]y OD LQVWDODFLyQ GH XQ QXHYR HTXLSR GH
TXtPLFR KLSRFORULWR GH FDOFLR DO HQ HO 3R]R 3URIXQGR 0DQJ

Ilustración 32 Instalación de bomba dosificadora de hipoclorito de calcio en el Pozo Manga de Coleo

$ FRQWLQXDFLyQ VH SUHVHQWD ORV PDQWHQLPLHQWRV JHQHUDOH
SURIXQGRV HQ HO PHV GH PD\R

Tabla 32 Mantenimiento General Pozos Profundos – Mayo 2024

'(6&5,3&,Ï1	(9,'(1&,$)272*5$),&$
6H UHDOL]y DFW IXPLJDFLyQ HQ 9LOOD 'DYLG %HQGLFLyQ	
6H UHDOL]y DFW IXPLJDFLyQ \ O HQ HO 3R]R $PpULFDV	

6H UHDOL]y OLP HO 3R]R =DUDQG UHWLUDQGR HO YHJHWDO	

$ FRQWLQXDFLyQ VH SUHVHQWD ORV PDQWHQLPLHQWRV JHQHUDO SURIXQGRV HQ HO PHV GH MXQLR

Ilustración 33 Actividad de guadaña en pozo profundo Villa María. 29 de Junio/2024.

92/80(1 '($*8$ 327$%/(680,1,675$'2

$ FRQWLQXDFLyQ VH SUHVHQWD HO YROXPHQ GH DJXD SRWDEOH VI WUDWDPLHQWR \ SR]RV SURIXQGRV

Tabla 33 Volumen de agua potable suministrado por los sistemas de potabilización.

0(6	3/17 '(),1,7,9$ P PHV	32=26 352)81'26 P PHV	727$/ 0(6
(1(52			
)(%5(52			
0$5=2			
$%5,/			
0$<2			
-81,2			

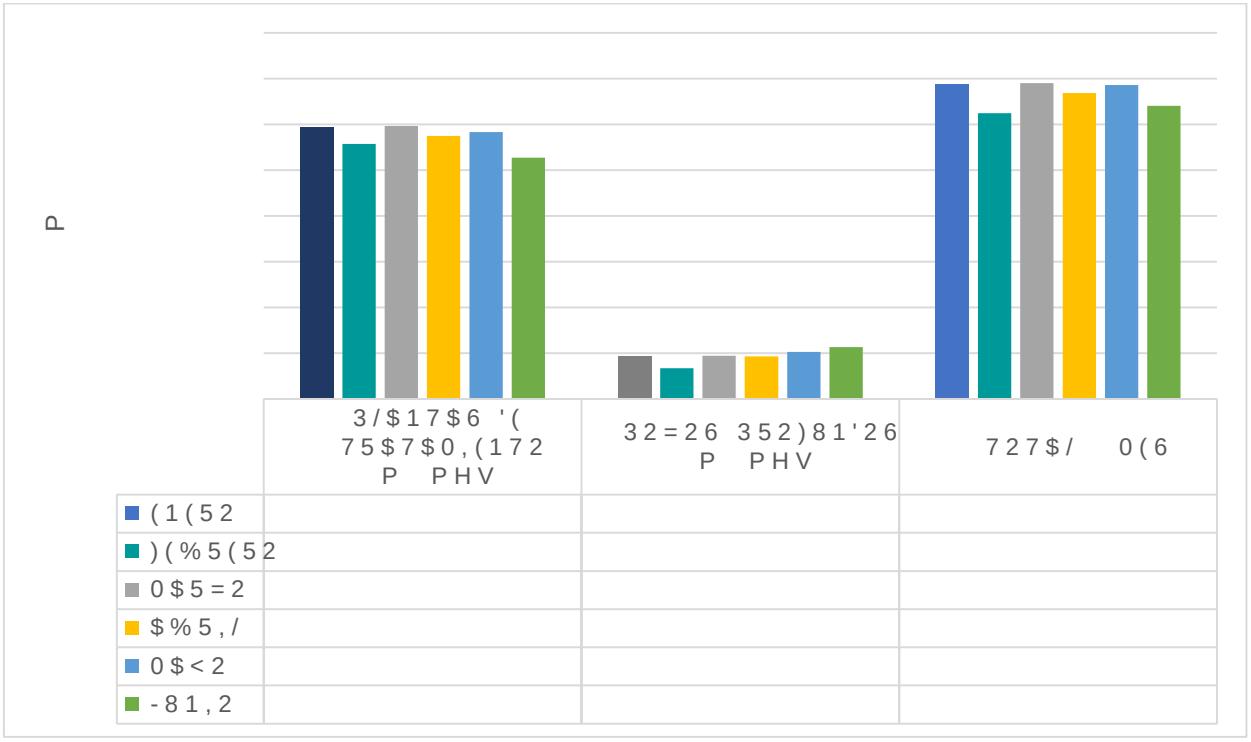


Ilustración 34 Volumen de agua potable suministrado por los sistemas de potabilización

$ FRQWLQXDFLyQ VH UHODFLRQD ORV VHFWRUHV KLGUiXOLFRV GH VXPLQLVWUDGRV GH DFXHUGRV D ORV VLVWHPDV GH WUDWDPLHQWR

Tabla 34 Sectores hidráulicos atendidos por sistema de potabilización

6,67(0$6 '(75$7$0,(172	6(&725(6 +,'5È8/,&26
37$3 'HILQLWLYD	$ % & ' ( ) $ $ % $ % & $ $ % $ $ %
0DQJD GH &RORR	% ± &
1~FOHR 8UEDQR ,, \ %HQGLFLyQ	
0DWHUQR ,QIDQWLO	± $
=DUDQGD	$

&RPR GH LJXDO PDQHUD ORV FDXGDOHV GH FDGD XQR GH ORV SR RSHUDWLYRV \ HO FDXGDO VXPLQLVWUDGR

	1Ò&/(2 85%$12 ,,				0$1*$ '(&2/(2			
	0$<2		-81,2		0$<2		-81,2	
'Ë$	&37'2 P	680,1,675$'2 P	&37'2 P	680,1,675$'2 P	&37'2 P	680,1,675$'2 P	&37'2 P	680,1,675$'2 P
727$/								

	%5$8/,2 &$03(675(				%(1',&,Ï1			
	0$<2		-81,2		0$<2		-81,2	
'Ë$	&37'2 P	680,1,675$'2 P	&37'2 P	680,1,675$'2 P	&37'2 P	680,1,675$'2 P	&37'2 P	680,1,675$'2 P
727$/								

	0$7(512 ,1)$17,/				75,$'$			
	0$<2		-81,2		0$<2		-81,2	
'Ë$	&37'2 P	680,1,675$'2 P	&37'2 P	680,1,675$'2 P	&37'2 P	680,1,675$'2 P	&37'2 P	680,1,675$'2 P
727$/								

&$/,'$' '(/ $*8$ 680,1,675$'$

(O DJXD VXPLQLVWUDGD HQ HO SULPHU VHPHVWUH GHO DxR SRU C
3ODQWD 'HILQLWLYD \ 3R]RV 3URIXQGRV FXPSOLy FRQ ODV FDUDFW
PLFURELROyJLFDV GH OD QRUPD VHJ~Q UHSRUWHV GH OD
6LVWHPD GH ,QIRUPDFLyQ SDUD 9LJLODQFLD GH OD &DOLGDG GHO $
,5&$ ËQGLFH GH 5LHVJR GH OD &DOLGDG GHO $JXD SDUD &RQVXPR
UHVXOWDGR 6,1 5,(6*2 HV GHFLU HO DJXD VXPLQLVWUDGD HQ ORV
FRQ OD FRQGLFLRQHV GH FDOLGDG DSWD SDUD FRQVXPR KXPDQR

Tabla 35 IRCA mensual año 2024 – Plataforma SIVICAP.

INSTITUTO NACIONAL DE SALUD

Consolidado IRCA mensual por Persona Prestadora (Decreto 1575/2007)

844000755-EMPRESA DE ACUEDUCTO, ALCANTARILLADO Y ASEO DE YOPAL EICE ESP

Mes	Numero de Muestras de Vigilancia	Irca Consolidado Mensual	Nivel de Riesgo
ENERO	4	0	Sin Riesgo
FEBRERO	26	0,2959	Sin Riesgo
MARZO	18	0,202	Sin Riesgo
ABRIL	27	0,2083	Sin Riesgo
MAYO	11	0,3287	Sin Riesgo
JUNIO	1	0	Sin Riesgo

)XHQWH KWWSV VLYLFDS LQV JRY FR 6,9,&$3 $FFRXQW /RJLQ"5HWXUQ8UO)6,9,&$3

(V LPSRUWDQWH UHVDOWDU HO FXPSOLPLHQWR GH OD QRUPDWLYLGD
\ HO ySWLPR PDQHMR HQ OD RSHUDFLyQ \ ORV SURFHVRV GH SRWDEI
WUDWDPLHQWR 3ODQWD 'HILQLWLYD \ 3R]RV 3URIXQGRV

5('(6 '(',675,%8&,Ï1

&RQWLQXLGDG GH SUHVWDFLyQ GH VHUYLFLR GH DFXHGXFWR

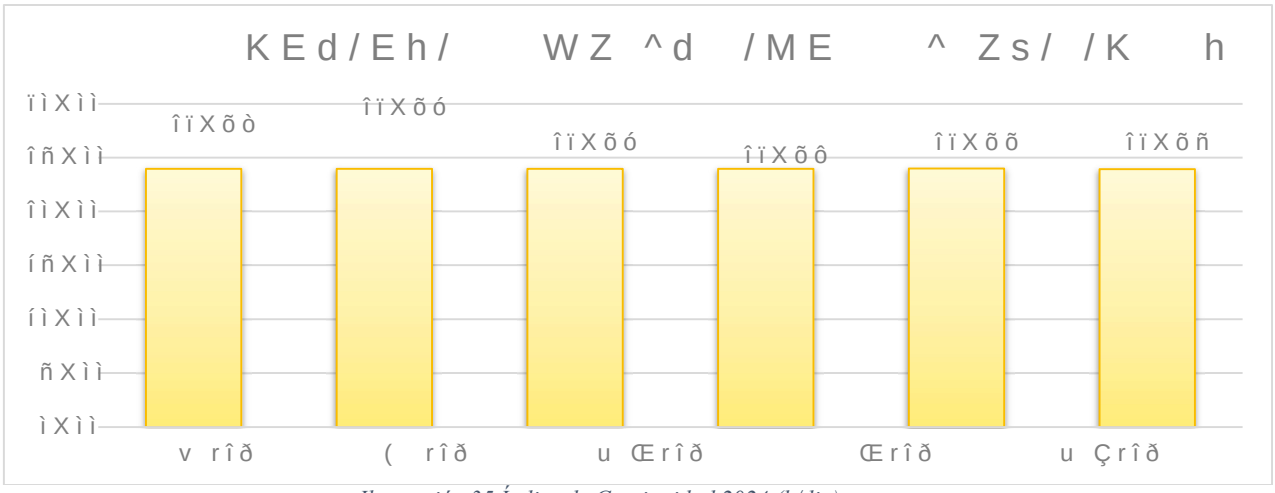


Ilustración 35 Índice de Continuidad 2024 (h/dia)

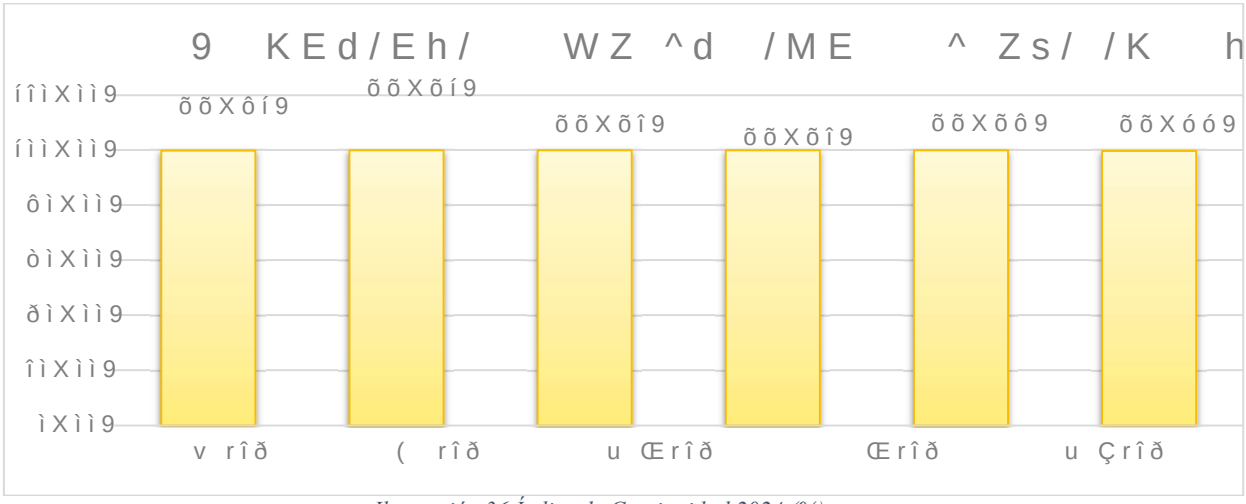


Ilustración 36 Índice de Continuidad 2024 (%)

/D RSHUDFLyQ SDUD ORV PHVHV GH PD\R \ MXQLR GHO DxR GHO GRQGH VH FXHQWD FRQ WUHV IXHQWHV GH DEDVWHFLPLHQWR DFW VXSHUILFLDO GH DEDVWHFLPLHQWR HV HO 5LR &UDYR 6XU \ FRPR IXH GH OD 4XHEUDGD OD 7DEORQD \ )XHQWH 6XEWHUUiQHD GH ORV SR]RV FDXGDO VH KD ORJUDGR JDUDQWL]DU OD SUHVWDFLyQ GHO VHUYLFLR WHQLHQGR XQ SURPHGLR HQ HO SRUFHQWDMH WRWDO GH [illegible] HTXLYDOH D XQD SUHVWDFLyQ GH [illegible] GH HDULDV

/DV VXVSHQVLRQHV GHO VHUYLFLR GH $FXHGXFWR TXH VH KDQ SUHV SRU UHSDUDFLRQHV GH IXJDV HQ ODV UHGHV GH GLVWULEXFLyQ SUL HYLWDU DIHFWDU HO VXPLQLVWUR GH ORV VXVFULSWRUHV

5HGHV GH 'LVWULEXFLyQ

(Q HO VLJXLHQWH FXDGUR VH GHVFULEHQ ORQJLWXGHV GLiPHWURV DFXHGXFWR GH OD FLXGDG GH <RSDO

5(' '(',675,%8&,21 $&8('8&72 <23$/			
1R	',$0(752 E ~/E•	/21*,78' P	
727$/			
5(' '(&21'8&&,21 $&8('8&72 <23$/			
1R	',$0(752 E ~/E•	/21*,78' P	
727$/			

Tabla 36 longitudes, diámetros de las redes de distribución 2023.

3UHVLRQHV GH SUHVWDFLyQ GH VHUYLFLR GH DFXHGXFWR

/DV SUHVLRQHV GH VHUYLFLR HQ OD UHG GH GLVWULEXFLyQ VH P
PDQyPHWURV LQVWDODGRV HQ OD UHG GH GLVWULEXFLyQ ORFDOL]D
SUHVLRQHV VH KDQ PDQWHQLGR FRQVWDQWHV \ FRQ VHUYLFLR FRQW
KD HQWUDGR HQ RSHUDFLyQ OD 37$3 '(),1,7,9$ $ FRQWLQXDFLyQ VH
GHVFULEH HO FRPSRUWDPLHQWR GH ODV SUHVLRQHV SURPHGLR GHO
KLGUiXOLFRV

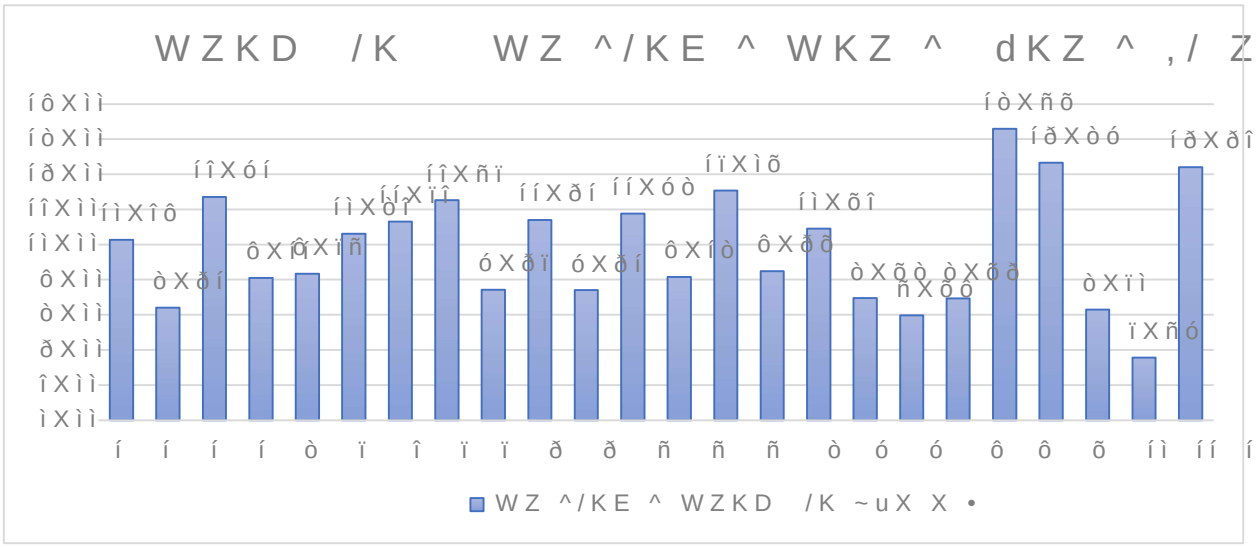


Ilustración 37 promedio presiones por sector hidráulicos del año 2024

/D EDMD SUHVLyQ HQ HO PXQLFLSLR GH <RSDO VH GHEH D OD IDOW
FRPSOHWD \D TXH HO GLVHxR LQLFLDO HUD OD OtQHD GH FRQGXFFLy
DVt SRGHU WHQHU EXHQD SUHVLyQ ODV KRUDV GHO GtD WHQLHQGR
GH ORV VHFWRUHV VH SUHVHQWDQ SUHVLRQHV DOWDV HQ KRUDV GH

)XJDV UHSDUDGDV GXUDQWH HO DxR

/DV IXJDV HQ DFRPHWLGDV UHSRUWDGDV HQ HO VLVWHPD VH GHEHQ
YLGD ~WLO GHO PDWHULDO \ SRU OD LQVWDODFLyQ GHILFLHQWH GH
XVXDULRV 3RU RWUR ODGR ODV IXJDV UHSRUWDGDV GH UHG SU
LQWHUYHQFLyQ GH WHUFHURV HQ OD UHG FXPSOLPLHQWR GH OD
GHILFLHQFLD HQ ORV SURFHVRV GH HPSDOPH SHJXH GH ODV WXEHU

(O PHV GH[HQLVR YLR SRFD UHSDUDFLyQ GH IXJDV GH DFRPHWLGD TXH V
GHELGR D TXH QR VH FRQWDED FRQ ORV HTXLSRV QHFHVDULRV SDUD
OD FRUWDGRUD WHQLHQGR HQ FXHQWD TXH VH HQFRQWUDED HQ PDQ

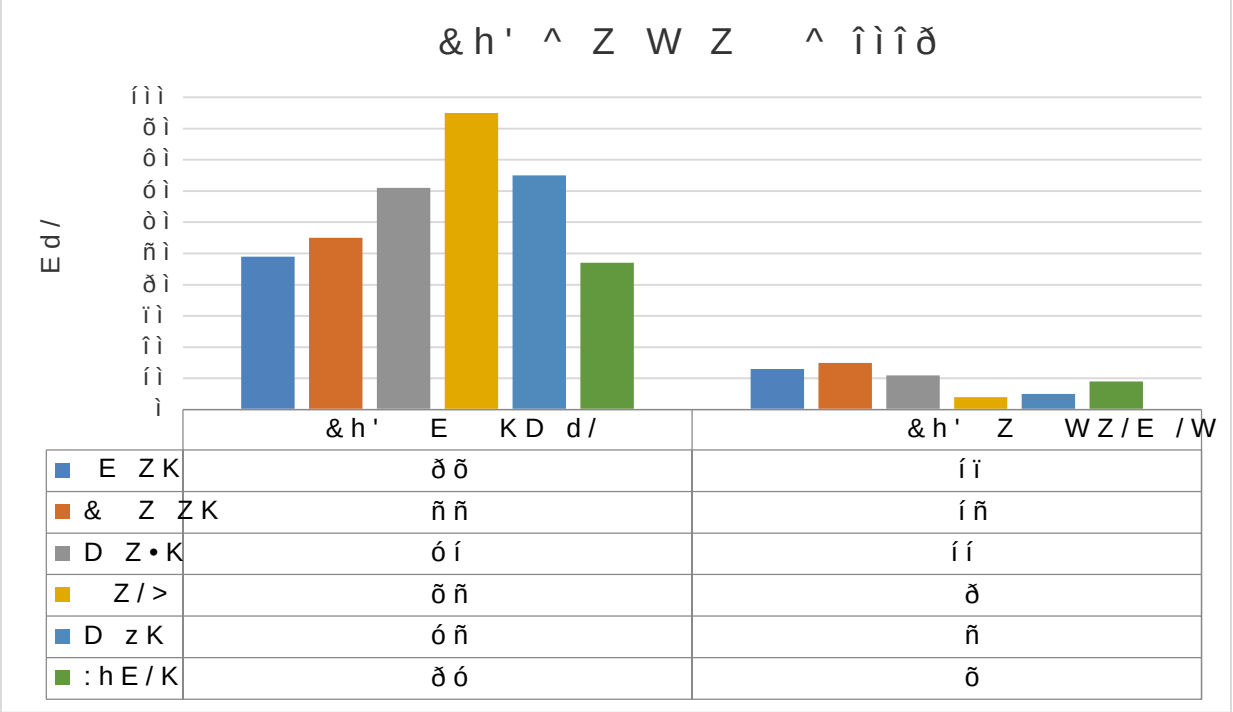


Ilustración 38 Fugas reparadas por mes

*HVWLyQ GH 3pUGLGDV

0D\R

(O GH PD\R 6H SUHVHQWy HPHUJHQFLD SRU PRYLPLHQWR GH PDVD GH OD WXEHUtD RFDVLRQDQGR XQD IXJD HQ OD OtQHD FRQGXFFLy &DIDUQD~P OD FXDO HVWi DEDVWHFLHQGR OD YHUHGD OD 9HJD FRQ GXUR KDVWD HO GH PD\R

Ilustración 39 El 30 de mayo se prestó apoyo en el lavado de estructuras de la planta alterna – conciliada.

-XQLR

Ilustración 40 El 05 de junio se realizó reparación en la línea de conducción de 16" de la Bocatoma la tablona.

GH MXQLR HQ OD &DUUHUD FRQ FDUUH
HVTXLQD VH FDPELy OD YiOYXOD GH

Ilustración 41 cambios de válvulas

7DPELpQ VH UHDOL]y OD LQVWDODFLyQ GH XQD YiOYXOD

- GH MXQLR HQ OD 'LDJRQDO FRQ FDUUHUD VH LQVWDOy X
UHVWULQJLU HO VXPLQLVWUR DO DSHQWDPLHQWR LOHJDO OD Y

Ilustración 42 Instalación de válvula

,QIUDHVWUXFWXUD \ SpUGLGDV

(Q SURFXUD GH DOFDQ]DU ODV PHWDV SURSXHVWDV SRU HO VLVWHP XQLGDG GH ,QIUDHVWUXFWXUD \ 3pUGLGDV GH OD (PSUHVD GH $FXHG GH <RSDO SUHVHQWD LQIRUPH HMHFXWLYR TXH GHVFULEH ORV EDOD GH DJXD GH <RSDO

(O GRFXPHQWR SUHVHQWDUi HO EDODQFH KtGULFR REWHQLGR DO LQW GH HQWUDGD DO VLVWHPD FRQVXPRV IDFWXUDGRV SXUJDV FRQH[L VXVFULWRV DO VLVWHPD Q~PHUR GH DFRPHWLGDV ORQJLWXG GH OD SUHVLyQ SURPHGLR GLDULD HQWUH RWURV

(O %DODQFH +tGULFR VH EDVD HQ OD DSOLFDFLyQ GHO SULQFLSLR DJXD \ EXVFD HO HTXLOLEULR HQWUH WRGRV ORV UHFXUVRV KtGULF ORV TXH VDOHQ GHO PLVPR HQ XQ LQWHUYDOR GH WLHPSR GHWHUP $FXHGXFWR $OFDQWDULOODGR \ $VHR GH <RSDO HVWH EDODQFH SURGXFFLyQ GH ODV IXHQWHV GH DEDVWHFLPLHQWR FRQWUD OD GHP

&DEH UHFDOFDU TXH GXUDQWH HO WUDQVFXUVR GH 6-7DVHLPSDOHPHQWD JHQHUDGR XQ SURFHVR GH WUDQVLFLyQ TXH KD UHIOHMDGR TXH OD LC ODV iUHDV GH IDFWXUDFLyQ FDUWHUD HQWUH RWURV QR VH HQWU TXH OD LQIRUPDFLyQ VXVFLWD GXGDV IUHQWH ORV GDWRV REWHQLG LQFHUWLGXPEUH GH ODV FLIUDV FRQFOXLGDV
&RQIRUPH DO SRVWXODGR DQWHULRU HQ HO SUHVHQWH LQIRUPH VH SULPHU VHPHVWUH GHO DxR (V LPSRUWDQWH PHQFLRQDU TXH GXUD DEULO HO UHVXOWDGR REWHQLGR GHO EDODQFH KtGULFR HV LQH[DF GHO YDORU GHO YROXPHQ GH HQWUDGD D VLVWHPD IUHQWH D SHULP HV HTXLSDUDEOH GHELGR D TXH HO YROXPHQ GH HQWUDGD FRUUHV REWHQLGRV SDUD XQ SHULRGR GH GtDV \ HV FRQWUDVWDGD FRQ DXWRUL]DGR IDFWXUDGR VLQ HPEDUJR OD LQIRUPDFLyQ FROHFWDG GtDV IDFWXUDGRV SDUD HO PHV GH PDU]R \ GtDV IDFWXUDGRV SD FRQVLJXLHQWH OD LUUHJXODULGDG HQ HO UHVXOWDGR GHO EDODQFH GH PDU]R \ DEULO QR VRQ GDWRV FRQVLVWHQWHV

3RU RWUD SDUWH ORV UHVXOWDGRV SRUFHQWXDOHV GHO EDODQFH FRQWDELOL]DGD UHIOHMDQ XQ DXPHQWR FRQVLGHUDEOH SDVDQGR G IHEUHUR D XQ SDUD HO PHV GH MXQLR DXQ FXDQGR VH KD GLV HQWUHJDGRV GH ORV FRQVXPRV DXWRUL]DGRV QR IDFWXUDGRV FR FDUURWDQTXH \ HO VXPLQLVWUR SRU SLODV S~EOLFDV 3RU OR WDQ FROHFWDGRV SRU FDGD XQD GH ODV GHSHQGHQFLDV TXH SURYHHQ EDODQFH KtGULFR SXHV OD LQIRUPDFLyQ FRQWUDVWDGD UHIOHMD REWHQLGRV (V GHFLU /RV GDWRV QR VRQ FRQFOX\HQWHV

'(7(50,1$&,Ï1 '(/ %$/$1&(+Ë'5,&2 35,0(5 6(0(675($f2

+DFLHQGR XVR GH OD KHUUDPLHQWD :% (DV\&DOF VH GHWHUPLQy HO HQ OD 7DEOD (VWH EDODQFH VH UHDOL]y SDUD WRGR HO PXQLFLSL GH DJXD HQWUHJDGR \ IDFWXUDGR SDUD HO SULPHU VHPHVWUH GHO

Tabla 37 Balance hídrico 2024 - IWA – EAAAY - Enero

s}oµu v vš íXïóî uï D ŒP v Œ ðU	}v•µu} µš}Œ]Ì } òòñXuï	}v•µu} µš}Œ]Ì } (šµŒ òòñXuï	}v•µu} (šµŒ } òíóXuï	Pµ (š òòñXuï
			}v•µu} (šµŒ } v ðóXuï	
	}v•µu} µš}Œ]Ì } òòñXõõõ D ŒP v Œ ìUì	}v•µu} µš}Œ]Ì } (šµŒ } òîuï D ŒP v Œ ìUì	}v•µu} v} (šµŒ òîuï	Pµ v} (š óìóXuï D ŒP v Œ õU
			}v•µu} v} (šµŒ } ìuï D ŒP v Œ ìUì	
	W Œ] • óìòXuï D ŒP v Œ õU	W Œ] • ‰ Œ ~ }u Œ íñòXuï D ŒP v Œ íîU	}v•µu} v} µš ïôXuï D ŒP v Œ íõU	
			/v Æ š]šµ o u] Œ}u]] u v i} o}• š}• ííóXuï D ŒP v Œ íñU	
		W Œ] • Œ o ñðõXuï D ŒP v Œ Œ Œ €=lr•		

Tabla 38 Balance hídrico 2024 - IWA – EAAAY - febrero

s}oµu v vš íXîðô uï D ŒP v Œ ðU	}v•µu} µš}Œ]Ì } ñõóXuï	}v•µu} µš}Œ]Ì } (šµŒ ñõóXuï	}v•µu} (šµŒ } ñðñXuï	Pµ (š ñõóXuï
			}v•µu} (šµŒ } v ñíXuï	
	}v•µu} µš}Œ]Ì } ñõóXõõî D ŒP v Œ ìUì	}v•µu} µš}Œ]Ì } (šµŒ } òčuï D ŒP v Œ Œ Œ €=lr• ìUì	}v•µu} v} (šµŒ òčuï	Pµ v} (šµŒ òñìXuï D ŒP v Œ õU
			}v•µu} v} (šµŒ } ìuï D ŒP v Œ ìUì	
	W Œ] • òñìXuï D ŒP v Œ õU	W Œ] • ‰ Œ ~ }u Œ] o •• íðñXuï D ŒP v Œ íîU	}v•µu} v} µš ïõXuï D ŒP v Œ íõU	
			/v Æ š]šµ o u] Œ}u]] u v i} o}• š}• íìñXuï D ŒP v Œ íñU	
		W Œ] • Œ o ñìñXuï D ŒP v Œ Œ Œ €=lr•		

Tabla 39 Balance hídrico 2024 - IWA – EAAAY - marzo

s}oµu v vš íXïôì›uï D ŒP v Œ ðU	}v•µu} µš}Œ]Ì } ñòïXîuî D ŒP v Œ ìUì	}v•µu} µš}Œ]Ì (šµŒ } òćuï D ŒP v Œ ìUì	}v•µu} (šµŒ } ñîõXuï	Pµ (š ñòîXuï
			}v•µu} (šµŒ } v ïïXîuï	
			}v•µu} v} (šµŒ òćuï	
			}v•µu} v} (šµŒ } ìuï D ŒP v Œ ìUì	
	W Œ] • ôíòXuï D ŒP v Œ ôU	W Œ] • ‰ Œ ~ }u Œ] íðîXïuï D ŒP v Œ íîU	}v•µu} v} µš vš • ïõXïuï D ŒP v Œ íõU	Pµ v} (š ôíóXuï D ŒP v Œ ôU
			/v Æ š]šµ o u] Œ}u]] u v i} o}• š}• íìîXćuï D ŒP v Œ íñU	
		W Œ] • Œ o òóðXuï D ŒP v Œ Œ Œ}Œ €=lr•		

Tabla 40 Balance hídrico 2024 - IWA – EAAAY - abril

s}oµu v vš íXïïñ›uï D ŒP v Œ ðU	}v•µu} µš}Œ]Ì } óíïXòuî D ŒP v Œ ìUì	}v•µu} µš}Œ]Ì (šµŒ } ìuï D ŒP v Œ Œ Œ}Œ €=lr• ìUì	}v•µu} (šµŒ } òòíXuï	Pµ (š óíïXïuï
			}v•µu} (šµŒ } v ñîXíuï	
			}v•µu} v} (šµŒ ìuï	
			}v•µu} v} (šµŒ } ìuï D ŒP v Œ ìUì	
	W Œ] • ôîîXïuï D ŒP v Œ íìUì	W Œ] • ‰ Œ ~ }u Œ] íòñXuï PµD ŒP v Œ Œ Œ}Œ €=lr• íîU	}v•µu} v} µš vš • ðìXïuï D ŒP v Œ íõU	Pµ v} (š òîîXïuï D ŒP v Œ íìUì
			/v Æ š]šµ o u] Œ}u]] u•v i} o}• š}• íîñXíuï D ŒP v Œ íñU	
		W Œ] • Œ o ðñòXuï D ŒP v Œ Œ Œ}Œ €=lr•		

Tabla 41 Balance hídrico 2024 - IWA – EAAAY - Mayo

s}oµu v vš íXïòð uï D ŒP v ðU	}v•µu} µš}Œ]Ì } ñóìXñóõ D ŒP v ìUì	}v•µu} µš}Œ]Ì } (šµŒ } ìuï D ŒP v ìUì	}v•µu} (šµŒ } ñîíXuï	Pµ (š ñóìXuï
			}v•µu} (šµŒ } v ðôXuï	
		}v•µu} µš}Œ]Ì } (šµŒ } ìuï D ŒP v ìUì	}v•µu} v} (šµŒ } v} ìuï	
			}v•µu} v} (šµŒ } ìuï D ŒP v ìUì	
	W Œ] • óõïXuï D ŒP v ôU	W Œ] • ‰ Œ ~ }u Œ] íðîXuï D ŒP v íîUì	}v•µu} v} µš} vš • ðìXuï D ŒP v íõU	Pµ v} (š óõïXuï D ŒP v ôU
			/v Æ š]šµ o u] Œ}u]] u v i} o}• š}• íìíXuï D ŒP v íñU	
		W Œ] • Œ o òñíXuï D ŒP v ŒŒ}Œ €=lr•		

Tabla 42 Balance hídrico 2024 - IWA – EAAAY - Junio

s}oµu v vš íXîóñuï D ŒP v ðU	}v•µu} µš}Œ]Ì } ñôìXôúï D ŒP v ìUì	}v•µu} µš}Œ]Ì } (šµŒ } ñôìXuï D ŒP v ŒŒ}Œ €=lr• ìUì	}v•µu} (šµŒ } ñïóXuï	Pµ (š ñôìXuï
			}v•µu} (šµŒ } v ðîXuï	
		}v•µu} µš}Œ]Ì } (šµŒ } ìuï	}v•µu} v} (šµŒ } v} ìuï	
			}v•µu} v} (šµŒ } ìuï D ŒP v ìUì	
	W Œ] • òõðXuï D ŒP v ôU	W Œ] • ‰ Œ ~ }u Œ] íðñXuï PµD ŒP v ŒŒ}Œ €=lr• íîUì	}v•µu} v} µš} vš • ðíXuï D ŒP v íõU	Pµ v} (š òõðXuï D ŒP v ôU
			/v Æ š]šµ o u] Œ}u]] u v i} o}• š}• íìðXuï D ŒP v íñU	
		W Œ] • Œ o ñðõXuï D ŒP v ŒŒ}Œ €=lr•		

Fuente: EAAAY

5(68/7$'26

(O SURSyVLWR GHO FiOFXOR GHO %DODQFH +tGULFR SRU OD PHW
SRUFHQWDMH GH DJXD QR IDFWXUDGD \ HPSH]DU D FRQWDELOL]DU
DXWRUL]DGR (V GHFLU SDVDU OD PD\RU FDQWLGDG GH FRQVXPR SRV
D ODV FDVLOODV D]XOHV \ UHGXFLU DO Pi[LPR ODV SpUGLGDV GH DJX

'H DFXHUGR D ORV UHVXOWDGRV REWHQLGRV HO $JXD 1R &RQWDELOL]D
ORV VLJXLHQWHV

(QHUR
9ROXPHQ GH HQWUDGD 0
$JXD)DFWXUDGD 0
$JXD QR)DFWXUDGD
3pUGLGD UHDO 0 3pUGLGD $SDUHQWH ± 0

3RUFHQWDMH GH SpUGLGD PHV GH HQHUR

)HEUHUR
9ROXPHQ GH HQWUDGD 0
$JXD)DFWXUDGD 0
$JXD QR)DFWXUDGD
3pUGLGD UHDO ± 0 3pUGLGD $SDUHQWH ± 0

3RUFHQWDMH GH SpUGLGD PHV GH IHEUHUR
0DU]R
9ROXPHQ GH HQWUDGD 0
$JXD)DFWXUDGD 0
$JXD QR)DFWXUDGD 0
3pUGLGD UHDO ± 0 3pUGLGD $SDUHQWH ± 0

3RUFHQWDMH GH SpUGLGD PHV GH PDU]R

$EULO
9ROXPHQ GH HQWUDGD 0
$JXD)DFWXUDGD 0
$JXD QR)DFWXUDGD 0
3pUGLGD UHDO ± 0 3pUGLGD $SDUHQWH ± 0

3RUFHQWDMH GH SpUGLGD PHV GH DEULO

0D\R
9ROXPHQ GH HQWUDGD 0
$JXD)DFWXUDGD 0
$JXD QR)DFWXUDGD 0
3pUGLGD UHDO ± 0 3pUGLGD $SDUHQWH ± 0

3RUFHQWDMH GH SpUGLGD PHV GH PD\R

-XQLR
9ROXPHQ GH HQWUDGD 0
$JXD)DFWXUDGD 0
$JXD QR)DFWXUDGD 0
3pUGLGD UHDO ± 0 3pUGLGD $SDUHQWH ± 0

3RUFHQWDMH GH SpUGLGD PHV GH MXQLR

/RV SRUFHQWDMHV GH SpUGLGDV REWHQLGRV SDUD FDGD XQR GH UHODFLRQDGRV FRUUHVSRQGHQ D XQ SURFHVR GH WUDQVLFLyQ HQ OH VRIWZDUH PHRWLYR SRU HO FXDO VH GLYLGHQ HQ FLIUDV DQWHV \ G WUDQVLFLyQ DO FLWDGR VRIWZDUH 3RU OR WDQWR ODV FLIUDV GH GDWRV SUHYLRV D OD6-7MOHRXFLyQ GSUHVHQWD FLIUDV FRQ EDMR S LQFHUWLGXPEUH HQ VX DGTXLVLFLyQ \ GDWRV FRQFOXLGRV 3F LPSOHPHQWDFLyQ GHO VRIWZDUH HO SRUFHQWDMH GH LQFHUWLGXPE DXPHQWDGR GHELGR D ORV LQWHUYDORV GH VXPLQLVWUR GH GDWR GtDV D SHULRGRV LUUHJXODUHV GH PHQRV R PiV GtDV SRU OR TXH FiOFXOR VH SUHVHQWDQ GDWRV GLVSHUVRV GHELGR D TXH VH FRQ DJXD D OD HQWUDGD DO VLVWHPD \ HVWH GDWR FRUUHVSRQGH D ORV

&$7$6752 '(5('(6

/D 8QLGDG GH &DWDVWUR GH 5HGHV VH SHUPLWH LQIRUPDU ODV DFW PHVHV GH HQHUR \ IHEUHUR GHO DxR HQ FXUVR DVt PLVPR HV LPSRU FRQ PiV UHOHYDQFLD GHQWUR GHO SURFHVR

- ',6321,%,/,'$'(6 '($&8('8&72 < $/&$17$5,//$'2 6$1,7$5,2

/DV YLVLWDV UHDOL]DGDV SRU OD 8QLGDG GH &DWDVWUR GH 5HGHV C WHUUHQR GH ORV VHUYLFLRV S~EOLFRV GH DFXHGXFWR \ DOFDQW VROLFLWDQWH GHO UHJLVWUR \ YHQWD GH PDWUtFXOD GRPLFLOLDULL DEULO VH GLR DWHQFLyQ D VROLFLWXGHV GH PDWUtFXODV \ SDUD H YLYLHQGDV SRU ~OWLPR SDUD HO PHV GH MXQLR YLVLWDV GH H GLVSRQLELOLGDG R QR GLVSRQLELOLGDG SDUD FDGD XVXDULR VROLF

6ROLFLWXGHV DWHQGLGDV PHV GH DEULO

,163(&&,21(6	&2081,&$&,21(6	&20,7e6	0,6,21$/(6
'LVSRQLELOLGDGHV	(QYLDGDV	5HXQLRQHV	0HFL 6*&
3DYLPHQWDFLRQHV	,QWHUQDV	9LVLWDV D FDPSR	,QGLFDGRUHV \ 0DWUL] GH LQGLFDGRUHV
	,QIRUPHV		3ODQ GH
	&RUUHRV		2WRU 68,
	&HUWLILFDFLRQHV		

6ROLFLWXGHV DWHQGLGDV PHV GH PD\R

,163(&&,21(6	&2081,&$&,21(6	&20,7e6	0,6,21$/(6
'LVSRQLELOLGDGHV	(QYLDGDV	5HXQLRQHV	0HFL
3DYLPHQWDFLRQHV	,QWHUQDV	9LVLWDV D FDPSR	,QGLFDGRUHV \ 0DWUL] GH LQGLFDGRUHV
	,QIRUPHV		
	&RUUHRV		3ODQ GH $FFLyQ
	&HUWLILFDFLRQHV		2WUR 68,

6ROLFLWXGHV DWHQGLGDV PHV GH MXQLR

,163(&&,21(6	&2081,&$&,21(6	&20,7e6	0,6,21$/(6
'LVSRQLELOLGDGHV	(QYLDGDV	5HXQLRQHV	0HFL
3DYLPHQWDFLRQHV	,QWHUQDV	9LVLWDV D FDPSR	,QGLFDGRUHV \ 0DWUL] GH LQGLFDGRUHV
	,QIRUPHV		
	&RUUHRV		3ODQ GH $FFLyQ
	&HUWLILFDFLRQHV		2WUR 68,

- $&78$/,=$&,Ï1 '(&$7$6752 '(5('(6

/DV ORQJLWXGHV GLiPHWURV \ XELFDFLRQHV GH ODV UHGHV LQV
DOFDQWDULOODGR VDQLWDULR VH GHWDOODQ D FRQWLQXDFLyQ

$FXHGXFWR
3DUD ORV PHVHV GH DEULO \ PD\R QR VH SUHVHQWy LQVWDODFLyQ DC

0HV GH MXQLR

6H UHDOL]DURQ ODV VLJXLHQWHV DFWXDOL]DFLRQHV HQ HO FDWDVWUR GH UHGHV C
.PV
352<(&72 85%$1Ë67,&2 %2648(6 '( )(1,&,$ 5(' ,167$/$'$ (1 39& NP

$OFDQWDULOODGR
3DUD ORV PHVHV GH DEULO \ PD\R QR VH SUHVHQWy LQVWDODFL
DOFDQWDULOODGR VDQLWDULR

0HV GH MXQLR

6H UHDOL]DURQ ODV VLJXLHQWHV DFWXDOL]DFLRQHV HQ HO FDWDVWUR
&216758&&,Ï1 '('26 32=26 '(,163(&&,Ï1 (,167$/$&,Ï1 '(5(' 6$1,7$5,$ '(%2648(6 '( )(1,&,$ 129$)257 NPV

- 0$&520(',&,Ï1

(Q FXDQWR D OD PDFURPHGLFLyQ GHO VHFWRU SLORWR • /RV FRQW
HQWUHJD GH OD LQIUDHVWUXFWXUD FRQWUDWDGD LQFXPSOLHQGR FR
HVWLPDED OD HQWUHJD HO GH GLFLHPEUH GH DVt ODV FRVDV
QR VH SXHGHQ GHVDUURODU ODV DFWLYLGDGHV GHO SODQ GH UHGX
HVWH VHFWRU 6LQ HPEDUJR SDUD HO PHV GH MXQLR VH LQLFLy XQD
GtDV GH YHULILFDFLyQ GH OD LQIUDHVWUXFWXUD \ FRPSDUDFLyQ G

% &21752/ '(&$/,'$' '($*8$

/D ($$$< DVHJXUD OD FDOLGDG GHO DJXD SRWDEOH PHGLDQWH D PLFURELROyJLFRV GH PXHVWUDV WRPDGDV HQ OD UHG GH GLVWULEXF GH 7UDWDPLHQWR GH $JXD 3RWDEOH 37$3V 'H DFXHUGR FRQ OD 5HV GH OD ($$$< D WUDYpV GH VX ODERUDWRULR GH DJXDV WRPD FRQWURO SDUD JDUDQWL]DU OD FDOLGDG GHO DJXD VXPLQLVWUDGD $GLFLRQDOPHQWH OD 6HFUHWDUtD GH 6DOXG GHO PXQLFLSLR GH <I DQDOL]DGDV SRU HO /DERUDWRULR GH 6DOXG 3~EOLFD GH OD 6HFUH ILQDOPHQWH SXEOLFDGDV HQ OD SODWDIRUPD 6,9,&$3 GHO ,QVWLW HVWDV PXHVWUDV KDFHQ SDUWH GHO VLVWHPD GH YLJLODQFLD GH FI

0RQLWRUHRV 'H &RQWURO 'H &DOLGDG 'H $JXD 3RWDEOH

021,725(26 '(&21752/ '(&$/,'$' '($*8$ 327$%/(

/RV PRQLWRUHRV GH FRQWURO VRQ PXHVWUHRV \ DQiOLVLV UHDOL]D VX ODERUDWRULR GH DJXDV 7LHQHQ FRPR ILQ DVHJXUDU TXH OD FD GLVWULEXFLyQ FXPSOD FRQ OD QRUPDWLYD DSOLFDEOH

0$<2

'XUDQWH HVWH PHV VH WRPDURQ \ DQDOL]DURQ PXHVWUDV GH DJXD WRPDGDV D OD VDOLGD GH ORV GLIHUHQWHV VLVWHPDV GH WUDWDPL UHG GH GLVWULEXFLyQ SDUD UHDOL]DU ORV GLIHUHQWHV DQiOLVL UHVROXFLyQ GH SDUD HO FRQWURO TXH VH GHEH WHQHU HQ FD TXH VXPLQLVWUD DJXD D OD FRPXQLGDG HO ,5&$ GH FRQWURO REWH ORV PRQLWRUHRV GH FRQWURO QHG6LXH5GHVJR

'H ODV PXHVWUDV GH UHG DQDOL]DGDV VRQ SURFHGHQWHV GH SURFHGHQWHV GHO 3R]R GH *UDQ 3URGXFFLyQ GH 1~FOHR XUEDQR ,, GHO 3R]R GH *UDQ 3URGXFFLyQ GH 0DQJD GH &ROHR 3*3 0&

7DEOD (VWDGtVWLFDV GH PRQLWRUHRV GH FRQWURO GH DJXD SRWDEOH HQ UHG GH

6,67(0$ '(75$7$0,(172	)	4	%	680$725,$ 1	08(675$	08(675$6 12 &21)250(6	,5&$	1,9(/ '(5,(6*2
5(' '(),1,7,9$								6,1 5,(6*2
5(' 3*3 1 8								6,1 5,(6*2
5(' 3*3 0&								6,1 5,(6*2
727$/								6,1 5,(6*2

'XUDQWH HVWH PHV WRGDV ODV PXHVWUDV IXHURQ FRQIRUPHV 6LQ PXHVWUDV GH FRQWURO VH KD UHGXFLGR GUDPiWLFDPHQWH SRU

3iJLQD GH

PRWRFLFOHWD GHO ODERUDWRULR HVWi SURJUDPDGD SDUD PDQWHQI
TXH VXEVDQDUtD HO SRFR Q~PHUR GH PXHVWUDV

6H HYLGHQFLD TXH ORV ,5&$V PHQVXDOHV HVWXYLHURQ VLHPSUH S
SHUPLWH FRQFOXLU TXH HO DJXD VXPLQLVWUDGD QR UHSUHVHQWy UL
GH DFXHUGR FRQ OD 5HVROXFLyQ GH

-81,2

'XUDQWH HVWH PHV VH WRPDURQ \ DQDOL]DURQ PXHVWUDV GH DJXD
WRPDGDV D OD VDOLGD GH ORV GLIHUHQWHV VLVWHPDV GH WUDWDPL
UHG GH GLVWULEXFLyQ SDUD UHDOL]DU ORV GLIHUHQWHV DQiOLVL
UHVROXFLyQ GH SDUD HO FRQWURO TXH VH GHEH WHQHU HQ FD
TXH VXPLQLVWUD DJXD D OD FRPXQLGDG HO ,5&$ GH FRQWURO REWHQ
ORV PRQLWRUHRV GH FRQWURO RELYHUHG6LXQH5GHVJR

'H ODV PXHVWUDV GH UHG DQDOL]DGDV VRQ SURFHGHQWHV GH
SURFHGHQWHV GHO 3R]R GH *UDQ 3URGXFFLyQ GH 1~FOHR XUEDQR ,,
GHO 3R]R GH *UDQ 3URGXFFLyQ GH 0DQJD GH &ROHR 3*3 0&

7DEOD (VWDGtVWLFDV GH PRQLWRUHRV GH FRQWURO GH DJXD SRWDEOH HQ UHG GH

6,67(0$ '(75$7$0,(172	)	4	%	680$725,$ 1	08(675$	08(675$6 12 &21)250(6	,5&$	1,9(/ '(5,(6*2

5(' '(),1,7,9$		6,1 5,(6*2
5(' 3*3 1 8		6,1 5,(6*2
5(' 3*3 0&		5,(6*2 %$-2
727$/		6,1 5,(6*2

'XUDQWH HVWH PHV KXER XQD PXHVWUD QR FRQIRUPH 6LQ HPEDUJR
GH FRQWURO VH KD UHGXFLGR GUDPiWLFDPHQWH SRU IDOWD GH WU
ODERUDWRULR IXH HQWUHJDGD D ILQDOHV GHO PHV GH PHV GH MXQL
MXOLR DXPHQWH HO Q~PHUR GH PXHVWUDV

6H HYLGHQFLD TXH ORV ,5&$V PHQVXDOHV HVWXYLHURQ VLHPSUH S
SHUPLWH FRQFOXLU TXH HO DJXD VXPLQLVWUDGD QR UHSUHVHQWy UL
GH DFXHUGR FRQ OD 5HVROXFLyQ GH

+,67Ï5,&2 ,5&$ 18/ '(&21752/ '($*8$ 327$%/((1
5(' '(',675,%8&,Ï1

$ FRQWLQXDFLyQ VH SUHVHQWDQ ORV ,5&$6 DQXDOHV SDUFLDOHV G
UHG GH GLVWULEXFLyQ

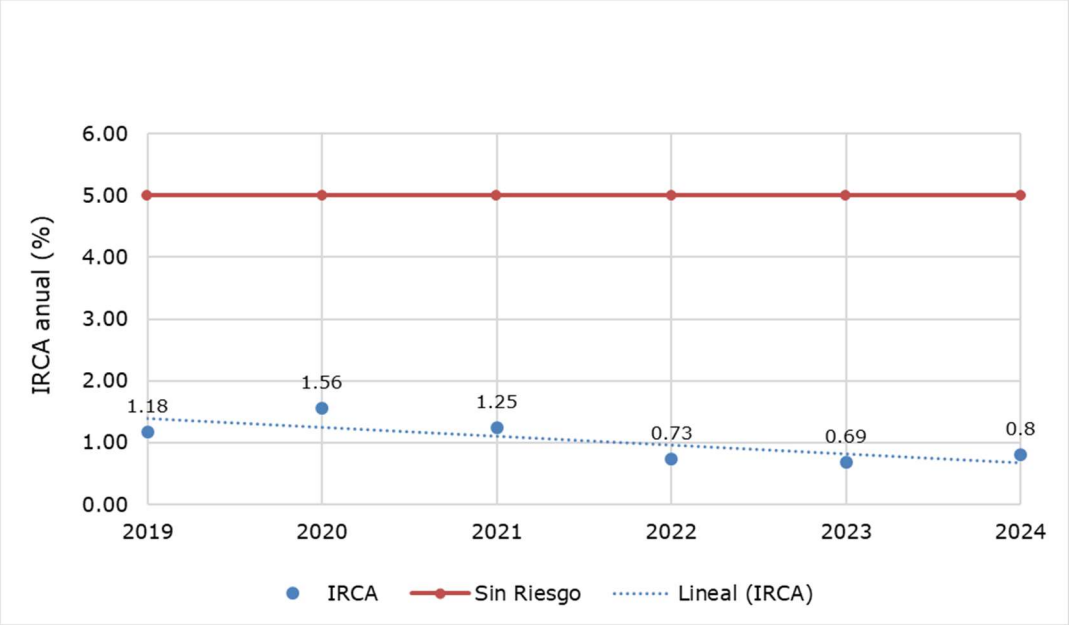


Ilustración 43 IRCA (%) anual de control de agua potable en red de distribución (2019-junio 2024)

021,725(26 '(/ 352*5$0$ '(9,*,/$1&,$ '(&$/,'$' '($*8$
327$%/(5(3257(6 '(6(&5(7$5Ë$ '(6$/8' ± 6,9,&$3

$ FRQWLQXDFLyQ VH UHJLVWUDQ HO ËQGLFH GH 5LHVJR GH OD &DO
SRU OD 6HFUHWDULD GH 6DOXG 0XQLFLSDO ± 660 \ HO REWHQLGR HQ
SRU HO /DERUDWRULR GH $JXDV GH OD ($$$< UHSRUWDQGR HO QLY
DPERV FDVRV

0$<2

6H UHDOL]DURQ PXHVWUHRV GH YLJLODQFLD SDUD HO FiOFXOR GHO
GH QLYHO 6,1 5,(6*2 (Q FXDQWR D ORV DQiOLVLV GH ODV FRQWU
HO ODERUDWRULR GH DJXDV GH OD ($$$< DUURMDURQ XQ ,5&$ GH

7DEOD 3RUFHQWDMH ,5&$ GH YLJLODQFLD PHV GH PD\R

3(5,2'2	9,*,/$1&,$		
	0XHVWUDV	5&$ 660	,5&$ ($$$<
(1(52			

-81,2

6H UHDOL]y PXHVWUHR GH YLJLODQFLD SDUD HO FiOFXOR GHO ,5&$
6,1 5,(6*2 (Q FXDQWR D ORV DQiOLVLV GH ODV FRQWUDPXHVWUDV W
GH DJXDV GH OD ($$$< DUURMDURQ XQ ,5&$ GH QLYHO 6,1 5,(6*2

7DEOD 3RUFHQWDMH ,5&$ GH YLJLODQFLD PHV GH MXQLR

3(5,2'2	9,*,/$1&,$		
	0XHVWUDV	5&$ 660	,5&$ ($$$<
(1(52			

6H HQIDWL]D TXH OD SURJUDPDFLyQ GH HVWRV PRQLWRUHRV HVWi D VDOXG PXQLFLSDO SRU OR TXH QR HV UHVSRQVDELOLGDG GH OD PXHVWUDV TXH SURJUDPD OD HQWLGDG PHQFLRQDGD

+,67Ï5,&2 ,5&$ 18/ '(9,*,/$1&,$ '($*8$ 327$%/(

)LQDOPHQWH D PRGR GH FRPSDUDFLyQ $ FRQWLQXDFLyQ VH SU GHPXHVWUD FyPR KD PHMRUDGR OD FDOLGDG GH DJXD HQ ORV ~OWLP

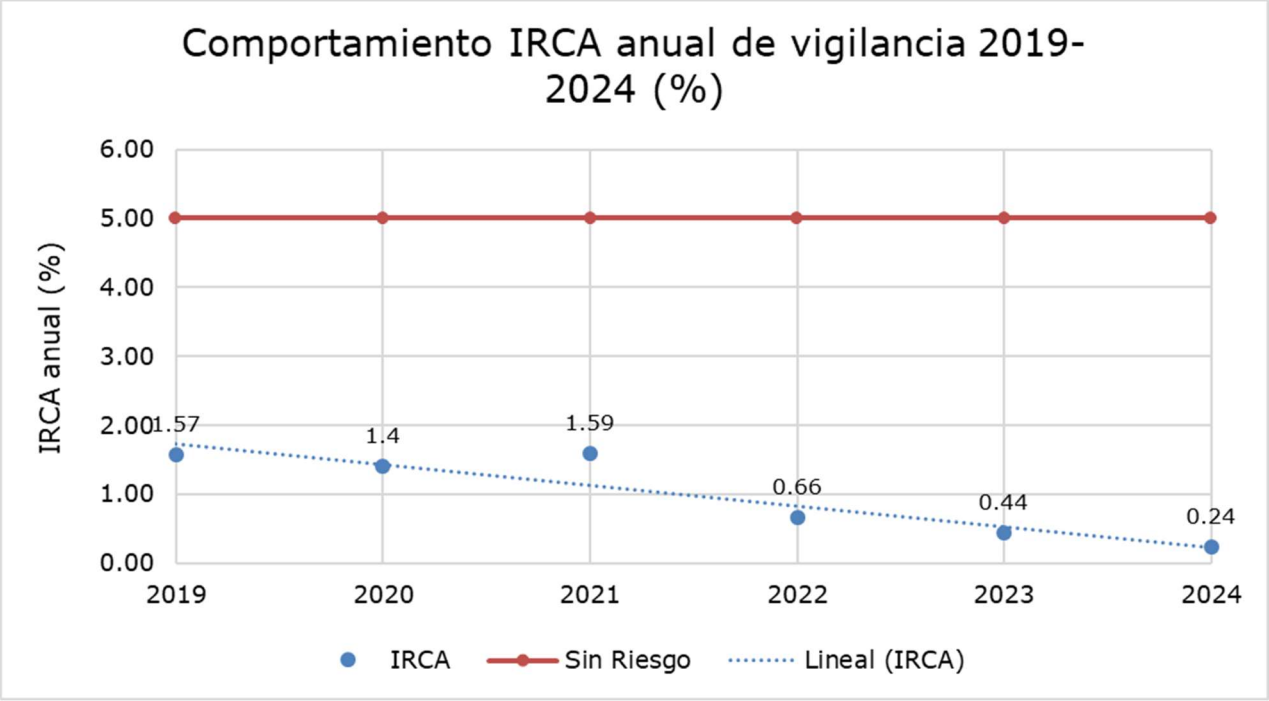


Ilustración 44 Comportamiento IRCA% de vigilancia anual 2019-junio 2024

&203257$0,(72 '(/ ,5&$ 0(168$/ '(9,*,/$1&,$

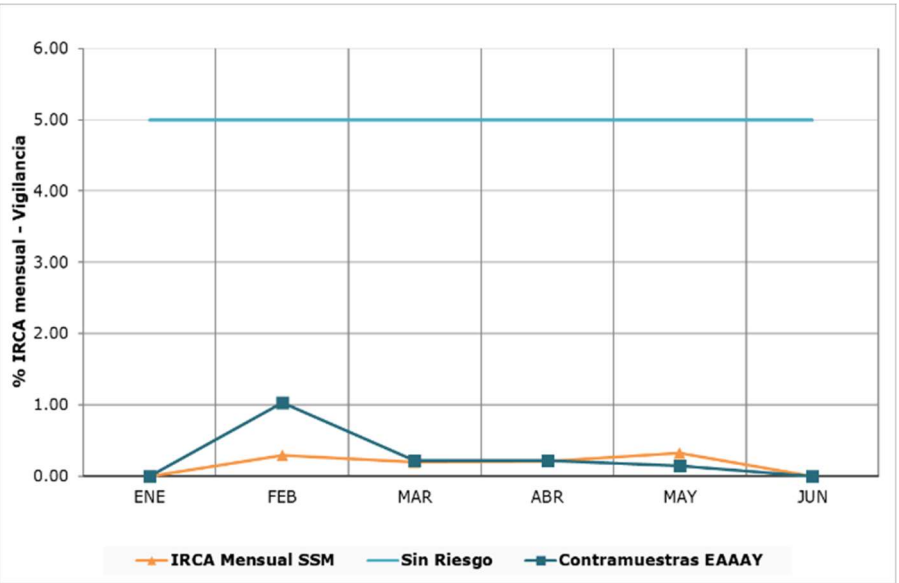


Ilustración 45 Comportamiento IRCA% de vigilancia mensual enero -junio 2024

6HPHMDQWH DO FRPSRUWDPLHQWR HQ ORV ~OWLPRV DxRV GH ORV ,5&
HQ UHG GH GLVWULEXFLyQ FRPR HV QDWXUDO HO ,5&$ GH YLJLODQF
6DOXG 0XQLFLSDO VLJXH PHMRUDQGR \ WLHQGH D EDMDU D~Q PiV (V
DFXHUGR FRQ OD QRUPDWLYD DFWXDO HO DJXD VXPLQLVWUDGD SRU
KXPDQR VX QLYHO GH ULHVJR HV

352*5$0$ 3,&&$3

(O ODERUDWRULR GH DJXDV SDUWLFLSy HQ HO SURJUDPD 3,&&$3 URQ
OD HPLVLyQ GH UHVXOWDGRV SRU SDUWH GHO ,16

$1È/,6,6 (63(&,$/(6

$OJXQRV DQiOLVLV HVSHFLDOHV VH KDQ UHDOL]DGR D WUDYpV GH O
UHVXOWDGRV FRQIRUPHV (VWRV UHVXOWDGRV IXHURQ UHSRUWDGRV
\ VRQ ORV TXH VH PXHVWUDQ D FRQWLQXDFLyQ

ITEM	NOMBRE DEL ITEM	PARAMETROS	LUGAR	MAYO				JUNIO			
FECHA				îí	îî	îó	îô	ñ	îõ	îò	îó
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		^/}o}ŒX ‰ Œ vš		í	î	î	î	î	ð		
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/D LQIRUPDFLyQ FRUUHVSRQGLHQWH DO PHV GH PD\R GH FDOLGDG GH ÒQLFR GH LQIRUPDFLyQ GH DFXHUGR FRQ OD FDSWXUD GH SDQW FRQWLQXDFLyQ

EMPRESA DE ACUEDUCTO, ALCANTARILLADO Y ASEO DE YOPAL EICE - ESP

CARGUE DE INFORMACION.

PLAN DE CARGA DE INFORMACION DEL PERIODO | PLAN DE CARGA DE INFORMACION GENERAL | CREACION CARGUE APERIODICO

Plan de Carga de Información. Año 2024 Periodo Mensual (M) N° Periodo 5 VER

Ayuda	Fecha Inicial	Fecha Final	Tipo de Archivo	Periodo	Estado	Datos de envío	Formato no aplica	Archivos	Anexos	Certificar Consolidado	PDF	Fecha Certificación
	2024-06-01	2024-06-16	CARACTERÍSTICAS NO OBLIGATORIAS - RANGO 2, 3 Y 4	5 M 2024	Certificado							2024-07-17 09:49:54.0
	2024-06-01	2024-06-16	CALIDAD AGUA CARACTERISTICAS BASICAS - RANGO 3	5 M 2024	Certificado							2024-07-17 09:05:57.0
	2024-06-01	2024-06-16	CARACTERÍSTICAS ESPECIALES- RANGO 2, 3 Y 4	5 M 2024	Certificado							2024-07-17 09:36:04.0
	2024-06-01	2024-06-16	SUSPENSIONES SERVICIO DE ACUEDUCTO	5 M 2024	Certificado							2024-06-13 21:14:25.0

<1>

$FWXDOPHQWH VH WUDEDMD HQ OD DFWXDOL]DFLyQ \ HODERUDFLyQ GH DJXD SDUD GLOLJHQFLDPLHQWR GH IRUPDWRV FRQ XQLGDG GH WpFQLFR $GLFLRQDOPHQWH VH HVSHUDQ ORV UHVXOWDGRV GH ORV ILQDOHV GHO PHV GH MXQLR SDUD SRGHU FDUJDU OD LQIRUPDFLyQ DO

& 6(59,&,2 '($/&$17$5,//$'2

*(67,Ï1 '($&7,9,'$'(6 3$5$ /$ 23(5$&,Ï1 < 237,0,=$&,Ï1 '(/ 6(59,&,2 '($/&$17$5,//$'2 6$1,7$5,2

3URJUDPD GH RSHUDFLyQ \ PDQWHQLPLHQWR GHO VLVWHPD GH VDQLWDULR

6LQ LPSRUWDU OD WHPSRUDGD R HVWDFLyQ OD 8QLGDG GH $OFDQW SURJUDPD GH IUHFXHQFLD GLDULD GH RSHUDFLyQ \ PDQWHQLPLHQWR HQIRFiQGRVH HQ ODV]RQDV R VHFWRUHV TXH WLHQHQ DOFDQWDULO PD\RU GHWHULRUR \ SUHVHQFLD GH WDSRQDPLHQWRV H LQFUXVWDFL VHFWRUHV LGHQWLILFDGRV HQ OD]RQD FHQWUR \ ]RQDV GH LQIOXHQ \ FDOOHV \ /DV DFWLYLGDGHV TXH VH UHDOL]DQ VH PHQFLRQDQ

ACTIVIDADES PRINCIPALES DE MANTENIMIENTO Y OPERACIÓN REDES SANITARIAS YOPAL		
No	**ACTIVIDAD**	**MODALIDAD DE EJECUCIÓN**
1	Mantenimientos correctivos y preventivos Alcantarillado sanitario y PTAR de Yopal	Plan rutinario o atención de quejas y reclamos y se ejecutan de forma manual o mediante el uso del Equipo de Succión – Presión según determine el grado de complejidad del problema.
2	Reposición de tapas de pozos de inspección de Alcantarillado sanitario.	Periodicidad mensual de cambio de tapas basculantes en zonas identificadas de trafico constante.
3	Mantenimiento preventivo y correctivo de las Estaciones de Bombeo de Aguas residuales de Yopal.	Periodicidad mensual en coordinación con Unidad de Electromecánica. Se efectúan limpieza y cambio de equipos y accesorios electromecánicos.
4	Inspecciones de disponibilidad del servicio de Alcantarillado sanitario.	Plan rutinario en coordinación con la Unidad de catastro de la EAAAY con periodicidad diaria.

✓ 3URJUDPD GH 0DQWHQLPLHQWRV FRUUHFWLYRV \ SUHYHQWLYRV VDQLWDULR GH <RSDO

0HGLDQWH OD PRGDOLGDG GH SODQ UXWLQDULR VH HIHFWXy PDQWHQ /DYDGR LQWHUQR GH UHGHV D SUHVLyQ R LQVHUFLyQ GH VRQGDV P SUHVHQWDQ DOWD FROPDWDFLyQ H LQFUXVWDFLRQHV TXH KDQ JHQHU UHVDOWDU TXH ORV 3ODQHV 5XWLQDULRV GH PDQWHQLPLHQWR VH VX YHUDQR OLPSLDQGR GH LPSXUH]DV HO VLVWHPD GH DOFDQWDULOODGR OD JHQHUDFLyQ GH HPHUJHQFLDV VDQLWDULDV SRU UHERVHV RFDV LQYLHUQR WHPSRUDGD GRQGH ODV TXHMDV \ UHFODPRV GH ORV JHQHUDOPHQWH VRQ GHELGR D ODV VLJXLHQWHV FDXVDV TXH D FR RUGHQ SRUFHQWXDO

D 5HERVHV GHO VLVWHPD GH DOFDQWDULO O(DVWD SHQXYLDO 1XHVWD < RPSV FRP~Q FXDQGR VH SUHVHQWDQ IXHUWHV OOXYLDV HQ <RSDO VX VLVWHPD GH DOFDQWDULOODGR SOXYLDO GH <RSDO UHTXLHUH WUDVYHUVDOHV \ GH YHQWDQD HQ OD PD\RUtD GH ODV YtDV SUL FRPXQLGDG GH <RSDO VXHOH FRQIXQGLU ORV GRV VLVWHPDV G PDQLIHVWDU VX TXHMD D OD ($$$< SHQVDQGR TXH HO DOFDQWDULO FDUJR GH HVWD HQWLGDG +D\ TXH DFODUDU TXH SDUD HO FDVR G QR HV UHVSRQVDEOH GHO PDQWHQLPLHQWR RSHUDFLyQ \ H[SDQVL GH OD FLXGDG OD HQWLGDG FRPSHWHQWH HV OD 6(&5(7$5,$ '(,1

PXQLFLSLR GH <RSDO (Q HVWH FDVR OD ($$$< (,&((63 SURFHGH D ORV XVXDULRV D OD HQWLGDG FRPSHWHQWH VLQ HPEDUJR HQ ODV HUUDGDV HO DOFDQWDULOODGR VDQLWDULR HV DIHFWDGR SRU HO D LQWHUYHQLU ORV FROHFWRUHV VDQLWDULRV PHGLDQWH (TXLSR

E 5HERVHV GHO VLVWHPD GH DOFDQWDULOODGR VDQLWDULR GH <RSD GH JUDVDV(WWH WLSR GH UHERVHV VRQ IUHFXHQWHV HQ]RQDV HVSHF HVSHFLDO HQ ODV]RQDV FRPHUFLDOHV GRQGH VH FRQJORPHUDQ UI GH IULWXUDV \ FRPLGDV UiSLGDV TXH HQ OD PD\RUtD GH ORV FDVR GH WUDWDPLHQWR GH JUDVDV R QR OH KDFHQ HO GHELGR PDQWH HVWUXFWXUDV DOJR TXH SRU QRUPD GHEHQ HMHFXWDU DQWHV DOFDQWDULOODGR VDQLWDULR SRU WUDWDUVH GH XVXDULRV HVSH D KDFHU OLPSLH]D PHGLDQWH VRQGD GH LQVHUFLyQ PHFiQLFD FX HQ OD DFRPHWLGD GHO HVWDEOHFLPLHQWR R PHGLDQWH HO (TXLS HO WDSRQDPLHQWR HV RULJLQDGR HQ HO FROHFWRU SRU DFXPX SUREOHPD HV UHLQFLGHQWH KDFHPRV MRUQDGDV GH LQVSHFFLyQ FRQ OD VHFUHWDULD GH VDOXG D ORV HVWDEOHFLPLHQWRV FRP FXPSOHQ FRQ ORV UHTXLVLWRV VDQLWDULRV VL VH HQFXHQWUDQ GH 6DOXG 0XQLFLSDO RUGHQD HO FLHUUH GHO HVWDEOHFLPLHQ FRUUHFFLRQHV GHO FDVR

F 5HERVHV GHO VLVWHPD GH DOFDQWDULOODGR VDQLWDULR GH <RSD VROLGRV JUXHVRV(HVWH WLSR GH UHERVHV HV KDELWXDO HQ ODV]RQD HVSHFLDO HQ FRQMXQWRV FHUUDGRV VH SUHVHQWD DWDVFDPLHQ DFXPXODFLyQ GH VROLGRV JUXHVRV FRPR SDxLWRV K~PHGRV SU WUDSRV \ KHEUDV GH FDEHOOR (VWD HV XQD PDOD FXOWXUD GH O VH SUHWHQGH FRQWURODU PHGLDQWH FDPSDxDV LQIRUPDWLYD DOFDQWDULOODGR VDQLWDULR \ OD FRUUHFWD GLVSRVLFLyQ GH DWHQFLyQ GH HVWRV UHERVHV VH KDFH PHGLDQWH VRQGD GH LQV GH VXFFLyQ SUHVLyQ

(VWD DFWLYLGDG VH KDFH FRQ FXDGULOOD \ R FRQ HO (48,32 '(68 FRQWLQXDFLyQ VH HQXQFLDQ ODV]RQDV DWHQGLGDV HQ HO SHULRG

Tabla 47 Registro De Daños En Puntos Críticos Alcantarillado Sanitario De Yopal

Z '/^dZK	HK^ E WhEdK^ Z1d/ K^ > Ed Z/>> K ^ E/d	Z/K zKW >
•KE d E /ME	WZK > D d/	D dK K /Ed Zs E /ME
> Ed Z/>> K ^/DW>/&/ K /h >K^ s E KZ ^	Z }• • Pµ Œ •] µ oU ‰}Œ •}o] }• PŒµ •}• ‹>µ (š v o}•] u šŒ}• ‰ ‹µ y}•X	šµ Œ]v•‰]•v u vµ oX /v• Œ]•v µ Ç Z}š}•}v u v]
ZZ/K > KZK KZ	}o ‰•} šŒ u} }o š}Œ (oo ‰}Œ µu‰o]u}ovš}	Z ‰}•]v]P vŒ ••U u šŒ}• šµ Œ_ À] · îî_
ZZ Z îõ	Z }• • Pµ Œ •] µ oU]v ‹Œ À•š}]}W Œ•]•v u] vš Yh/WK PŒ • • Ç •]u vš}• }Œ]P]v ^h ‰ /MErWZ ^/ME /v• Œ]•v •š o]u] vš}• }u Œ] o • Z}š}•}v u v]	
>> ^ ðírðò EdZ íí ~ }uµv ñ•	(Z šór]•v o v o y} ^ } Ç >oÀ vš Œ W Œ •]•v u] vš Yh/WK ‰oµÀ] o ^h /MErWZ ^/ME	

3iJLQD GH

ZZ/K > DW/H ‹µ (š v o}•] u šŒ}• ‰ ‹µ y}•X	Z }• • Pµ Œ •] µ oU ‰}Œ •}o] }• PŒµ •}• šµ Œ_^h /MErWZ ^/ME	> Ã} µµÇ WŒ •]•v u] vš Yh/WK
^ dKZ <rîõ EdZ	Z }• • Pµ Œ •] µ oU]v Œµ•š]}v •U ríðPzŒîð• • Ç •]u vš}• }Œ]P]v }• ‰ •š o]u] vš}• }u Œ] o •	> Ã} WŒ •]•v u] vš Yh/WK ^h /MErWZ ^/ME
/Ed Z^ /ME >> ZZ Z îð	îðo ‰E} (oo ‰}Œ µu‰o]uÿovš}	šŒ u} }o š}Œ Z ‰}•]v]•PvŒ •íU u šŒ}• šµ Œ_ À] · îî_
Wd Z zKW >	>]u‰] Ì š v‹µ	^} Œ v vš • v }u }U o Pµv • o Z}• • } ‰Œ šŒ š u] vš}U }Æ]]•v Ç> Ã} u] vš Yh/WK ^µ]•v Ç ^h /MErWZ ^/ME

✓ 3URJUDPD GH 2SHUDFLyQ \ PDQWHQLPLHQWR ODV FLQFR (VW %RPEHR GH $JXDV UHVLGXDOHV GH <RSDO

(VWD ODERU HV GH DOWD LPSRUWDQFLD \D TXH VH EXVFD PLWLJDU \ SRU UHERVH GH DJXDV UHVLGXDOHV HQ ORV EDUULRV /D HVPHUDOG /XFLD &LXGDG %HUOtQ \ YLOOD 'YLG &DEH DFODUDU TXH D WRGDV VH OHV HIHFW~D PRQLWRUHR ORV VLHWH GtDV GH OD VHPDQD FRP HVWLSXODGRV D FRQWLQXDFLyQ

Tabla 48 Programación monitoreo estaciones de bombeo

'Ë$ '(/$ 6(0$1$	+25$,1,&,2	+25$),1$/	$&7,9,'$'	727$/ +25$6
/XQHV D YLHUQHV /DERUDO 'LXUQ	D P	S P	,QVSHFFLyQ RSHUDFLy	
/XQHV D YLHUQHV +RUDV ([WUDV QRFWXUQDV	D P	S P	HVWDFLRQHV GH ERPEHR GH DJXDV	
6iEDGRV 'RPLQJR \ +RUDV ([WUDV GL	D P S P	D P S P	UHVLGXDOHV /XFLD HVPHU	
6iEDGRV 'RPLQJR \ +RUDV ([WUDV QRF	IHVWLYRV P	S P	5DGRDO $PpULFDV &LXGDG %HUOtQ 9LOOD 'YLG FRQ PRWRFLFOHWD .,0)	

Tabla 49 Datos Técnicos Estaciones De Bombeo De Aguas Residuales De Yopal

'$726 7e&1,&26 (67$&,21(6 '(%20%(2 '($*8$6 5(6,'8$/(6 '(<23$/							
&$17 '(%20%$6	120%5((67$&,Ï1 '(%20%(2	327(1&,$ '(/$ %20%$ +3	&$8'$/ '(%20%(2 / V	',È0(752 '(,038/6,Ï1 3XOJ	/21*,78' '(,038/6,Ï1 P	92/7,26	%$55,26 $7(1','26
	(% 5$8'$/ $0e5,&$6						5DGRDO /DV $PpULFDV
	(% (60(5$/'$						/D (VPHUDOGD
	(% 9,//$ /8&,$						9LOOD /XFLD /ODQR 9DUJDV 7RUUHV GHO 6RO 7RUUHV GH :LULUt
	(% &,8'$' %(5/Ë1						&LXGDG %HUOtQ +HOLFRQLDV

'$726 7e&1,&26 (67$&,21(6 '(%20%(2 '($*8$6 5(6,'8$/(6 '(<23$/							
&$17 '(%20%$6	120%5((67$&,Ï1 '(%20%(2	327(1&,$ '(/$ %20%$ +3	&$8'$/ '(%20%(2 / V	',È0(752 '(,038/6,Ï1 3XOJ	/21*,78' '(,038/6,Ï1 P	92/7,26	%$55,26 $7(1','26
	(% 9,//$ '$9,'						9LOOD 'DYLG

*HVWLyQ GH SUR\HFWRV SDUD VX HMHFXFLyQ HQ HO DxR SD
HILFLHQFLDV RSHUDWLYDV GH ORV SURFHVRV XQLWDULRV GH WU
UHVLGXDOHV

$ FRQWLQXDFLyQ VH H[SRQHQ ORV SUR\HFWRV TXH HO VXVFULWR VRO
SRU SDUWH GH OD ($$$< (,&((63 FRQ HO SURSyVLWR GH PHMRUDU OI
ODV UHGHV GH DOFDQWDULOODGR VDQLWDULR

Tabla 50 Gestión de proyectos

WŒ}Ç š}ŸŒ]}	}Œš} ‰o Ì}	&µ vš &]v v]]•v	}•š} ‰Œ}Æ]u }	À v l K • ŒÀ]}v •
^µu]v]•šŒ} d ‰ • u š o] • • µo vš • v ZŸoŒŒd}D · ñïò }v oš Œ •]•š v] o }ŒŒ}•]•vU šŒ . } ‰ • }U] u šŒ} (ŸÀ} òìì uuU ‰] ŒP ‰µvšµ o ðìì <EU }v o}‹µ } • PµŒ] v µv vPµo} u Ç}Œ õì£X]u v•]}v • ~ ‰ ŒšµŒ o] ŸŒ oì uU Æš Œ]}Œ óôUñ u Ç oš µŒ íì u•U u Œ } } š}P}v oU ŸÀ•UPŒ µ •µ‰ Œ.Ÿ] •o]Ì vš U ‰ ŒšµŒ Z •š íîì£U u‰ ‹µŸo v}‰}o] oš v•]ŸrŒW]v}ŸÇ v À] Œ]}v •X	Z µŒ•}• WŒ}‰]}ó ìXíìì Xìì ìUìì	z • Œ]] Œ}v ðí š ‰ • • µo vš • ‰ oŸ•• ‹µ •]v•š o Œ v v i}Œv Œ ‰}•]]•v v ‰}Ì}•]v•‰]•v ‰}Œ À Œ_ } Œ} }X •š ‰Œ}Ç š} •š v •µ š ‰ o]‹µ]]•v
D vš v]u] vš} •‰] o]Ì } o ‹µ]‰} •µ]•v t ‰Œ •]•vZ µŒ•}• WŒ}‰]}ó ìXíìì Xìì ìUìì Yh d , ríì				o ‹µ]‰} •µ]•vr‰Œ •]•v o z • o Z ŒŒ u] vš ‰Œ]v]‰ o ‰ Œ o o]u‰] Ì Œ • • v]š Œ] • z}‰ oU Œ ‹µ] Œ u vš v]u] vš} •‰] o]Ì } }v (Œ µ v] µv ~í• À Ì o y} ‰ Œ À]š Œ (oo • PŒ À v •µ• •]•š u ÇŸ•šŒ µv o u vš v]u] vš} o • Œ •X •š ‰Œ}Ç š} šµ ou vš •š v ‰Œ} •} o }Œ]•v •šµ]}• ‰Œ À]}•X z • i µš• o Œ À]•]•v Ÿ‰ Œ] v Z ŒŒ u] vš • Ç •}Œ]}• u] ŒU ‰ Œ} Z Ç]v }vÀ v] vš • v o •]Pv]•v ‰Œ •µ‰µ •š} ‰}Œ ‰ Œš o K.]v &]v v] Œ X

' 3/17 '(75$7$0,(172 '($*8$6 5(6,'8$/(6

*(67,Ï1 '($&7,9,'$'(6 23(5$7,9$6 < '(0$17(1,0,(172 '(/ 6,67(0$
'(75$7$0,(172 '($*8$6 5(6,'8$/(6 '(<23$/

/D SODQWD DFWXDOPHQWH SXHGH WUDWDU HQ VX WRWDOLGDG ODV D
HQ OD]RQD XUEDQD GHO PXQLFLSLR GH <RSDO HO FXDO HQ FRQGLF
DOUHGHGRU GH ORV /36 QR REVWDQWH UHFLHQWHPHQWH KHPR
FDXGDO GH DJXD UHVLGXDO GH LQJUHVR D OD 37$5 D QLYHOHV TXH V
GH WUDWDPLHQWR GH OD 37$5 GH <RSDO /36 HQ KRUDULRV FRQ F
\ SP $ FRQWLQXDFLyQ QRV SHUPLWLPRV LQIRUPDUOH VREUH ORV
WpFQLFRV SUHVHQWDGRV HQ OD 3ODQWD GH 7UDWDPLHQWR GH $JXDV

D 75$7$0,(172 35(/,0,1$5

$9$1&(6

6H YLHQH DGHODQWDQGR OD OLPSLH]D \ UHWLUR SHULyGLFR GH ORV
\ DFHLWHV HQ HO FULEDGR \ GHVDUHQDGRUHV PHGLDQWH HO HTX
PHMRUDQGR DVt HO DSHFWR YLVXDO \ HYLWDQGR HO IOXMR GH JUD
WUDWDPLHQWR ELROyJLFR

$ ILQDOHV GHO PHV GH MXQLR PHGLDQWH PDTXLQDULD DPDULOOD V
IRQGR GH ORV GRV GHVDUHQDGRUHV SDUD UHFXSHUDU YROXPHC
GHVDUHQDFLyQ 'H LJXDO PDQHUD VH UHSDUy HO VLVWHPD DXWROLP
PHFiQLFDV HQ VXV URGDPLHQWRV \D VH HQFXHQWUD HQ QRUPDO IXQ

,1&219(1,(17(6

1,1*812

E /$*81$6 '(2;,'$&,Ï1

$9$1&(6

$FWXDOPHQWH ODV ODJXQDV GH R[LGDFLyQ FRQWLQ~DQ SUHVHQ
FROPDWDFLyQ HQ HVSHFLDO ODV ODJXQDV IDFXOWDWLYDV GHELGR
YHQLGR UHIRU]DGR OD DSOLFDFLyQ GHO SURFHVR GH %LRUUHPHGLDF
GHO YHUWLPLHQWR (Q HVWXGLRV UHDOL]DGRV HQ HO PHV GH DEULO
1$7,21$/ 7(&+12/2*,(6 VH GHWHUPLQy TXH OD SULQFLSDO FDXVD GH
HVSHFLDO GHO SDUiPHWUR GH '42 SRU HQFLPD GH ORV OtPLWHV SH
HV SUHFLVDPHQWH ORV SURFHVRV ELRTXtPLFRV TXH VH RFDV
IDFXOWDWLYDV GDGR HO H[FHVR GH ORGR 'H DFXHUGR FRQ HVWH UH
DSOLFDFLyQ GH ELRUUHPHGLDFLyQ SDUD QHXWUDOL]DU ORV ORGRV
SURJUHVLYDPHQWH GH IRUPD ELROyJLFD VLQ JHQHUDU LPSDFWRV QHJ
GHO VHFWRU

3DUD HO DxR OD ($$$< (,&((63 FRQWUDWy HO SURFHVR GH 3
0(',$17(/$ 5('8&&,Ï1 (6&$/21$'$ '(&$5*$6 25*È1,&$6 35(6(17(6 (1 (/
9(57,0,(172 '($*8$6 5(6,'8$/(6 '20(67,&$6 '(/ &$6&2 85%$12 '(/
081,&,3,2 '(<23$/ '(3$57$0(172 '(&$6$1$5(87,/,=$1'2 6,67(0$
(675$7e*,&2 '($3/,&$&,Ï1 '(0,&5225*$1,6026 %(1e),&26 (1 /26 352&(626
81,7$5,26 '(75$7$0,(172´ PHGLDQWH FRQWUDWR GH SUHVWDFLyQ

GHO GH IHEUHUR GH &RQ HVWH SURFHVR VH KD VLJQLILFDWLYDPHQWH

- ✓ 1LYHOHV GH '%2 \ '42 HQ HO YHUWLPLHQWR
- ✓ 7UDVIRUPDFLyQ GH VROLGRV RUJiQLFRV SUHVHQWHV HQ ODV &2 \ +2 (VWH SURFHVR HV OHQWR SRU UDOHQWL]D OD FR ODJXQDV
- ✓ 5HGXFFLyQ GH 2ORUHV RIHQVLYRV \ YHFWRUHV
- ✓ 0HMRUDPLHQWR GH OD HILFLHQFLD GH ORV ILOWURV SUFRO ELRSHOtFXOD GHJUDGDGRUD GH PDWHULD RUJiQLFD \ DXPHQ HQ HO DJXD

$GLFLRQDOPHQWH FRQ OD DSHUWtD GH OD HPSUHVD FRQWUDWLVWD VH LMPOHPHQWy XQ SLORWR GH LQ\HFFLyQ PHFiQLFD GH R[tJHQR HQ SDUD DXPHQWDU HO R[tJHQR GLVXHOWR HQ GIKD ODJXQD \ IRUWDO PHGLDQWH PLFURRUJDQLVPRV DHURELRV /RV UHVXOWDGRV GH ORV VLPSOHV GH &RUSRULQRTXLD KDQ VDOLGR VDWLVIDFWRULRV HQ OR QRUPDWLYR $ FRQWLQXDFLyQ VH PXHVWUDQ ODV HYLGHQFLDV

DEMANDA BIOQUÍMICA DE OXIGENO (DBO) AÑO 2024

Fecha de Muestreo	DBO (mg/l) Entrada	DBO (mg/l) Salida	Valor Máximo Permisible	%Eficiencia	Tipo de monitoreo	Laboratorio
12-ene-24	312,40	139,10	90	55,5	SIMPLE	LAB-EAAAY
02-feb-24	275,30	128,70	90	53,3	SIMPLE	LAB-EAAAY
15-mar-24	373,00	116,30	90	68,8	SIMPLE	LAB-EAAAY
02-abr-24	210,58	61,88	90	70,6	COMPUESTO	LAB-CORPORINOQUIA
08-abr-24	217,00	54,90	90	74,7	SIMPLE	LAB-AQUALIM
26-abr-24	301,09	90,50	90	69,9	SIMPLE	LAB-EAAAY
26-abr-24	201,52	71,66	90	64,4	SIMPLE	LAB-CORPORINOQUIA
26-abr-24	201,52	21,16	90	89,5	SIMPLE	LAB-CORPORINOQUIA
24-may-24	NR	31,40	90	NR	COMPUESTO	LAB-AQUALIM

OBSERVACIONES

El proceso de aplicación inició el 28 de febrero del 2024, se puede apreciar la regulación de los niveles del parámetro ajustándose por debajo de los limites permisibles. El 26 de abril CORPORINOQUIA hizo medición en el vertimiento y a 100 metros aguas abajo del vertimiento; nótese que aguas abajo del vertimiento, el proceso de Biorremediación sigue haciendo efecto positivo en la depuración de la DBO y la DQO.

ALERTA: Desde el 13 de junio de 2024 no se está aplicando Biorremediación en la PTAR y no se ha permitido continuidad por razones que esta unidad desconoce, lo que puede llevar a una disminución en la calidad del vertimiento.

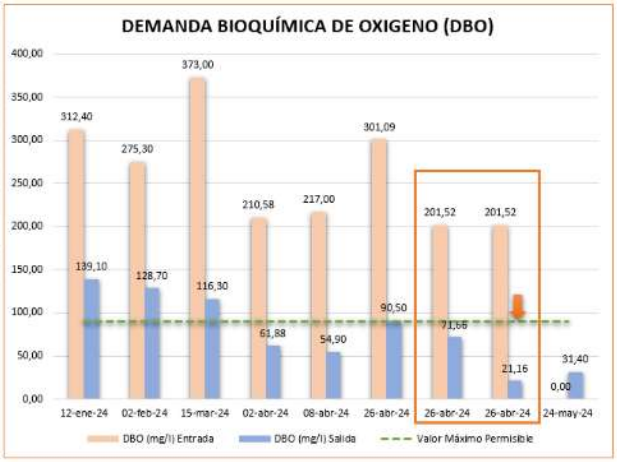

Ilustración 46 Demanda Bioquímica de Oxigeno (mg/L O2) año 2024

DEMANDA QUÍMICA DE OXIGENO (DQO) AÑO 2024						
Fecha de Muestreo	DQO (mg/l) Entrada	DQO (mg/l) Salida	Valor Máximo Permisible	%Eficiencia	Tipo de monitoreo	Laboratorio
12-ene-24	615,00	208,00	180	66,2	SIMPLE	LAB-EAAAY
02-feb-24	528,00	180,00	180	65,9	SIMPLE	LAB-EAAAY
15-mar-24	704,00	220,00	180	68,8	SIMPLE	LAB-EAAAY
22-mar-24	832,00	163,00	180	80,4	SIMPLE	LAB-EAAAY
02-abr-24	557,15	130,64	180	76,6	COMPUESTO	LAB-CORPORINOQUIA
08-abr-24	619,00	157,00	180	74,6	SIMPLE	LAB-AQUALIM
26-abr-24	464,00	147,00	180	68,3	SIMPLE	LAB-EAAAY
26-abr-24	466,80	168,48	180	63,9	SIMPLE	LAB-CORPORINOQUIA
26-abr-24	466,80	57,52	180	87,7	SIMPLE	LAB-CORPORINOQUIA
24-may-24	NR	65,90	180	NR	COMPUESTO	LAB-AQUALIM

OBSERVACIONES

El proceso de aplicación inició el 28 de febrero del 2024, se puede apreciar la regulación de los niveles del parámetro ajustándose por debajo de los limites permisibles. El 26 de abril CORPORINOQUIA hizo medición en el vertimiento y a 100 metros aguas abajo del vertimiento; nótese que aguas abajo del vertimiento, el proceso de Biorremediación sigue haciendo efecto positivo en la depuración de la DBO y la DQO.

ALERTA: Desde el 13 de junio de 2024 no se está aplicando Biorremediación en la PTAR y no se ha permitido continuidad por razones que esta unidad desconoce, lo que puede llevar a una disminución en la calidad del vertimiento.

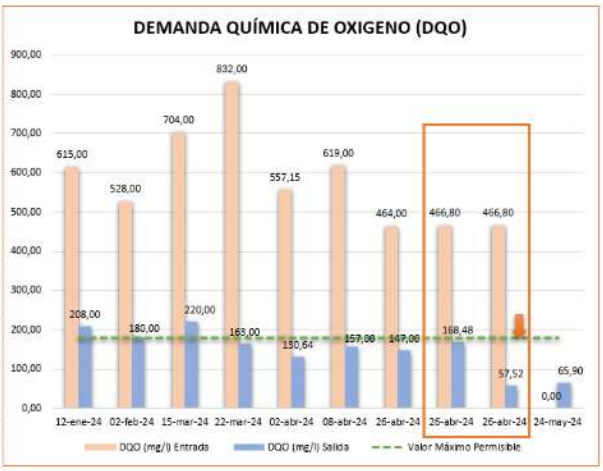

Ilustración 47 Demanda Química de Oxigeno (mg/L O2) año 2024

3DUD HO FDVR GHO 2[tJHQR GLVXHOWR 2' HQ HO DJXD GHSXUDGD HO GH DJXDV UHVLGXDOHV GH <RSDO 37$5 SRGHPRV REVHUYDU HQ OD SURFHVR GH %LRUUHPHGLDFLyQ IDYRUHFH VX LQFUHPHQWR SRU HQFL XQ DSHFWR WpFQLFR SRVLWLYR \D TXH PLQLPL]D HO LPSDFWR DPEL UHFHSWRUD

OXIGENO DISUELTO (OD) AÑO 2024						
Fecha de Muestreo	OD (mg/l) Entrada	OD (mg/l) Salida	Valor mínimo en vertimiento	%Eficiencia	Tipo de monitoreo	Laboratorio
12-ene-24	0,24	0,73	2,00	67,1	SIMPLE	LAB-EAAAY
02-feb-24	1,03	2,01	2,00	48,8	SIMPLE	LAB-EAAAY
15-mar-24	1,19	7,47	2,00	84,1	SIMPLE	LAB-EAAAY
22-mar-24	2,85	5,12	2,00	44,3	SIMPLE	LAB-EAAAY
02-abr-24	0,20	4,22	2,00	95,3	COMPUESTO	LAB-CORPORINOQUIA
26-abr-24	0,76	5,08	2,00	85,0	SIMPLE	LAB-CORPORINOQUIA
26-abr-24	0,20	5,18	2,00	96,1	SIMPLE	LAB-CORPORINOQUIA
PROMEDIO	**0,92**	**4,26**	-	**74,4**		

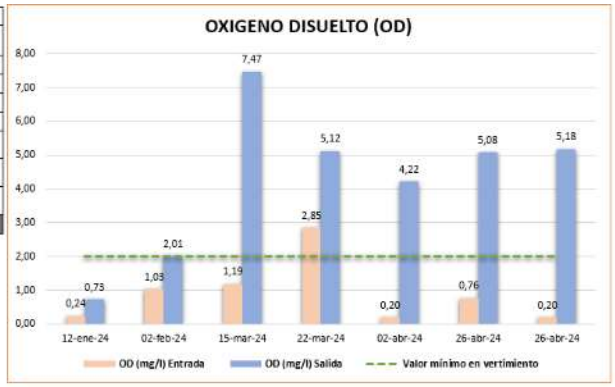

Ilustración 48 Oxígeno Disuelto (mg/L) año 2024

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$ ODUJR SOD]R HV QHFHVDULR UHDOL]DU OD ([WUDFFLyQ GH H[FHVRV GH O PHGLDQWH PpWRGRV QR LQYDVLYRV SRU EDOVDV GH VXFFLyQ \ SURFHVRV GH VLVWHPD HVWi RSHUDQGR FHUFD GH VX Pi[LPD FDSDFLGDG \ VH UHTXLHUH PHULRGRV PiV GH GtDV ORV SURFHVRV XQLWDULRV GH WUDWDPLHQWR

F),/7526 3(5&2/$'25(6

$9$1&(6

(O VLVWHPD GH ERPEHR GH ORV ILOWURV SHUFRODGRUHV HVWi VL
FRQWUDWR GH VXPLQLVWUR 1R GHO GH GLFLHPEUH G
VH EXVFD DXPHQWDU FDSDFLGDG GH ERPEHR D ODV FXDWUR XQLGDG
GHO VLVWHPD GH FRQWURO $GLFLRQDOPHQWH VH HVWi UHDOL]DQG
OD RSWLPL]DFLyQ \ SXHVWD HQ PDUFKD GHO ILOWUR 1R HO FXDO V
SRU GDxR JUDYH HQ VX VLVWHPD GH URWDFLyQ \ DVSHUVLyQ VH H
FRQWUDWDFLyQ ILQDOLFH HQ HO PHV GH PD\R GHO DxR HQ FXUVR

<u>,1&219(1,(17(6</u>

(O GDxR GHO ILOWUR SHUFRODGRU 1R KD JHQHUDGR TXH RSHUDW
WUDWDPLHQWR HQ HO VLVWHPD GH ILOWUDFLyQ VH UHGX]FD XQ D
HQ OD HMHFXFLyQ GHO SURFHVR GH FRQWUDWDFLyQ SDUD OD UHDGH
OHQWD GHELGR D TXH HO GDxR HQ VX VLVWHPD GH URWDFLyQ \ DVSHU
GHVDUPiQGROR FRPSOHWDPHQWH HVWD DFWLYLGDG HV FRPSOHMD
DFWXDOPHQWH VH HVWi SURFHGLHQGR D FDOFXODU ORV FRVWRV XQL
WRWDO GHO SUR\HFWR

G &803/,0,(172 '(&$/,'$' '(/ 9(57,0,(172

'HVGH HO DxR OD 37$5 GH <RSDO KD JHQHUDGR UHPRFLRQHV GH
PX\ EXHQD DYHJDQGR D FXPSOLU OD QRUPD GH YHUWLPLHQWRV HQ OD
PRQLWRUHRV GH FDOLGDG GH DJUDFLDV D OD DSOLFDFLyQ GHO SUR
%LRUUHPHGLDFLyQ FRPR VH PXHVWUD HQ ODV JUiILFDV GHO QXP
GRFXPHQWR 5HFLHQWHPHQWH &2563(5,1248,$ HIHFWXy PRQLWRUHRV FRPSXHVW
VLPSOHV GH FDOLGDG GHO YHUWLPLHQWR SDUD HVWH DxR ORV
VDWLVIDFWRULRV DILUPDQGR OD FRQWLQXLGDG HQ HO FXPSOLPLH
YHUWLPLHQWR GH OD 5HVROXFLyQ GH HVWR DILUPD OD FDOLG
RSHUDWLYR GH OD 37$5 GH <RSDO

<u>,1&219(1,(17(6</u>

'HVGH HO GH MXQLR GH QR VH HVWi DSOLFDQGR %LRUUHPHGLD
KD UHQRYDGR HO FRQWUDWR OR TXH SXHGH OOHYDU D XQD GLVF
YHUWLPLHQWR 6H UHTXLHUH GDUOH FRQWLQXLGDG DO SURFHVR
UHDGHFXDFLyQ GHO HPLVDULR ILQDO 5LR &KDUWH SDUD SRWHQFLDOO

*HVWLyQ GH SUR\HFWRV SDUD VX HMHFXFLyQ HQ DxR SDUD
HILFLHQFLDV RSHUDWLYDV GH ORV SURFHVRV XQLWDULRV GH WU
UHVLGXDOHV

$ FRQWLQXDFLyQ VH H[SRQHQ ORV SUR\HFWRV TXH HO VXVFULWR VRO
SRU SDUWH GH OD ($$$< (,&((63 FRQ HO SURSyVLWR GH PHMRUDU OI
SURFHVRV XQLWDULRV GH HO WUDWDPLHQWR GH OL[LYLDGRV HQ HO
FRQWURO D FRUWR SOD]R GHO LPSDFWR DPELHQWDO QHJDWLYR GH O
IDFXOWDWLYDV

WŒ}Ç š} Çl} š]Á	}Œš} ‰o ì}	&µ vš &]v v]]•	}•š} ‰Œ}Æ]	À v l K • ŒÀ]}v •
D vš v]u] vš} o šŒ}u &]ošŒ}• W Œ }o }Œ •	v}y}	Z µŒ•}• WŒ}‰]}•	¨ íîñXìîìXìîìUìì	•š ‰Œ}Ç š} Ç •š v •µ š 9 i µ]•vX
]}ŒŒu]]•v D] Z µ]•v • o}v KŒP v] • WŒ • vš • s Œš]u] vš} Pµ • }u •š] • z}‰ o hš]o]ì v } ^]•š u •šŒ š P] } D] Œ}}ŒP v]•u}• o}• WŒ} •}• hv]š dŒ š u] vš}	vš yo ŒP • v o Z •] µ o • ‰o]]•v v (] }• v	Z µŒ•}• WŒ}‰]}•	¨ñìUšôl‰Œ}Ç š} • i µ]•v } o]P š}Œ] vµ o Ç •š]vu Œ•} v o Wo v vµ o ‹µ]•]]}v • ~W •X >}• }•š}• •š ‰Œ}Ç š} Ç •š v Z Œ] }• v o š Œ](o vš Œ]oo } • o u • • ‰š] u Œ o y} îìîï ‰Œ š vš} µ vš }v o}• Œ µŒ•}• ‰Œ}‰]}• ‰ Œ •µ i µ]•vX

*HVWLyQ GH SUR\HFWRV SDUD VX HMHFXFLyQ D PHGLDQR \ ODU RSWLPL]DU HILFLHQFLDV RSHUDWLYDV GH ORV SURFHVRV XQLWDU GH DJXDV UHVLGXDOHV

D š	WŒ}Ç š} Çl}	/vÀ Œ• vµ o	&µ vš &]v v]	}•š} ‰Œ}Æ]	À v l K • ŒÀ]}v •
K‰š]u]ì o (]] v] K‰ Œ šµ o WŒ} •} dŒ š u] vš} Pµ • Œ •] µ o • z}‰ o	]•ÆšŒ]•v (µoš š]À • o	o} }• o Pµv •	'} Œv]•v • v Œ t Yh dK K^ KdZK	vš Œ ¨ ñìì} D/>>KE ^ ¨îòìì D/>>KE ^ ~o À o}Œ ‰ v o}• o v •‰ _(] }• ‰Œ}Ç š}•	> u‰Œ • ‰ Œš u vš o ^ ŒÀ]]}• ‰· o] }• o • v Œ Yh dK K^ o vš• µv ‰Œ}Ç š} ‹µ (µ Œ] } v o ' Œv]•v • v Œ }v Z] } E} îìîïìõìõròîîóñ ‰ Œ i µ]•v }v Œ µŒ•}•]•‰}v] o • Z P o_ •U šµ ou vš }vš]vµ v À oµ]•v ‰}Œ o W Zd D EdK D/E/^dZ d/sK W> E /ME o 'K ZE /ME ^ E Z ‰ Œ] vš](] Œ oš Œv š]À u • }‰š]u µ Œ } }v]•‰}v]]o] Œ µŒ•}• Ç Œ ‹µ Œ]u] vš}• š v]]•X > • }• o ‰ v šŒv š]À • µ• v o Œ µ‰ Œ]•v •o ‰] šŒ š u] vš} Ç o u l}Œ u] vš} o o] o À Œš]u] vš}X
	D vš v]u] vš} ^]•š u šŒ š u] vš} šŒ š u] vš}	‰Œ o]u]v Œ	Z µŒ•}• WŒ}‰]}•	¨ îîXìîìXìîìUìì	o ‰ • } îî u Œì} îìîð • vÀ]• }uµv]]•v }(]] o }v• µš]À} E} ôðíXíòXìíXìñññîòXîð o W Zd D EdK D/E/^dZ d/sK W> E /ME o 'K ZE /ME ^ E Z U •}o]]š v }]v(}Œu]•v •} Œ o •š } o ‰Œ}Ç š}U •š u}• •‰ Œ v } o Œ •‰µ •š X •š ‰Œ}Ç š} • i µ]•v } o]P š}Œ] vµ o Ç •š]vu Œ•} v o Wo v vµ o ‹µ]•]]}v • ~W •X • v • Œ]} ‰ Œ u vš v Œ o (µv]}v u] vš} îðló o •]•š u µš}o]u‰] vš Ç Œ] } o Wd ZX

(352&(626 7e&1,&26 < '(0$17(1,0,(172

Tabla 51 Actividades De Mantenimiento Realizados Por La Unidad Procesos Técnicos – Mayo – Junio 2024

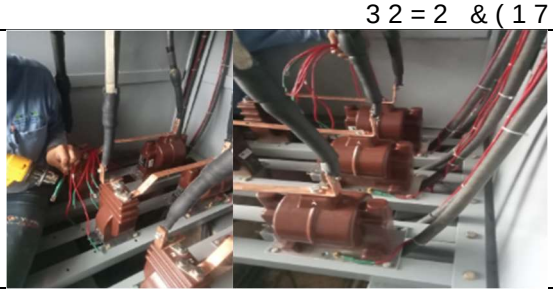
$&7,9,'$' (-(&87$'$	0D\R	MXQLR
0$17(1,0,(172 35(9(17,92 < &255(&7,92 ' $&21',&,21$'26		
0$17(1,0,(172 35(9(17,92 < &255(&7,92 '((48,32 < 0$	48,1$5,$	
358(%$ $,6/$0,(172 02725(6		
021,725(26 32=26		
0$17(1,0,(172 35(9(17,92 < &255(&7,92 '(5(&83(5 $&20(7,'$6		
0$17(1,0,(172 35(9(17,92 < &255(&7,92 '(/80,1 $/80%5$'2 3(5,0(75$/		
021,725(26 5(6,'8$/		
0$17(1,0,(1726 352*5$0$'26 35(9(17,926 < &255(&0$48,1$5,$ < (48,326 '(&21752/ (,167580(17$&,Ï1 (/(&7520(&È1,&2 (/e&75,&2 (/(&75Ï1,&2 0(&È1,&2 +,'5È8/,&2		
727$/ $&7,9,'$'(6 (-(&87$'$6 325 /$ 81,'$' 352&(626 7e&1,&26		

7,32 '(0$17(1,0,(172 0$17(1,0,(1726 5($/,=$'26 3/17 '(),1,7,9$

68%(67$&,Ï1 812 .9$ .9 3/17 '(),1,7,9$	
	0DQWHQLPLHQWR SUHYHQWLYR VXEHV NYD XQR NY SODQWD GHILQLWL GHVKLHUEH \ IXPLJDFLy
0$17(1,0,(172 35(9(17,92 68%(67$&,Ï1 '26 .9$ .9	
	6H UHDOL]D PDQWHQLPLHQWR SUHYHQW WDEOHURV GH FRQWURO WUDQVIHU SRWHQFLD GH VXEHVWDFLyQ GRV

0$17(1,0,(172 5(/$7,=$'26 3/$17$ $/7(51$ < &21&,/,$'$ 32=26 '(%$-$ <
*5$1 352'8&&,Ï1 (%$5 37$5 6('(35,1&,3$/ 5(//(12 6$1,7$5,2 0$&21'2 <
&$6&$-$5

37$5	
	6H UHDOL]D PRQWDMH GH WDEOHUR GH F SRWHQFLD GH HOHFWURERPEDV GH K ILOWURV SHUFRODGRUHV

32=2 &(175$/ '($%$6726	
	6H UHDOL]y PDQWHQLPLHQWR FRUUH SUHPROGHDGRV WF \ WS GH FHOGD PHGLGD GH SR]R FHQWUDO GH DEDVWRV

) 3/$1(6 '(&217,1*(1&,$

7HQLHQGR HQ 'F&5(QWD HO GH ***3.1.1. Componente de preparación para la respuesta a emergencia*** GRQGH HV HO FRQMXQWR GH DFFLRQHV SULQFLSDOPH GH DOHUWD FDSDFLWDFLyQ HTXLSDPLHQWR FHQWURV GH UHVHUYD RSWLPL]DU OD HMHFXFLyQ GH OD UHVSXHVWD /D HIHFWLYLGDG GH O GH SUHSDUDFLyQ TXH VH LPSOHPHQWHQ

&RPSRQHQWH GH HMHFXFLyQ SDUD OD UHVSXHVWD D HPHUJHQFL

3URWRFRORV \ SURFHGLPLHQWRV SDUD HO PDQHMR GH OD UHVSXHVWD

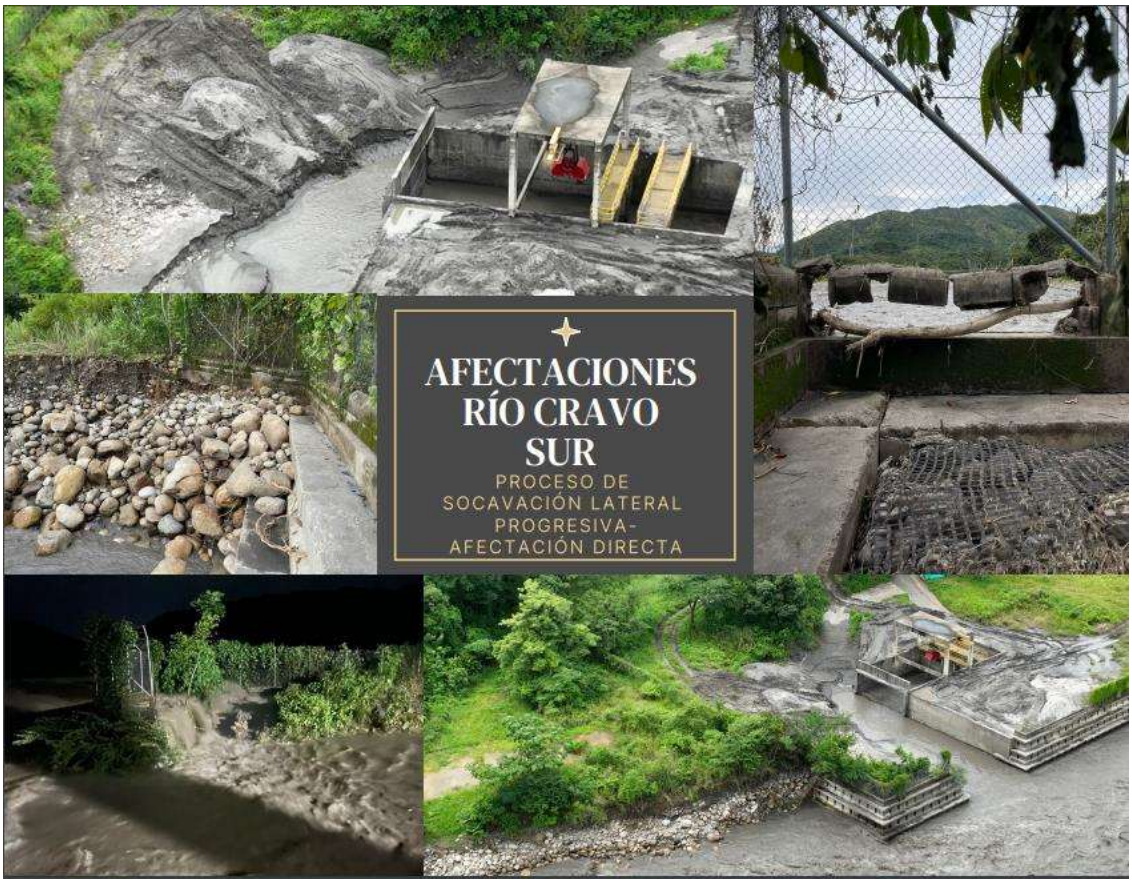
(O FRQRFLPLHQWR GHO ULHVJR GH GHVDVWUHV SDUD WRPDU PHGLGD GH UHGXFFLyQ GHO ULHVJR \ IRUWDOHFHU HO SURFHVR GH PDQHMR GH ODV LQVSHFFLRQHV TXH VH UHDOL]DQ D ORV GHUHFKRV GH YtD GRQG VLVWHPD GH DFXHGXFWR GiQGRVH SULRULGDG D ORV SXQWRV GH OD LQIUDHVWUXFWXUD FRPR VRQ ORV 3$626 (//(9$'26 HQ HVSHFLDO D OR GH VRFDYDFLyQ ODWHUDO GHVGH OD ERFDWRPD GHO UtR &UDYR VXU TXH FRQOOHYR D OD GHFODUDFLyQ GH OD &$/$0,'$' 3Ò%/,&$ GH DFXH HPLWLGR SRU OD DOFDOGtD 0XQLFLSDO SDUD DERUGDU HVWH

LPSDFWR FRQ ODV FUHFLHQWHV V~ELWDV R DYHQLGDV WRUUHQFLDOHV GH PiV OOXYLD TXH VH SXHGH SUHVHQWDU HQ HVWH DxR

(Q HVWH FRPSRQHQWH GH HMHFXFLyQ SDUD OD UHVSXHVWD VH HQ UHVSHFWR D ODV DIHFWDFLRQHV SUHVHQWDGDV GHVGH HO SDVR HOH 5tR &UDYR 6XU FRQ ORV VLJXLHQWHV LQIRUPHV

,QIRUPH 1ƒ GHO GH PD\R GH 2%-(72 35(6(17$5 ,1)250(325 $)(&7$&,Ï1 '(/$ &217,18,'$' 325 &5(&,(17(6 6Ò%,7$6 '(/ 5,2 &5$92 685 6,67(0$ '(75$7$0,(172 '($*8$ 327$%/('(/ 081,&,3,2 '(<23$/ '(6'((/ 3$62 (/(9$'2 (/ 9,(-2 $ /$ %2&720

,QIRUPH 1ƒ GH MXQLR GH 2%-(72 35(6(17$5 ,1)250(325 $)(&7$&,Ï1 ',5(&7$ 325 &5(&,(17(6 6Ò%,7$6 '(/ 5,2 &5$92 685 $ /$6 ,167$/$&,21(6 '(/ 6,67(0$ '(75$7$0,(172 '($*8$ 327$%/('(/ 081,&,3,2 '(<23$/ '(6'((/ 3$62 (/(9$'2 (/ 9,(-2 $ /$ %2&720 /$7(5$/



3iJLQD GH

&RPSRQHQWH GH SUHSDUDFLyQ SDUD OD UHVSXHVWD D HPHUJHQ

H (TXLSR GH UHVSXHVWD GHO SODQ GH HPHUJHQFLD \ FRQWLQJHQFLD

9DORUDFLyQ GHO ULHVJR

F (TXLSDPLHQWR RHQWLGDG UHODFLRQDGD FRPR UHVSRQVDEOH GH DS
SUHVHQWH FDStWXOR GHEH FRQWDU FRQ KHUUDPLHQWDV HTXLSRV
WHPSUDQD GH VXV SURSLRV SURFHVRV SDUD JDUDQWL]DU GH PDQ
UHVSXHVWD SDUD HVWR VH UHDOL]y LQVSHFFLyQ GH HTXLSRV FRPS
H[WLQWRUHV

$QiOLVLV GHO UHVJR VH HQFXHVWH HQ OD GHWHUPLQDFLyQ GH FRQ
SUREDELOLGDGHV GHO ULHVJR SHUPLWLHQGR VX UHFRQRFLPLHQWR
ODV DPHQD]DV ORV HOHPHQWRV H[SXHVWRV \ HO ULHVJR

&RQ DIHFWDFLRQHV FRQVLGHUDGDV D OR ODUJR GH OD LQIUDHVWUX
FRPR HV OD ERFDWRPD OtQHD GH DGXFFLyQ 37$3 'HILQLWLYD DSU

DIHFWDFLyQ GH P GH ORV FXDOHV VROR VH HQFXHQWUD HQ SURV
\ GH HVWRV P VH HQFXHQWUDQ DIHFWDGRV DOUHGHGRU GH
LQIUDHVWUXFWXUD FRPR VH REVHUYD HQ ORV UHJLVWURV DQWHULRU
FRQ QLQJ~Q WLSR GH SURWHFFLyQ GHVGH OD ERFDWRPD KDVWD HO
LPSOLFDUtD TXH HO UtR &UDYR VXU FRQ VXV FRQGLFLRQHV GH YHOR
SXHGD LQJUHVDU SRU XQ FRVWDGR GH OD LQIUDHVWUXFWXUD GH O
HVWD HVWUXFWXUD SXHGD TXHGDU DLVODGD \ FRQ DIHFWDFLRQHV GH
HQ &0*5' &RQVHMR 0XQLFLSDO SDUD OD *HVWLyQ GH 5LHVJRV \ 'HVD

$KRUD ELHQ PDQLIHVWDPRV QXHVWUD SUHRFXSDFLyQ WDO FRPR VH K
, 6HVLyQ 2UGLQDULD 3UHVHQFLDO GHO &RQVHMR GH JHVWLyQ GHO U
DxR HQ HO GHVDUUROOR GHO RUGHQ GHO GtD HQ HO SXQWR
HMHFXFLyQ GHO SODQ GH DFFLyQ HVSHFtILFR DSUREDGR SRU HO &
GHFODUDWRULD GH FDODPLGDG S~EOLFD PDQLIHVWDPRV ODV SUHF
VHFWRU (O 9LHMR KDVWD OD ERFDWRPD GHO VLVWHPD GH WUDWDPLH
QR VH KD UHDOL]DGR QLQJ~Q WLSR GH SURWHFFLyQ HO FXDO IXH UH
ODV FRQGLFLRQHV FOLPiWLFDV GHO PHV GH MXQLR OD LQIUDHVWUXF

(O GtDGH MXQLR GHVH SUHVHQWD XQD FUHFLHQWH V~ELWD GRQ
HQ ODV LQVWDODFLRQHV GH OD ERFDWRPD DIHFWDFLyQ FRPR S
GH VRSRUWH GH ORV SROHGURV TXH KDFHQ SDUWH GH OD SU
HQFXHQWUD HQ OD SDUWH IURQWDO WDO FRPR VH REVHUYD
IRWRJUiILFR

Ilustración 49 Rio Cravo Sur - Captación

/RV QLYHOHV IXHURQ DOWRV WDO FRPR VH UHJLVWUy SRU SDUWH GH

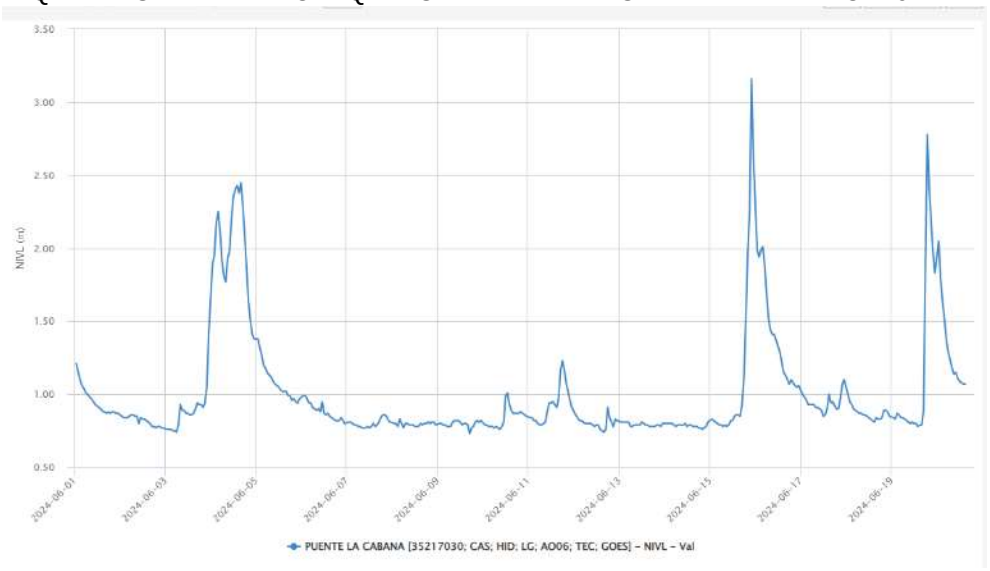


Ilustración 50 Impacto directo y de frente del cauce del río Cravo sur a la infraestructura.

,PSOLFDQGR FRQ HOOR TXH OD IXHU]D \ OD YHORFLGDG GHO UtR F
LQIUDHVWUXFWXUD \D TXH FRQ OD GLQiPLFD GHO UtR TXH HVWH VH
GH MXQLR GH DUUDVWUDED FRQVLJR SLHGUD GH JUDQ WDPDxR
OOHJDURQ D FKRFDU FRQ OD LQIUDHVWUXFWXUD \ D REVHUYDUVH S
TXHGDU H[SXHVWD HO FHUUDPLHQWR \ UXSWXUD GHO PLVPR FHUUDPL

'DxR (VWUXFWXUDO
(URVLyQ GH OD EDVH GHO FHUUDPLHQWR \D TXH HO IOXMR GH DJ
LQIUDHVWUXFWXUD \ DGHPiV OD YHORFLGDG GHO UtR \ GH PDQHUD F

EDVH GH OD LQIUDHVWUXFWXUD GHELOLWiQGROD \ HYHQWXDOPHQW
GHO FHUUDPLHQWR

Ilustración 51 Cerramiento PTAP definitiva

0RQLWRUHR UL(GHVJRQLWRUHR GHO ULHVJR FRQFHU HO FRPSRUW
GH ODV VXV DPHQD]DV \ YXOQHUDELOLGDGHV ODV FXDOHV SXHGHQ F
UHDOLPHQWDU SURFHVR GH FRQFLPLHQWR SDUD HOOR VH KDFH LQ
SXQWRV FUtWLFRV TXH GXUDQWH HVWRV GRV PHVHV VH KDQ SUHVHQ

3iJLQD GH

&RPSRQHQWH GH HMHFXFLyQ SDUD OD UHVSXHVWD (WWD HPHU
FRPSRQHQWH GHILQH HO PDUFR GH DFWXDFLyQ GH OD HQWLGDG SDU
HYHQWRV DGYHUVRV TXH VH SXHGDQ SUHVHQWDU

&RPR ORV SUHVHQWDGRV HQ HVWRV GRV PHVHV

+81',0,(172 '(/$ &$//(352'8&72 '($)(&7$&,Ï1 '(/$ 78%(5,$ '(
$/&$17$5,//$'2 '(´ '($*8$ 5(6,'8$/
&2/$362 '(/$ 78%(5,$ '(´ 352'8&72 '(/ '(6/,=$0,(172 (1 /$6
=21$6 $/('$f$6 '(%,'2 $ /$6 &2617$17(6 //89,$6 35(6(17(6 (1 /$
=21$

) 6(59,&,2 '($6(2

$ FRQWLQXDFLRQ VH SUHVHQWD LQIRUPH VREUH OD SUHVWDFLyQ GH GH DVHR \ HQ FDGD XQR GH VXV FRPSRQHQWHV

5HFROHFFLyQ \ 7UDQVSRUWH GH UHVLGXRV 6yOLGRV

(Q HO FRPSRQHQWH GH UHFROHFFLyQ \ WUDQVSRUWH FRQWLQXDP FRPSHWHQFLD GHO VHUYLFLR OD VLWXDFLyQ RSHUDWLYD FRQWLQ~D GH HTXLSR SDUD OD UHFROHFFLyQ GH UHVLGXRV HQ EXHQDV FRQGLF

&RQ FRUWH D GH MXQLR GH OD SUHVWDFLyQ GHO VHUYLFLR GH KD SUHVWDGR FRQ QRUPDOLGDG \D TXH GHVGH HO PHV GH PD\R FRQWUDWDFLyQ GH GRV YHKtFXORV FRPSDFWDGRUHV FRQ FDMD FRPS \DUGDV F~ELFDV 9HKtFXORV TXH LQJUHVDQ D FXEULU OD QHFHVLGD VXSOHQFLD GHO YHKtFXOR GH \DUGDV TXH TXHGy IXHUD GH VHUYLF

/D ($$$< (,&((6 3 HQ VX SDUTXH DXWRPRWRU GHO FRPSRQHQWH GH U GH UHVLGXRV VyOLGRV FXHQWD FRQ ORV YHKtFXORV TXH VH UHODFLF

Tabla 52 Relación Parque Automotor

,7(0	3/$&$	7,32	0$5&$	&3&,'$'	02'(/2	(67$'2
	26(	&203$&7$'25	)5(,*7/,1(5	<$5'$6		23(5$7,92
	26(	&203$&7$'25	)2721	<$5'$6		23(5$7,92
	26(	&$0,21(7$	-$&	.*		23(5$7,92 6$7(/,7$/(6
	26(	&$0,21(7$	-$&	.*		23(5$7,92 6$7(/,7$/(6
	26(	&203$&7$'25	)2721	<$5'$6		6,1,(675$'2 $&&,'(17(9Ë$ $/ 5(//(12 '($%5,/ '(
	26(	92/48(7$	&+(952/(7	0		,123(5$7,92
	26(	&203$&7$'25	&+(952/(7	<$5'$6		(1 0$17(1,0,(172
	26(	&$0,21(7$	-$&	.*		,123(5$7,92
	26(	&203$&7$'25	&+(952/(7	<$5'$6		,123(5$7,92
	26(	&203$&7$'25	)5(,*7/,1(5	<$5'$6		,123(5$7,92

/D)ORWD SUHVHQWD GLH] YHKtFXORV GH ORV FXDOHV D FRUWH G 7$1 62/2 6(&8(17$ &21 '26 9(+Ë&8/26 &203$&7$'25(6 23(5$7,926 < '26 9(+Ë&8/26 7,32 6$7(/,7(SURSLRV &RQ HO Q~PHUR GH YHKtFXORV IRU]DU OD IORWD OR TXH QR SHUPLWH HO GHVFDQVR GH ORV YH IDOODV UHFXUUHQWHV FRQ RFDVLyQ GH OR DQWHULRU VH UHDOL]y

3iJLQD GH

FRQWUDWDFLyQ GHO DOTXLOHU GH GRV FRPSDFWDGRUHV GH \DU
\D VH HQFXHQWUDQ HQ RSHUDWLYLGDG

(V GHFLU D FRUWH GH GH MXQLR GH VH SUHVWD HO VHUYLFLR
YHKtFXORV RSHUDWLYRV GH \DUGDV \ GRV YHKtFXORV WLSR
FDSDFLGDG OR TXH KD SHUPLWLGR TXH OD SUHVWDFLyQ GHO VHUYL
KRUDULRV \ IUHFXHQFLDV HVWDEOHFLGDV

5HJLVWUR GH SURGXFFLyQ iUHD GH SUHVWDFLyQ GH VHUYLFLR

$WHQGLHQGR HO iUHD GH SUHVWDFLyQ GH VHUYLFLR HQ OR TXH YD
GHO DxR KHPRV HYDFXDGR ORV VLJXLHQWHV UHVLGXRV

Tabla 53 Residuos Recogidos por operador

5(*,6752 (1 721(/$'$6	(1(52	)(%5(52	0$5=2	$%5,/	0$<2	-81,2
($$$<						
9(2/,$						

)XHQWH 'LUHFFLyQ $VHR ($$$< MXQLR

6H YLHQHQ DWHQGLHQGR ODV UXWDV HVWDEOHFLGDV GHQWUR GH
GHWHUPLQDGDV $ OD IHFKD GH FRUWH GH MXQLR GH VH DWLHQG
DVHR GH OD ($$$<±(,&((63

/D PD\RU SDUWH GH ORV XVXDULRV GHO VHUYLFLR GH $VHR FRQWL
UHFRQRFH FRPR XQD IRUWDOH]D SDUD OD (PSUHVD SRU OR TXH VH
DXWRPRWRU \ DVt HYLWDU TXH VH DGHODQWHQ DFFLRQHV GH FRPH
RSHUDGRU HQ FRPSHWHQFLD

3HUVRQDO RSHUDWLYR QHFHVDULR

(O FUHFLPLHQWR SREODFLRQDO GH OD FLXGDG GH <RSDO VH HVWi LQ
DXPHQWR GH OD SURGXFFLyQ GH UHVLGXRV VyOLGRV GRPLFLOLDULR
FRQWDU FRQ HO SHUVRQDO VXILFLHQWH SDUD FXEULU ORV GLIHUHQW

$ FRQWLQXDFLyQ VH UHIOHMD HO SHUVRQDO YLQFXODGR DO VHUYLF

Tabla 54 Personal De Recolección Y Transporte

		(1(52	)(%5(5	0$5=2	$%5,/	0$<2	-81,2
75,38/$17							
&21'8&725(							

(V QHFHVDULR FRQWDU FRQ ORV FRQGXFWRUHV \ ORV WULSXOD
QHFHVLGDGHV RSHUDWLYDV GHO VHUYLFLR VH HQFXHQWUDQ WU

DFWLYRV \D TXH GH HOORV HVWiQ FRQ UHVWULFFLRQHV PpGLFDV \ UHXELFDGRV

ÈUHD GH SUHVWDFLyQ GH VHUYLFLR

6H FRQWLQ~D DWHQGLHQGR ORV VHFWRUHV HQ &8$752 0$&5258 0,&52587$6 'H ODV FXDOHV

- 'LH] UXWDV VH UHDOL]DQ HQ MRUQDGD GLXUQD FXEULHQGR O
- 1XHYH UXWDV FRQ IUHFXHQFLD GH WUHV YHFHV D OD FRPSUHQGLGR HQWUH DP D ODV SP
- 8QD UXWD FRQ IUHFXHQFLD GH WRGRV ORV GtDV SP ± SXQWRV HVSHFLDOHV
- /DV WUHV UXWDV UHVWDQWHV TXH FRUUHVSRQGHQ DO VHFWR HQ MRUQDGD QRFWXUQD SP ± DP WUHV YHFHV D OD VHPD 61± % TXH VH UHDOL]D WRGRV ORV GtDV

(O VHUYLFLR VH KD YHQLGR SUHVWDQGR HQ ODV UXWDV \ IUHFXHQF DWHQGLHQGR OD GLYLVLyQ GH UXWDV FRQ HO RSHUDGRU HQ FRPS LQWHUPLWHQFLD HQ ODV IUHFXHQFLDV

6H KDFH LQGLVSHQVDEOH FRQWDU FRQ HO SDUTXH DXWRPRWRU FRPS OD SUHVWDFLyQ GHO VHUYLFLR FRQ OD PD\RU FDQWLGDG GH XVXDUL SUHVHQFLD HQ WRGD OD FLXGDG

$FFLRQHV FRPSOHPHQWDULDV PDQWHQLPLHQWRV SUHYHQWLYRV EDVH GH RSHUDFLRQHV GH VHUYLFLR

6H FHOHEUy FRQWUDWR 1R FX\R REMHWR HV 35(67$5 (/ 6(59,&, '(0$17(1,0,(172 35(9(17,92 < &255(&7,92 ,1&/8<(1'2 (/ 680,1,6752 '($&&(625,26 5(38(6726),/7526 /8%5,&$17(6 $',7,926 //$17$6 0217$//$17$6 (1 6,7,2 < $ '20,&,/,2 (;3(',&,Ï1 '(&(57,),&$'2 '(5(9,6,Ï1 7(&1,&20(&È1,&$ < '((0,6,21(6 &217$0,1$17(6 < (/$%25$&,Ï1 '(&21&(372 7e&1,&2 62%5((/ (67$'2 < 9$/25,=$&,Ï1 '(/26 9(+Ë&8/26 48(+$&(1 3$57 '(/ 3$548($87202725 '(/$ ($$$< (,&((63

(O FXDO SHUPLWH FRQWDU FRQ XQ WDOOHU HVSHFLDOL]DGR LQWHJU IORWD GHO SDUTXH DXWRPRWRU HQ EXHQ HVWDGR

$Vt PLVPR VH SODQWHD FRQWLQXDU FRQ HO PHMRUDPLHQWR HQ RSHUDFLRQHV GRQGH VH UHDOL]DQ ODERUHV GH PDQWHQLPLHQWR SHUQRV PDQJXHUDV VROGDGXUDV PHQRUHV DMXVWHV GH UXHGDV HQJUDVH HQ JHQHUDO FDPELR GH ERPEOOHUtD ODYDGR JHQHUDO

%DUULGR \ OLPSLH]D GH 9tDV

6H FRQWLQXD HQ HVWH ELPHVWUH [illegible]

(O EDUULGR \ OLPSLH]D HQ ODV]RQDV UHVLGHQFLDOHV VH HIHFWXDU
YHFHV SRU VHPDQD HQ OD]RQD FRPHUFLDO VLHWH YHFHV D OD VH
FRQ XQD IUHFXHQFLD GH WUHV YHFHV SRU VHPDQD /R DQWHUL
QRUPDWLYLGDG YLJHQWH \ D OD QHFHVLGDG GHILQLGD FRQ ORV VXV

(Q HO VHUYLFLR GH EDUULGR FXDQGR OD FRQWUDWDFLyQ RSHUH SRU HQ ODERU
FXEULU OD QHFHVLGDG GH ORV NP FXQHWD VH UHTXLHUH FRQ
EDUULGR

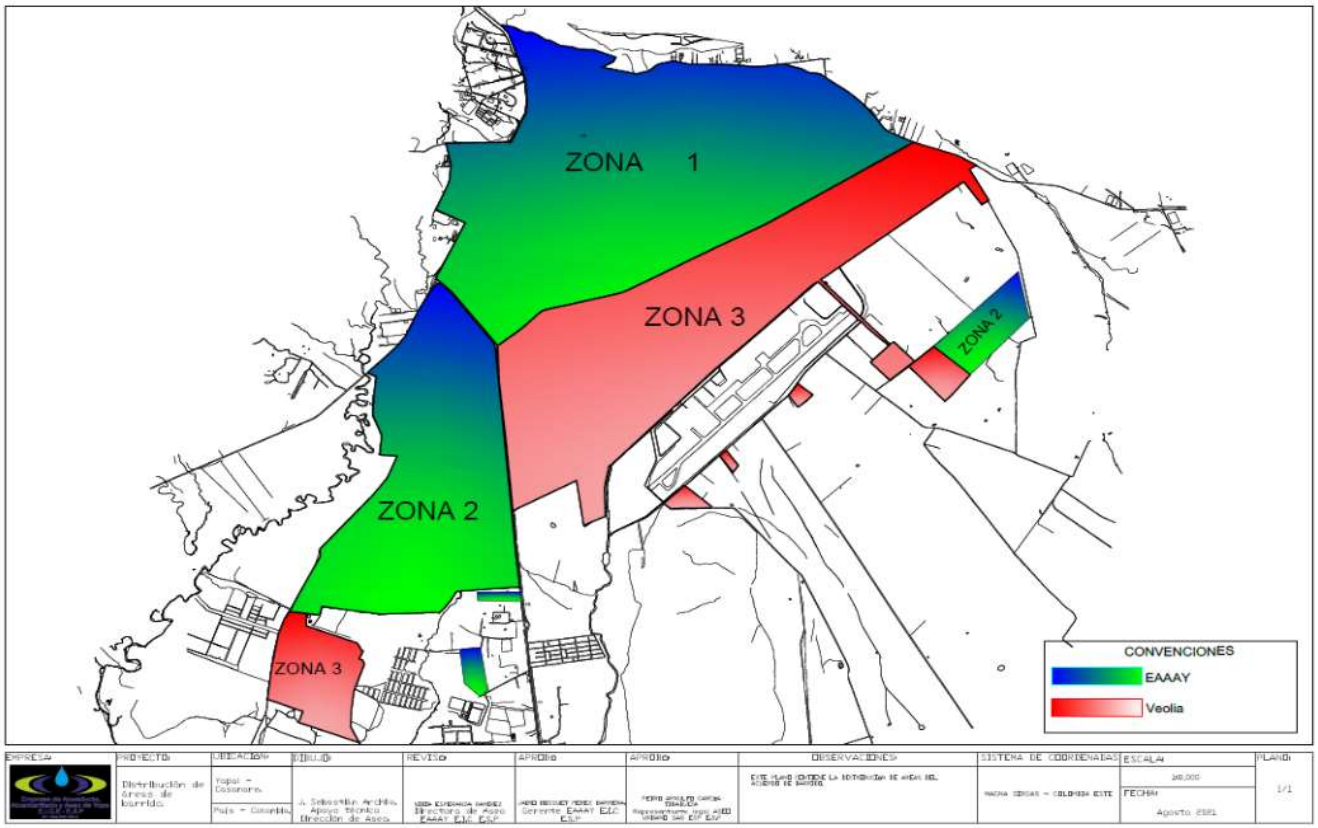
6H FRQWLQXD FRQ HO $FXHUGR GH %DUULGR FRQ OD (PSUHVD 9HI
FRQWLQXDFLyQ

- =RQD $ EDUUHU SRU OD ($$$< VH DEDUFD GHVGH OD FDOOH D OD
  KDVWD OD YtD 0DWHSDQWDQR
- =RQD 'HVGH OD YtD PDUJLQDO GH OD VHOYD KDVWD OD FDOOH & \
  OD FDUUHUD RHVWH

(Q ODV]RQDV TXH QR FXHQWDQ FRQ YtDV SDYLPHQWDGDV VH UHDOL]

3DUD OD DWHQFLyQ GHO VHUYLFLR VH GLVWULEX\HQ ORV RSHUDULRV
FXDOHV VRQ GRWDGDV FRQ XQ FDUULWR UDVWULOOR SDOtQ UHF
FXHQWD FRQ OD QHFHVLGDG GH UHDOL]DU HO PDQWHQLPLHQWR \
SDSHOHURV DVt FRPR OD DGTXLVLFLyQ GH XQD YROTXHWD SDUD HYD
HVWD ODERU

3iJLQD GH



)XHQWH 'LUHFFLyQ $VHR

/LPSLH]D XUEDQD ³FRUWH \ SRGD GH iUHDV S~EOLFDV´

(O HTXLSR GH OLPSLH]D XUEDQD FXEUH NP PHQVXDOHV C
FRQ VX SHUVRQDO TXH LQFOX\H RSHUDGRUHV GH JXDGDxDV PRWRV

6H DWLHQGHQ HO GH ODV iUHDV S~EOLFDV GHO VHUYLFLR GH DF
RSHUDGRU HQ FRPSHWHQFLD (O HTXLSR GH &/86 UHDOL]D DFWLYLG
SRGD GH iUEROHV HQ HVSDFLRV S~EOLFRV FRPR VRQ VHSDUDGRUHV Y

1RV HQFRQWUDPRV D OD HVSHUD GH OD DFWXDOL]DFLyQ \ DGRSFLyQ
DGPLQLVWUDFLyQ PXQLFLSDO GH <RSDO &DVDQDUH \D TXH HVWH LQ
GHQWUR GH OD JHVWLyQ GH UHVLGXRV VyOLGRV \ OD DWHQFLyQ \ SU

/D SURJUDPDFLyQ GH &/86 VH HQFXHQWUD HVWDEOHFLGD FRPR VH
DQWHULRU

'LVSRVLFLyQ ILQDO 5HOOHQR 6DQLWDULR HO &DVFDM

$ FRUWH GH GH MXQLR GH VH UHSRUWD TXH HQ HO UHOOHQR VD
GLVSRQLHQGR WUHV 0XQLFLSLRV GHO 'HSDUWDPHQWR GH %R\DFi

GHSDUWDPHQWR GH &DVDQDUH DGHPiV GHO 0XQLFLSLR GH <RSDO
FRQWLQXDFLyQ

Tabla 55 Disposición en Relleno Sanitario por Municipio

721(/$'$6 ',638(67$6 $f2						
081,&,3,26	(1(52	)(%5(52	0$5=2	$%5,/	0$<2	-81,2
$/&$/',$ '(/$%5$1=$*5$1'(						
0217(55(< 6 $ (63						
181&+,$ 6 $ (63						
6$%$1$/$5*$						
7$0$5$ 6 $ (63						
0$1,						
3$<$ 6 $ (6 3						
5(&(725						
$*8$=8/						
6$1 /8,6 '(3$/(148(						
75,1,'$'						
325(						
3,6%$ %2<$&$						
727$/ 721(/$'$6						

)XHQWH 'LUHFFLyQ $VHR

'H DFXHUGR FRQ ORV GDWRV UHJLVWUDGRV DO ,QJUHVR GHO UHOO
WRQHODGDV GLVSXHVWRV VHJ~Q VX RULJHQ HV HO VLJXLHQWH

D 7RQHODGDV 'LVSXHVWDV DxR HQ HO 5HOOHQR 6DQLWDULR (O &

7DEOD 7RWDO WRQHODGDV GLVSXHVWDV HQ HO DxR

5(*,675$ (1 721(/$'$6	(1(52	)(%5(52	0$5=2	$%5,/	0$<2	-81,2
081,&,3,26						
($$$<						
9(2/,$						
(035(6$6 35,9$'$6						

5(*,675 (1 721(/$'$6	(1(52	)(%5(52	0$5=2	$%5,/	0$<2	-81,2
727$/						

)XHQWH 8QLGDG GH 5HOOHQR VDQLWDULR ($$$<

(O SURPHGLR GH GLVSRVLFLyQ HQ HO PHV GH IHEUHUR HQ OD UHGG GH GLDULDV GH UHVLGXRV TXH LQJUHVDQ D FHOGD VLHQGR FRPSDFWDGD DFWXDO GH RSHUDFLyQ

(VWDGR DFWXDO WULQFKHUD HQ RSHUDFLyQ

6H FRQWLQ~D GLVSRQLHQGR VREUH OD WULQFKHUD \D QRV HQFR GH OOHQDGR SRU OR TXH VH KDFH GLVSHQGLRVD OD RSHUDWLYLGDG GHO UHOOHQR VDQLWDULR (O &DVFDMDU IXH SUR\HFWDGD FRQ XQD

/D FRQIRUPDFLyQ GH OD SDUWH VXSHULRU GH OD FHOGD VH XELFD FXQHWD SHULPHWUDO HQ DSUR[LPDGDPHQWH PHWURV GH HOEYDFL DFWLYLGDGHV SDUD FRQILQDU SHULPHWUDOPHQWH HO PDWHULDO FRPSDFWDFLyQ DGHFXDGD \ FRQWURODQGR ORV OL[LYLDGRV HYLWDQ GHO FXHUSO GH OD FHOGD

Ilustración 52 Jarillón perimetral trinchera 10

6H FXHQWD FRQ XQD VHJXQGD WULQFKHUD GLVSRQLEOH 7UL QHUD VLJ

/D WULQFKHUD 1R IXH WHUPLQDGD HQ VX REUD FLYLO VH HQFXH VROR VH SURYHFWD XVDUOD XQD YH] FXOPLQH OD FDSDFLGDG GH DFWXDOLGDG OD RSHUDFLyQ GHO UHOOHQR VDOYDJXDUGD OD VDOL UHDOL]D OD OLPSLH]D GH FXQHWDV SHULPHWUDOHV URFHUtD \ GHP FRQWLQXDFLyQ VH SUHVHQWD XQ UHJLVWUR IRWRJUiILFR GH VX HVW

Tabla 57 Datos Técnicos Trinchera 11

75,1&+(5$ 1R	
&DSDFLGDG 7RWDO P 7UL QFKHUD	
9ROXPHQ SURPHGLR SUR\HFWDGR P	
&DSDFLGDG HQ GtDV	

6H FXHQWDQ FRQ GRV DxRV GH VHUYLFLR DSUR[LPDGDPHQWH HQ H DJRWDUi HO HVSDFLR TXH VH HQFXHQWUD FRQVWUXLGR H[LVWLHQG ORV OXJDUHV TXH VH HQFXHQWUDQ GHQWUR GHO iUHD OLFHQFLD GHVWLQDGRV SDUD RWURV XVRV WDOHV FRPR

=RQD GH =RGPH TXH \D VH HQFXHQWUD OLEUH
0DQHMR GH OtTXLGRV OL[LYLDGRV GH SLVFLQD SDUD KDELOLWI
$GTXLVLFLyQ GH SUHGLRV KDFLD OD]RQD GHO FHUUR TXH FROLQGD

/D VLWXDFLyQ GH GLVSRVLFLyQ ILQDO HV FUtWLFD ODV FRQGLFLRQHV PHFDQL]DGR FRQVWDQWH TXH PHMRUH ORV tQGLFHV GH FRPSDFWDFL YLGD ~WLO GH PDQHUD PiV DFHOHUDGD (Q ORV ~OWLPRV PHVHV OR UHJLyQ DXPHQWDURQ JHQHUDQGR TXH VH FRPSOLFDUD HO PDQHMR FHOGD GH RSHUDFLyQ

3RU ~OWLPR HV LPSRUWDQWH DQRWDU TXH DFWXDOPHQWH VH DWLHQ VXV FRPSRQHQWHV FXPSOLHQGR FRQ ORV LQGLFDGRUHV HVWDEOHF PXFKDV QHFHVLGDGHV RSHUDWLYDV TXH UHTXLHUHQ GH LQYHUVLyQ GH XQD SUHVWDFLyQ GHO VHUYLFLR FRQ PD\RU HILFLHQFLD \ FDOLGD

9, $63(&726 &20(5&,$/(6

,1)250('(&$57(5$

/D 8QLGDG GH UHFDXGR FDUWHUD \ QRUPDOL]DFLyQ GH OD (PSUHVD G
\ $VHR GH <RSDO (,&(± (63 WLHQH SRU IXQFLyQ SULQFLSDO UHDOL]D
\ FRQWURO GH ODV FXHQWDV SRU FREUDU HQ PDWHULD GH OD SUHV
GH DFXHGXFWR DOFDQWDULOODGR \ DVHR GHQWUR GHO SHUtPHWUR
&DVDQDUH FRQ HO ILQ GH ORJUDU TXH ORV VXVFULSWRUHV \ R X
RSRUWXQD \ HIHFWLYD HO SDJR GH ORV VHUYLFLRV S~EOLFRV \ UH
FDUWHUD VLQ LQFOXLU ORV SURFHVRV HQ FREURV FRDFWLYRV D
DFWLYLGDGHV TXH HVWiQ GHQWUR GH ODV HVWUDWHJLDV GH UHFDXG

(Q HVWH LQIRUPH VH H[SRQHQ ODV DFWLYLGDGHV UHDOL]DGDV GHQW
HQ HO SHUtRGR IHEUHUR \ PDU]R GH FRQ HO ILQ GH PHMRUDU OD
GLVPLQXLU OD FDUWHUD \ GHPiV DFFLRQHV TXH FRQWULEX\HQ DO P
FXPSOLPLHQWR GH ORV LQGLFDGRUHV GHO iUEA $Vt PLVPR VH U
DFXHUGRV GH SDJR SUHYLRV DO LQLFLR GH SURFHVRV FRDFWLYRV
~OWLPD HWDSD GHO SURFHVR GH UHFDUJR

/D HMHFXFLyQ GH OD WDUHD VH OOHYD D FDER FRQ EDVH HQ OD VLJX

- /H\ GH
- 5HVROXFLyQ SRU PHGLR GH OD FXDO VH DGRSWD HO 1XHYR 5
  5HFDXGR GH &DUWHUD \ 3URFHGLPLHQWR $GPLQLVWUDWLYR GH (
  &RDFWLYR GH OD (PSUHVD GH $FXHGXFWR $OFDQWDULOODGR \ $V
  VH GHURJDQ ODV 5HVROXFLRQHV

- 'HPiV QRUPDWLYLGDG YLJHQWH

(V SHUWLQHQWH DQRWDU TXH VH SUHVHQWD XQ DXPHQWR OD FDUWH
TXH VH UHDOL]y FRQ HO FLHUUH FRQWDEOH RFDVLRQDGR SRU OD
VRIWZDUH WpFQLFR FRPHUFLDO (53 \D TXH HO SHULRGR GH UHFDXG

$ *(67,21 '(&$57(5$

'XUDQWH HO SHUtRGR VH LPSOHPHQWDURQ \ HMHFXWDURQ ODV VLJ
JHVWLyQ GH OD FDUWHUD

3iJLQD GH

- ✓ 6H UHDOL]D QRWLILFDFLyQ GH FREURV SUHMXUtGLFRV D XVXDULRV PHVHV
- ✓ 6H OOHYDQ D FDER ODV LQVSHFFLRQHV GH FDPSR GH QRWLILFDFLy VXVFULSWRUHV FRQ PRURVLGDG PD\RU D VHLV PHVHV
- ✓ 6H KDFH HQWUHJD GH QRWLILFDFLRQHV GH FRUWHV \ VXVSHQVLRQ
- ✓ 6H UHDOL]D OD YHULILFDFLyQ GH SUHGLRV GHVKDELWDGRV GHPRC
- ✓ 6H HMHFXWD OD UHYLVLyQ GH SUHGLRV D ORV TXH OHV KD VLG PRURVLGDG FRQVWDWDQGR TXH VH PDQWHQJDQ VLQ VHUYLFLR
- ✓ 6H UHDOL]DQ YHULILFDFLyQ GHO HVWDGR DFWXDO GHO VHUYLFLR EXVFDQGR JDUDQWL]DU TXH VH PDQWHQJDQ FRQ HO VHUYLFLR FRU
- ✓ 6XVSHQVLRQHV GHO VHUYLFLR GH DFXHGXFWR FRQ XQD IDFWXUD Y
- ✓ 6H UHDOL]DQ UHFRQH[LRQHV \ UHLQVWDODFLRQHV FXDQGR HO XV VHUYLFLR
- ✓ 6H UHDOL]DQ DFXHUGRV GH ILQDQFLDFLyQ GH GHXGD D ORV VXVFU UHTXLHUDQ VLQ H[FHSFLyQ DOJXQD IRUPDOL]iQGRORV SRU PHGLR
- ✓ 6H UHDOL]DQ DERQRV D ODV GHXGDV D TXLHQHV OR KDQ VROLFLWD
- ✓ 6H UHDOL]DQ YLVLWDV GH FDPSR SDUD GHWHFWDU IUDXGHV H LOH
- ✓ 6H UHDOL]D QRWLILFDFLyQ D XVXDULRV FRQ GHIUDXGDFLyQ GH IOX
- ✓ 6H UHDOL]D QRWLILFDFLyQ D XVXDULRV GH FREURV UHWURDFWLYR
- ✓ 6H FRPHQ]y OD YHULILFDFLyQ GH ORV SUHGLRV FRQ HO VHUYLFLR LGHQWLILFDU ORV JUDQGHV FRQVXPLGRUHV WDOHV FRPR
  - /DYDGHURV
  - +RWHOHV
  - 5HVWDXUDQWHV
  - 9LYHURV
  - 3LVFLQDV
- ✓ 8QD YH] LGHQWLILFDGRV ORV JUDQGHV FRQVXPLGRUHV VH UHDOL] GH VHPDQD D ODYDGHURV \ KRWHOHV FRQ VHUYLFLR KRUDV
- ✓ 6H OOHYD D FDER OD QRWLILFDFLyQ GH OD WHUPLQDFLyQ GHO &RQ HQ ODV UHFRQH[LRQHV VLQ SDJR GH OD GHXGD
- ✓ 6H UHDOL]D QRWLILFDFLyQ SDUD FRUWHV GHO VHUYLFLR HQ SUHG UHMDV \ PHGLGRUHV TXH WLHQHQ OD FDMD FRQ FDQGDGR HQ FDV SUHVHQWH VH SURFHGH D UHDOL]DU OD H[FDYDFLyQ \ HO FRUWH G

% &,)5$6 6,*1,),&$7,9$6

$ FRQWLQXDFLyQ VH SUHVHQWD HO FXDGUR UHVXPHQ GH LQGLFDGRU GH OD (PSUHVD HQ OR TXH YD FRUULGR GHO DxR KDFLHQGR pQI FRUUHVSRQGHQ DO WULPHVWUH UHSRUWDGR

(VWD DFWLYLGDG HVWi SODQHDGD SDUD HMHFXWDUVH D SDUWLU GHO PHV GH DEULO GH

Tabla 58 Cifras significativas Cartera

&,)5$6 6,*1,),&$7,9$6								
&21&(372	E ZK	& Z	ZK D	Z•K	Z/>	D zK	s Œ]]•v • }v :hE/K s]P v u Ç}Œ	
8VXDULRV $FXHGXFWR WRWDO PHV		ð	ð					D z
8VXDULRV $OFDQWDULOODGR	WRWDO PHV	ð	ð					Z
8VXDULRV $VHR WRWDO PHV		ï	ï					D z
)DFWXUDFLyQ WRWDO 0LOORQHV PHV		ñl	ñl					D z
5HFDXGR WRWDO 0LOORQHV PHV		ïU	ïU					D z
5HFDXGR FRUULHQWH 0LOORQHV PHV		îU	îU					E Ž
5HFDXGR FRUULHQWH PHV	(ILFLHQFLD	ôóX	ôóX	òóX	óòX	ìXìì		& Z
5HFDXGR FDUWHUD 0LOORQHV PHV								D z
5HFDXGR FDUWHUD PHV	(ILFLHQFLD	íõXì	íõXì	îíXìì	îõXî	ìXìì		D z
&DUWHUD GHO VHUYLFLR 0LOORQHV DFXPXODGD DO FLHUl	WRWDO	íUôôôXî	îUìôðXî	îUìôðXî	îUðîíXð			
6XEVLGLRV FDXVDGRV 0LOORQHV PHV		íU						E Ž
6XEVLGLRV FREUDGRV 0LOORQHV PHV								D Z•
6XEVLGLRV UHFLELGRV 0LOORQHV PHV								E Ž
&DUWHUD SRU VXVEVLGLRV 0LOORQHV DFXPXODGR DO FLHUl	WRWDO	íUìîôXî	íUñïîXì	íUìïôXï				r

,QWHUSUHWDFLyQ

- (O UHFDXGR YLHQH FRQ XQD WHQGHQFLD DO DO]D HQ OR TXH YD VX PD\RU SLFR HQ HO PHV GH PD\R (Q HO FDVR GHO UHFDXGR G SXHGH YHU XQ LQFUHPHQWR SDUD ORV PHVHV GH DEULO \ PD\R
- (O UHFDXGR FRUULHQWH HVWi HQ SRU HQFLPD GHO HQ WRGRV HO UHFDXGR GH FDUWHUD OOHJD DO RUGHQ GH ORV HQ HO D~Q VLJXH HQ DQiOLVLV \ VHUi DFODUDGD HQ XQ LQIRUPH GH DO HQWUHJXH DQWHV GH OD VHVLyQ GHO PRQLWRUHR

&),1$1&,$&,Ï1

(O YDORU ILQDQFLDGR HQ HO PHV GH DEULO DVFHQGLy D OD VXPD GH XQ YDORU UHFDXGDGR SRU FRQFHSWR GH FXRWD LQLFLDO GHO RUGHQ HO GHO YDORU ILQDQFLDGR (Q HO FRPSRUWDPLHQWR KLVWyULFR GH ILQDQFLDFLyQ HQ FLIUDV VXSHULRUHV D ORV PLOORQHV SURPH

Tabla 59 Estadística de financiación

	9DORUHV HQ 0LOORQHV GH 3HVRV			
	(QHUR	)HEUHUR	0DU]R	$EULO
)LQDQFLDFLyQ				
&XRWD ,QLFLDO				
&XRWD ,QLFLDO				
)LQDQFLDGR				

' $%2126

3DUD HO PHV GH DEULO VL ELHQ VH UHJLVWUDURQ DERQRV HQ HO V UHYLVLyQ FRQVROLGDFLyQ GHO LQIRUPH TXH SHUPLWD YLVXDOL]DU H

3iJLQD GH

HQ ORV PHVHV GH DEULO \ PD\R FRQ OD HQWUDGD HQ RSHUDFLyQ LQIRUPDFLyQ WpFQLFR FRPHUFLDO HUP

$ FRQWLQXDFLyQ VH SUHVHQWD OD HYROXFLyQ GH HQHUR PDU]R \ HQ DOFDQFH DO SUHVHQWH LQIRUPH

Tabla 60 Estadística de abonos

	(QHUR	)HEUHUR	0DU]R
1~PHUR GH $ERQRV			
9DORU 'HXGD			
9DORU $ERQR			
6DOGR 3HQGLHQWH			
,QGLFDGRU UHFXDGR			

(5(&83(5$&,Ï1 '(&$57(5$

(O Q~PHUR GH DFWLYLGDGHV DVRFLDGDV D OD UHFXSHUDFLyQ GH FDU HO UHFDXGR VH KDQ LQFUHPHQWDGR D OR ODUJR GHO SULPHU VHP DOWR HQ HO PHV GH DEULO YHU VLJXLHQWH FXDGUR DVt PLVPR OD GH HYHQWRV HDV LOVRGHS RU VXVSHQVLyQ \HVWUHVRHQWDGD D SHUVXDG XVXDULRV SDUD TXH UHDOLFHQ HO SDJR GH VX IDFWXUD

Tabla 61 actividades asociadas a la recuperación de cartera

/dD	d/s/ ^ E DWK	E Ƶ& Z Ƶ ƙ ƙ	D Z•K Z/> D zK :hE/					
		vš]	vš]	vš]	vš]	vš]	vš]	vš]
ï	KZd ^		îðì	íïô	ôñ	íìð	íïï	íìð ôìð
ð	^h^W E^/KE ^		òîð	íUìïï	õñô	ôîó	íUìõó	òóì ñUîìõ
ñ	Z KE y/KE ^		óó	ðí	ðí	ðî	ïô	îñ îòð
ò	Z /E^d > /KE ^		ïôð	òñì	óóô	ñôñ	óôó	ñïî ïUóíó
ó	&Z h ^ /> ' > ^ E KEdZ K^			îñ	ò	îí	ñð	í îï íðì
ô	s/^K^ /Es/d /KE W 'K		ðUììî	ì	ì	ì	ì	ì ðUììî
õ	s/^K^ ^h^W E^/KE z KZo			îUïð	ííUôìì	íïUïóî	íòUóóó	íïUîõï íñUíìî óîUïðô
íì	EKd/&/ /KE ^ W Z^h ^/sK			ì	ì	íîì	ì	ì ì íîì
íí	EdZ ' WZK ^K^ d W W Z^h ^/s			ì	ì	ðí	ì	ì ì õí
íî	/E^W /KE D dZ/ h> ^ Eh s ^			óî	ôð	óò	òó	õì òì ðõõ
íï	^h^W E^/KE d DWKZ >			ñî	òó	ïñ	ðì	ñî îó îóï
dKd > d/s/ ^		óUóôì íïUôíõ		íñUñóó	íôUíõò		íñUñìî	íòUñðï ôóUðíó

) &203257$0,(172 '(/$ &$57(5$

- &DUWHUD SRU HGDGHV GH YHQFLPLHQWR

/D FDUWHUD WXYR XQ LQFUHPHQWR GH PLOORQHV GH SHVRV HQ H DO PHV GH PDU]R \ GH PLOORQHV VL VH HYDO~D HQ WRGD OD FRPSRUWDPLHQWR SXHGH HVWDU H[SOLFDGR HQ GRV DSHFWRV TXH DEULO OD DSOLFDFLyQ GHO GHVLQFHQWLYR TXH VH OOHYy D FDER GH HQHUR GH IHFKD HQ OD TXH HQWUy HQ YLJHQFLD OD 5HVRO PD\RU Q~PHUR GH GtDV IDFWXUDGRV HQ HO PHV GH DEULO FRQ UHODF HQ SURPHGLR GtDV HQ GLFKR PHV

Tabla 62 Cartera por edades

(GDGHV	(QHUR	)HEUHUR	0DU]R	9DULDFLyQ ÒOWLPRV %LPHVWUH	9DULDFLyQ $ÒR FRUUHVSRQGLHQWH
&$57(5$ &255,(17(					
FDUWHUD GH D	GtDV				
FDUWHUD GH D	GLDV				
FDUWHUD GH D	GLDV				
FDUWHUD GH D	GLDV				
FDUWHUD GH D	GLDV				
FDUWHUD GH D	GLDV				
FDUWHUD GH D	GLDV				
FDUWHUD PD\RU D	GLDV				
&$57(5$ 9(1&,'$					
727$/ &$57(5$					

- &DUWHUD FRQVROLGDGD SRU (VWUDWR

(Q HO DQiOLVLV GH OD FDUWHUD SRU HVWUDWR VH SXHGH HYLGHQF SUHVHQWDQGR SDUD HO PHV GH DEULO HQ HO HVWUDGR XQR HVWR

Tabla 63 Cartera por Estrato

(VWUDGR	(QHUR	)HEUHUR	0DU]R	$EULO
812				
'26				
75(6				
&8$752				
&,1&2				
2),&,$/				
&20(5&,$/				
727$/				

0(',&,Ï1 &2168026 <)$&785$&,Ï1

/D RILFLQD GH 0HGLFLyQ &RQVXPRV \ )DFWXUDFLyQ HV OD HQFDUJDG PHGLDQWH OD WRPD GH OHFWXUD \ DQiOLVLV GH QRYHGDGHV GHWHF SRVWFULWLFD WDQWR HQ WHUUHQR FRPR HQ FDPSR IDFWXUDF FRPSOHPHQWDULRV LQKHUHQWHV D OD SUHVWDFLyQ GHO VHUYLFL VLJQLILFDWLYDV FiOFXOR GH WDULIDV UHSRUWHV GH LQIRUPDFLyQ

LQWHUQRV \ H[WHUQRV DGLFLRQDOPHQWH ODV DFWLYLGDGHV GHO FRQH[LRQHV QXHYDV UHSRVLFLyQ GH PHGLGRUHV \ UHSDUDFLyQ GH

'HELGR D TXH HQ PD\R QR VH SUHVHQWy HO UHSRUWH GH DEULO HQ H GHO WULPHVWUH FRPSOHWR KDFLHQGR DVt HO GHVDWDVH GH OD LQI

/D LQIRUPDFLyQ D SDUWLU GHO GH DEULO HV WRPDGD GHO QXHV 7pFQLFR &RPHUFLDO (53

$ 5(680(1)$&785$&,Ï1

$ FRQWLQXDFLyQ VH SUHVHQWD HO FXDGUR UHVXPHQ GH LQGLFDG IDFWXUDFLyQ GH OD (PUHVD HQ OR TXH YD FRUULGR GHO DxR KDF TXH FRUUHVSRQGHQ DO WULPHVWUH UHSRUWDGR

Tabla 64 Cifras Significativas Facturación y Crítica

&,)5$6 6,*1,),&$7,9$6								
&21&(372	E ZK	& Z	ZK D	Z•K	Z/>	D zK	s Œ]]•v ;hE/K^ s]P v	D • }v u Ç}Œ
8VXDULRV $FXHGXFWR WRWDO PHV		ð	ð					D z
8VXDULRV $OFDQWDULOODGR WRWDO PHV		ð	ð					Z
8VXDULRV $VHR WRWDO PHV		ï	ï					D z
)DFWXUDFLyQ WRWDO 0LOORQHV PHV		ñ	ñ					D z
5HFDXGR WRWDO 0LOORQHV PHV	ï	ïU	ïU					D z
5HFDXGR FRUULHQWH 0LOORQHV PHV		îU	îU					E Ž
5HFDXGR FRUULHQWH PHV	(IHFWLYR	ôóX	ôóX	òóX	óòX	ìXìì		& Z
5HFDXGR FDUWHUD 0LOORQHV PHV								D z
5HFDXGR FDUWHUD PHV (IHFWLYR	íõXì	íõXì	íõXì	îíXì	îõXî	ìXìì		D z
&DUWHUD GHO VHUYLFLR 0LOORQHV WRWDO DFXPXODGD DO FLHUH	íU	ôðòXî	îUìôðXî		îUìôðXî		îUðîíXð	
6XEVLGLRV FDXVDGRV 0LOORQHV PHV			íU					E Ž
6XEVLGLRV FREUDGRV 0LOORQHV PHV								D Z•
6XEVLGLRV UHFLELGRV 0LOORQHV PHV								E Ž
&DUWHUD SRU VXEVLGLRV 0LOORQHV WRWDO DFXPXODGR DO FLHUH	íU	ìîõXî	íUñîîXì		íUìïôXï			r

,QWHUSUHWDFLyQ

- (Q ORV PHVHV GH DEULO \ PD\R VH SUHVHQWy XQ PD\RU YDORU GD SRU OD DSOLFDFLyQ GHO GHVLQFHQWLYR HO PD\RU Q~PHUR \ XQ PD\RU YDORU GH OD FDUWHUD GHELGR D OD DSOLFDFLyQ GH HO QXHYR VLVWHPD GH LQIRUPDFLyQ WpFQLFR FRPHUFLDO (53 FRUUHJLGR D SDUWLU GHO PHV GH MXOLR DMXVWDQGR OD DS PDQHUD TXH VH GLVWULEX\D HQWUH OD FDUWHUD FRUULHQWH \ DSOLFDU VH OOHYH D ODV IDFWXUDV PiV DQWLJXDV TXH HVWpQ
- (O UHFDXGR YLHQH FRQ XQD WHQGHQFLD DO DO]D HQ OR TXH YD VX PD\RU SLFR HQ HO PHV GH PD\R (Q HO FDVR GHO UHFDXGR G SXHGH YHU XQ LQFUHPHQWR SDUD ORV PHVHV GH DEULO \ PD\R

(Q FXDQWR D ORV LQGLFDGRUHV GHO SURFHVR HO UHVXPHQ HV HO V

Tabla 65 Estadística de indicadores

,1',&$'25(6								
&21&(372	E ZK	& Z	ZK D	Z•K	Z/>	D zK	s Œ]]•W • }v :hE/K s]P v	u Ç}Œ
&2%(5785$ $&8('8&72		ð	ð					:hE
,1',&$'25 &2%(5785$ $&8('8&72	õõX	õõX	õõX	õõX	õõX	õôX	ïôXí	E ź
&2%(5785$ $/&$17$5,//$'2		ð	ð					:hE
,1',&$'25 &2%(5785$ $/&$17$5,//$'2	õõXìî9	õôXõì9	õôXóô9	õôXòñ9	õôXïó9	õôXîì9		ï
&2%(5785$ $6(2		ï	ï					:hE
,1',&$'25 &2%(5785$ $6(2	íìì Xð	íìì Xð	íìì Xï	õõX	íìì Xî	íìì Xî	óòX	E ź
,1',&('($*8$ 12 &217$%,/,=$'$	ñíXî	ñîXí	ñõX'	ðòX	ñõX	ñðX	ðòX	D Z•
,38)								D Z•
,&8)								
,&8)$F								Z
,&8)$OF								Z
3520(',26)$&785$'26	îUć	îUć	îUî	ïUî	ïUć	îUć	îUĉ	D z
,1',&$'25 3520(',26)$&785$'26	ñXðò9	ñXòî9	ñXóò9	óXïð9	óXóï9	ñXòô9		òX
686&5,3725(6)$&7 $&8('8&72				ðóU	ðóU	ðóU	ìXìì	:hE
,1',&$'25 686&5,3725(6)$&7 $&8('8&72						ìXìì9	& Z ZK	
686&5,3725(6)$&7 $/&$17$5,//$'2				ððUïîñ	ððUïíï	ððUïñî	ìXìì9	:hE
,1',&$'25 686&5,3725(6)$&7 $/&$17$5,//$'2						EKs	& Z ZK	
686&5,3725(6)$&7 $6(2				ïòU	ïòU	ïòU	ìXìì	:hE
,1',&$'25 686&5,3725(6)$&7 $6(2	õõXðï9	íìì Xìì9	íìì Xìì9	íìì Xìì9	íìì Xìì9	íìì Xìì9	ìXìì9	
1~PHUR GH UHSRVLFLRQHV UHDOL]DGDV							& Z	
1~PHUR GH PLFURPHGLGRUHV GDxDGRV							& Z	
,QGLFDGRU 5HSRVLFLyQ GH 0HGLGRUHV	ñXíð	ôXì	òXñ	ðXí	ïXõ	îXñ	ïìXõ	& Z

,QWHUSUHWDFLyQ

- &REHUWXUD GHO 6HUYLFLR WXUD SRU VHUYLFLR WLHQH FXPSOLPLH SDUD ORV VHUYLFLRV GH $FXHGXFWR \ DOFDQWDULOODGR P LQGLFDGRU HVWi HQ HO HO LPSDFWR VH GLR SRU OD DSOLFD FRQVXPR TXH JHQHUy TXH ORV XVXDULRV TXH WHQtDQ PiV GH XQD VX SURSLHGDG FRQHFWDGD D XQ VROR PHGLGRU VH DFHUFDUDQ D OD VLWXDFLyQ GH VXV LQVWDODFLRQHV \ FRQ HOOR HO FRQVXPR G
- ,38) /D GLVPLQXFLyQ HQ HO LQGLFDGRU GH DEULO VH H[SOLFD HQ IDFWXUDGRV HQ HO SHUtRGR TXH LPSOLFDQ XQ PD\RU FRQVXPR \ REVWDQWH OR DQWHULRU HO ,38) DFXPXODGR VH PDQWLHQH HQ
- ,&8) (Q HO PHV GH DEULO VH UHDOL]y IDFWXUDFLyQ FRQ XQ PD\RU D OD HQWUDGD HQ RSHUDFLyQ GHO QXHYR 6LVWHPD GH ,QIRUPDFL TXH UHTXLULy GH XQD VHPDQD GH SUHSDUDFLyQ TXH VH OOHYy HQ 6HPDQD 6DQWD (VH PD\RU HO Q~PHUR GH GtDV GH IDFWXUDFLyQ HQ ORV PHVHV GH PD\R \ MXQLR
- 3520(',26)$&785$'26 (O LQFUHPHQWR HQ ORV PHVHV GH DEULO \ P DO SURFHVR GH LPSOHPHQWDFLyQ \ HVWDELOL]DFLyQ GHO VLVWH &RPHUFLDO (53 TXH LQLFLy RSHUDFLyQ HO GH DEULO GH HQ

VH SUHVHQWy XQ PD\RU Q~PHUR GH IDFWXUDFLyQ SRU SURPHGLR T
D SDUWLU GHO PHV GH MXQLR

- ,1',&$'25 '(686&5,3725(6)$&785$'26 (O LQGLFDGRU GH VXVFULSW
IDFWXUDGRV VH WRPD FRQ EDVH HQ ORV VXVFULSWRUHV TXH DSDUH
VHUYLFLR 6H SXHGH HYLGHQFLDU TXH D SDUWLU GH IHEUHUR VH
VXVFULSWRUHV TXH HVWiQ DFWLYRV HQ HO 6LVWHPD GH ,QIRUPDFL
- 5(326,&,Ï1 '(0(','25(6 /D UHSRVLFLyQ GH PHGLGRUHV VH YLHQH UH
HQ ORV FDVRV HQ ORV TXH HO XVXDULR DGTXLHUH HO PHGLGRU H
TXH OD (PSUHVD UHDOLFH HO FDPELR
(Q HVWH VHQWLGR \ FRQ PLUDV D DWHQGHU OD WDUHD OD 6XEJHUH
HVWi HQ OD WDUHD GH UHDOL]DU XQ SLORWR TXH D\XGH D GHWHU
DOJXQRV PHGLGRUHV TXH HVWiQ GLVSRQLEOHV HQ HO PHUFDGR \
HQ ODV FRQGLFLRQHV GHO PXQLFLSLR GH <RSDO $Vt PLVPR HV
QRUPDWLYD LQWHUQD GH OD (PSUHVD DFHUFD GH FRQGLFLRQHV Wp
PHGLGRUHV UHVLGHQFLDOHV \ QR UHVLGHQFLDOHV DVt FRPR ODV

% ,1)250( )$&785$'2

➢)$&785$'2 325 6(59,&,2

$ FRQWLQXDFLyQ VH SUHVHQWD HO GHWDOOH GHO IDFWXUDGR SRU
PD\R /D IDFWXUDFLyQ FRUUHVSRQGH WLHQH XQ SLFR HQ DEULO G
GHVLQFHQWLYR UHWURDFWLYR GHVGH HO GH HQHUR GH IHFKD
OD UHVROXFLyQ GH DSOLFDFLyQ

Tabla 66 Facturado por servicio

)$&785$'2 325 6(59,&,2		
0(6(6	DEU	PD\
)$&785$'2 &255,(17		
$&8('8&72		
$/&$17$5,//$'2		
$6(2 ($$$<		
68%727$/ ($$$<		
)$&785$'2 &$57(5		
$&8('8&72		
$/&$17$5,//$'2		
$6(2 ($$$<		
68%727$/ ($$$<		
727$/)$&785$'2 &255,(17(0$6 &$57(		
$&8('8&72		
$/&$17$5,//$'2		
$6(2 ($$$<		
727$/ ($$$<		

)XHQWH UHSRUWH UHVXPHQ FDUWHUD FRQFHSWR IDFWXUDGR VLVWHPD GH LQIRUPDFyQ WpFQLFR F

& ,1)250(&216802 0)$&785$'26 325 6(59,&,2 $&8('8&72 < $/&$17$5,//$'2 < (675$72

$ FRQWLQXDFLyQ VH SUHVHQWD HO GHWDOOH GHO FRQVXPR GH JHQH GHELGR D TXH HQ DEULO VH SUHVHQWy XQ PD\RU Q~PHUR GH IDFWXU WUHLQWD \ VLHWH GtDV GH FRQVXPR

Tabla 67 Consumo por servicio (M3 facturados),

&2168026 325 6(59,&,2		
(675$72	DEU	PD\
$&8('8&72		
8QR		
'RV		
7UHV		
&XDWUR		
&LQFR		
&RPHUFLDO		
2ILFLDO		
68%727$/		
$/&$17$5,//$'2		
8QR		
'RV		
7UHV		
&XDWUR		
&LQFR		
&RPHUFLDO		
2ILFLDO		
68%727$/		

)XHQWH ,QIRUPH GH 3RVFULWLFD GHO VLVWHPD GH LQIRUPDFLRQ WpFQLFR FRPHUFLDO HUS

3(7,&,21(6 48(-$6 5(&/$02 < 62/,&,78'(6

(O SUHVHQWH LQIRUPH SUHVHQWD HO DQiOLVLV GHO FRPSRUWDPLHQ FRPSUHQGLGR HQWUH DEULO \ MXQLR GH HV LMPRUWDQWH WHQ FRQVLGHUDFLRQHV

- (O VLVWHPD GH LQIRUPDFLyQ GH WpFQLFR FRPHUFLDO HUS LQLFI GH
- &RQ HO LQLFLR GH RSHUDFLRQHV VH GLR HQ SDUDOHOR OD LP GHO GHVLQFHQWLYR GHO &RQVXPR H[FHVLYR GH $JXD 3RWDEO 5HVROXFLyQ 8$&5$ GHO \ OD 5HVROXFLyQ 8$(&5$ GHO FDVR GH OD ($$$< VH UHDOL]y OD DSOLFDFLyQ GHO UHWURDFWLY GH DEULO GH SDUD ORV VHUYLFLRV SUHVWDGRV D HQ IHEUH TXH HQWUy HQ YLJHQFLD D SDUWLU GHO GH HQHUR GH
- $Vt PLVPR OD LPSOHPHQWDFLyQ GHO VRIWZDUH LPSOLFy FDPELR GH VXEJHUHQFLD GH $VXQWRV &RUSRUDWLYRV D WUDYpV GH OD JHVWLyQ FRQ HO UHJLVWUR GH XQ PD\RU Q~PHUR GH DFWLY SUHVWDFLyQ GHO VHUYLFLR HVWR HV HO QXHYR VLVWHPD UH

UHDOL]DGD SRU HO iUHD GH IDFWXUDFLyQ \ R SRU FXDOTXLHU L
LPSOLTXH HO DMXVWH PRGLILFDFLyQ GH FRQFHSWRV YDORUHV H
GHEHQ VHU UHJLVWUDGRV GHQWUR GHO VLVWHPD SDUD GHMDU V

- /D LPSOHPHQWDFLyQ HQ Vt LPSOLFD XQ SURFHVR GH DGDSWDFL
SRU GHPiV JHQHUD DMXVWHV HQ OD IRUPD GHO UHJLVWUR SRU S

$ &203257$0,(172 */2%$/ '(345

(QWUH ORV PHVHV GH DEULO \ MXQLR VH SUHVHQWDURQ XQ WRWDO
UHJLVWUDGDV HQ HO VLVWHPD 7pFQLFR &RPHUFLDO (53 GH ODV FXD
GH DEULO HQ HO PHV GH PD\R \ HQ HO PHV GH MXQLR YHU

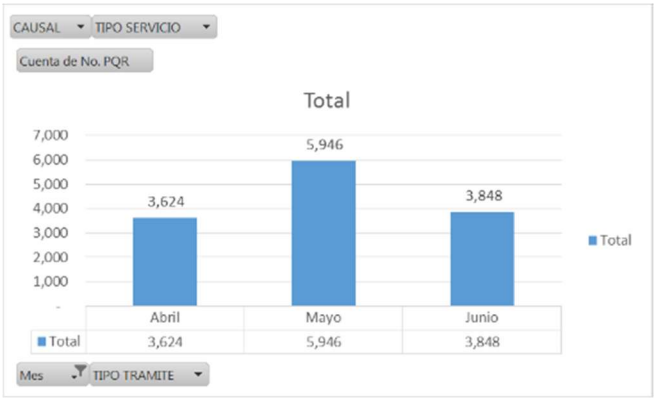


Ilustración 53 Comportamiento PQR total en el trimestre (abril-junio)

$O UHDOL]DU HO DQiOLVLV VLQ ODV FDXVDOHV TXH HVWiQ DVRFLDG
SURFHVR GH IDFWXUDFLyQ VH HQFXHQWUD TXH HO FRPSRUWDPLHQWL
WLHQH XQ WRWDO GH 345 GLVWULEXLGDV HQ GHO PHV GH
PD\R \ GHO PHV GH MXQLR YHU VLJXLHQWH JUiILFR

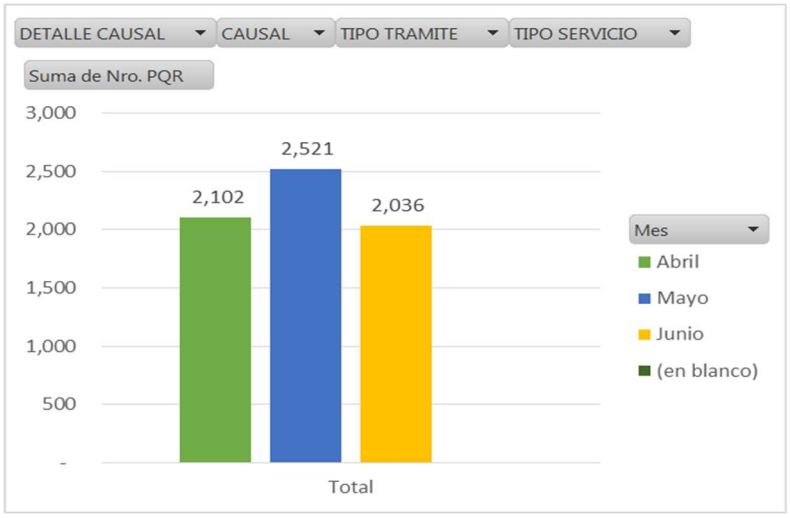


Ilustración 54 Comportamiento PQR total en el trimestre (abril-junio) sin proceso de facturación

'DGR HO LQLFLR GH RSHUDFLyQ GHO VLVWHPD WpFQLFR FRPHUFLDO VHPHVWUH SDUD ODV 345 DVt

Tabla 68 Estadística PQR

D •	d}š o	s Œ]]•v u v•µ	W Œš]]‰]•v
v Œ}	íUíóð		íî9
& Œ Œ}	íUïôï	íô9	íð9
D Œ Ì}	óóñ	rðð9	ô9
Œ]o	îUíìî	íóí9	îí9
D Ç}	îUñîí	îì9	îñ9
:µv]}	îUìïò	ríõ9	îì9
d}š o	õUõõí		

/D GLVPLQXFLyQ HQ HO Q~PHUR GH UHTXHULPLHQWRV TXH VH SUHVH SUHVHQWDU SRU XQ PHQRU Q~PHUR GH GtDV GH RSHUDFLyQ VHP RSHUDFLyQ VyOR GRV GtDV $Vt PLVPR VH HYLGHQFLD HO LQFUH SHWLFLRQHV GHO PHV GH DEULO \ PD\R TXH VH YLHURQ LPSDFWDGDV HO 6LVWHPD 7pFQLFR &RPHUFLDO (53 \ SRU OD DSOLFDFLyQ GHO GHV HPSH]DU D YHU XQ GHVFHQVR TXH SXHGH HVWDU DVRFLDGD DO SUR VRIWZDUH

325 &/$6('(6(59,&,2

$O UHDOL]DU HO DQiOLVLV GHO SHUtRGR SRU WLSR GH VHUYLFLR O GLVWULEXFLyQ

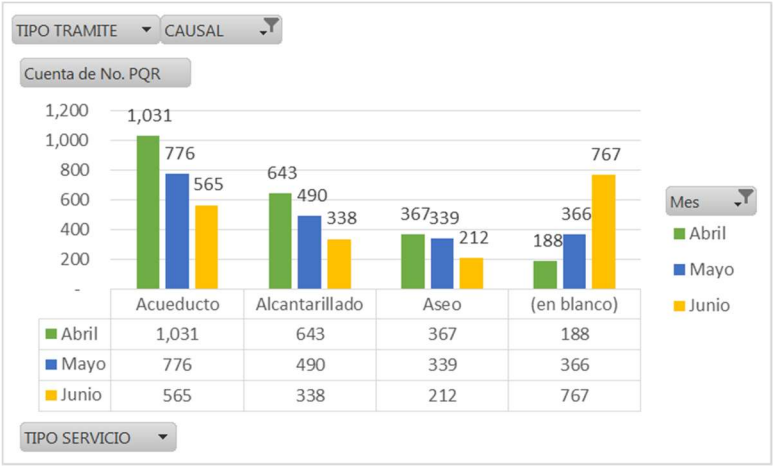


Ilustración 55 Comportamiento PQR por tipo de servicio en el trimestre (abril-junio) sin proceso de facturación

(O FRPSRUWDPLHQWR GH ODV 345 SUHVHQWD XQD WHQGHQFLD D OD VHUYLFLRV $FXHGXFWR $OFDQWDULOODGR \ $VHR GXUDQWH HO W TXH SDUD HO PHV GH MXQLR VH HVWi OOHJDQGR DO GH ODV 345

DEULO HQ ORV VHUYLFLRV GH $FXHGXFWR \ $OFDQWDULOODGR PLHQW
D XQ RUGHQ GHO

'H RWUR ODGR DO UHDOL]DU HO DQiOLVLV GH ODV 345 UHJLVWUDGDV
HQ EODQFR VH HQFXHQWUD TXH pVWDV FRUUHVSRQGHQ D FDPELRV H
GH DVHR GH 9HROD (VWD DFWLYLGDG HV QXHYD HQ HO SURFHVR
6LVWHPD 7pFQLFR &RPHUFLDO (53 GH OD ($$$<

345 325 &1/ '(35(6(17$&,Ï1

/D ($$$< DWHQGLy 345 HQ HO WULPHVWUH GLVWULEXLGDV HQ O
DWHQFLyQ SUHVHQWDGDV HQ IRUPD YHUEDO SRU ORV XV
$WHQFLyQ GH 8VXDULRV IXHURQ SUHVHQWDGDV D WUDYpV
SRU PHGLR GH OtQHDV WHOHIyQLFDV \ VH UHFHSFLR
HOHFWUyQLFR (Q OD VLJXLHQWH JUiILFD VH GHWDOOD HO FRPSRUW
SUHVHQWDFLyQ

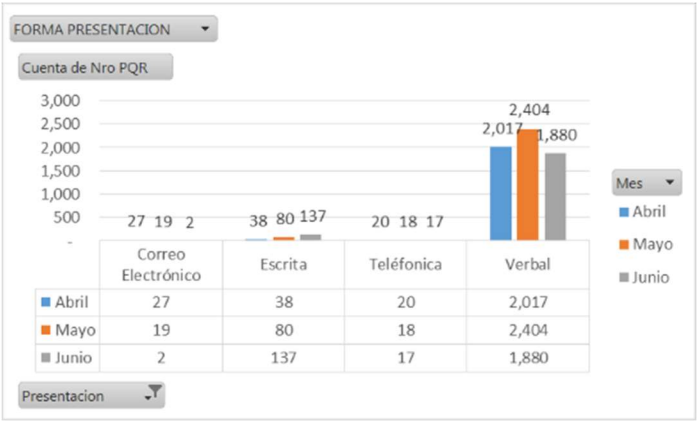


Ilustración 56 Comportamiento PQR por tipo de presentación en el trimestre (abril-junio) sin proceso de facturación

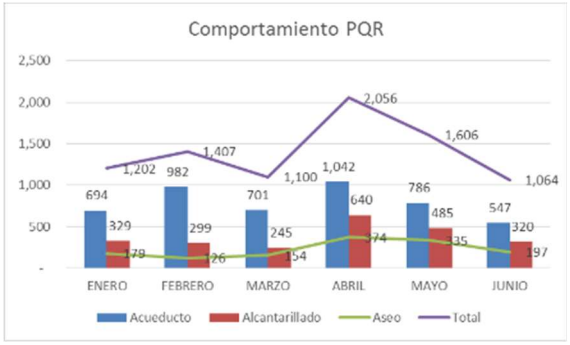
1RWD VLJXH SUHGRPLQDQGR OD SUHIHUHQFLD GH ORV XVXDULRV D
VXV UHTXLVLFLRQHV HQ ODV RILFLQDV GH $WHQFLyQ DO &OLHQWH GH
1RWD (V GH DQRWDU TXH GDGD OD HQWUDGD HQ RSHUDFLyQ GH
7pFQLFR &RPHUFLDO (53 UHTXLVLFLRQHV IXHURQ UHJLVWUDGDV
FRQ HO ILQ GH OOHYDU D FDER HO DQiOLVLV VH WRPDURQ FRPR
HPEDUJR VH HVWDEOHFH FRPR RSRUWXQLGDG GH PHMRUD HO WUDED
OD FODVLILFDFLyQ DGHFXDGD GHO WLSR GH SUHVHQWDFLyQ

345 325 7,32 '(5(48(5,0,(172

$O UHDOL]DU XQ DQiOLVLV SRU WLSR GH UHTXHULPLHQWR HO FRPS
FDXVDOHV HV HO VLJXLHQWH

Tabla 69 Comportamiento PQR más representativas por tipo de servicio

&2162/,'$'2 345							
6(59,&,2	(1(52	)(%5(52	0$5=2	$%5,/	0$<2	-81,2	727$/
µ µ Š}		òõð	õôî	óìí	íUìðî	óôò	ñðó
o vš Œ]oo }		ïîõ	îõõ	îðñ	òðì	ðôñ	ïîì
• }		íóõ	íìò	íñð	ïóð	ïïñ	íõó
7RWDO							



$ FRQWLQXDFLyQ VH SUHVHQWD HO GHWDOOH SRU FDXVDOHV SDUD F

D 6HUYLFLR GH $FXHGXFWR

Tabla 70 Causales PQR por servicio Acueducto

5(680(1 '((67$',67,&$6 '(345 $&8('8&72							
3(7,&,Ï1							
&86/	(1(52	)(%5(52	0$5=2	$%5,/	0$<2	-81,2	727$/
							&DQWL
)8*$ (1 (/ 0(','25							
62/,&,78' 18(9$							
6863(16,21(6 7(0325$/(6 325 (							
&$0%,2 '('$726							
7(50,1$&,21 '(/ &2175$72							
5(326,&,21 '(/ 0(','25							
3(7,&,21 3$5$ &$0%,2 '(5(*,67526							
120/,$6 (1 (/ 0(','25							
&2035$ '(&$0$5$ '(5(*,6752							
)8*$ (1 (/ ,108(%/(							
75$6/$'2 '(0(','25							
62/,&,78' '(5(,167$/$&,Ï1 '(/ 0(','25							
3$*2 (48,92&$'2 '( )$&785$							
5(9,6,Ï1),/752 '(0(','25							
5(9,6,Ï1 '($55(*/26 (1 (/ ,108(%/(							
$&7,9$&,21 '(/$							
$&7,9$&,21 '(/ 6(59,&,2 '(638(							
0(','25 ,19(57,'2							
&$0%,2 '((675$72							
5(9,6,Ï1 358(%$							
3$*2 '(0(7526							
75$6/$'2 '(()(							
&$1&(/$&,21 72							
9,6,7$ 9,$%,/,'$' '(0$75,&8/$ '(3523,('$' +25							
)8*$ (1 /$ 9,$							
)8*$ (1 /$ $&20(7,'$							
'(92/8&,Ï1 9$/25 '(&$-$							
62/,&,78' '( ),1							
$&7,9$&,21 0(7526							
'$f2 (1 (6)(5$							
862 32=2 352)81'2							
0$75,&8/$ &5($'$							
5(9,6,Ï1 0(','25(6 '(,108(%/(							
75$6/$'2 '($&							
&/$6('(862 ,1&255(&72							
&$1&(/$&,21 727$/ '( ),1$1&,$&,Ï1 '(							
,1&21)250,'$'							
5(9,6,21 3$5$,1							
3$*2 '( )$&785$							
5(638(67$ 5(&8562 663'							
0(','25 +857$'2							
68%727$/							

Tabla 71 Resumen Estadisticas PQR por servicio Acueducto

5(680(1 '((67$',67,&$6 '(345 $&8('8&72								
5(&/0&,Ï1								
&86		(1(52	)(%5(52	0$5=2	$%5,/	0$<2	-81,2	727$/
	,1&21)250,'$' &21 (/ $)252							
	&2%52 '(0(','25							
	&2%526 '(&$5*26 325 35(67$&,Ï1 '(/ 6(59,&,2							
	&2%526 '(27526							
	'(6&8(172 325							
	6863(16,21 325							
	(675$72 ,1&255(&72							
	&/$6('(862 ,1&255(&72							
	7$5,)$,1&255(&7$							
	,1&21)250,'$' &21 (/ &216802							
	&2%526 325 3520(',2							
	3$*2 6,1 $%212							
	/(&785$,1&215							
	,1&21)250,'$' 325 '(69,$&,21 6							
	&2%526 ,1232578126							
	&2%52 325 $&8(							
	&$0%,2 '(0(','							
	&2%526 '(6&21							
	7(50,1$&,21 '(/ &2175$72							
	6863(16,21 2 &							
	&2%526 325 &21							
	&2%52 325 6(59							
	)$//$ (1 /$ &21							
	12 &21(;,Ï1 '(/							
	)$//$ (1 /$ 35(667$&,21 '(/ 6(59,&,2							
	(175(*$,12325							
	&2%52 08/7,3/(							
68%727$/								

,QWHUSUHWDFLyQ

- (Q HO FDVR GH ODV SHWLFLRQHV VH SXHGH HYLGHQFLDU TXH H[LV DFXPXODQ HO GH ODV SHWLFLRQHV TXH UHDOL]DQ ORV XVXD PHGLGRU HQ HO WULPHVWUH)XJD GHO PHGLGRU H ,QFRQIRUPLGDG FRQ HO DIRUR HQ HO WULPHVWUH \ 6XVSHQ PXWXR DFXHUGR HQ HO WULPHVWUH /R FXDO SHUPLWH HV FRQWLQXDU WUDEDMDQGR HQ OD UHSRVLFLyQ GH HTXLSRV DFWX HQ ODV TXH HO XVXDULR DGTXLHUH HO HTXLSR PHGLGRU HQ HO P OD ($$$< SDUD VX LQVWDODFLyQ SDUDOHODPHQWH OD 6XEJHUHQF YLHQH UHDOL]DQGR XQ SLORWR SDUD LGHQWLILFDU HO ORV WLSR XWLOL]DUVH HQ OD FLXGDG GH <RSDO HQ ODV FRQGLFLRQHV D FRQVWUXFFLyQ GH QRUPDV WpFQLFDV GH OD HPSUHVD SDUD OD ODV FRQH[LRQHV HQWUH RWUDV
- (Q ODV UHFODPDFLRQHV VH HQFXHQWUD TXH HO GH ODV UHI HQ HO WULPHVWUH HVWXYLHURQ UHODFLRQDGDV FRQ HO SURFHVR FRQ OD PHGLFLyQ FREURV SRU SURPHGLR LQFRQIRUPLGDG FRQ SRU GHVYLDFLyQ VLJQLILFDWLYD (VR VH H[SOLFD HQ HO SURFH QXHYR VLVWHPD \ OD HWDSD GH HVWDELOL]DFLyQ TXH VH HVWi O HYLGHQFLDU TXH HO Q~PHUR GH UHFODPDFLRQHV KD LGR GLVPLQX ORV PHVHV

/RV 5HFXUVR WLHQHQ OD VLJXLHQWH GLVWULEXFLyQ HQ HO VHPHVWU

Tabla 72 Resumen Estadísticas PQR por Servicio Acueducto

5(680(1 '((67$',67,&$6 '(345 $&8('8&72								
5(&8562 '(5(326,&,Ï1								
&86		(1(52	)(%5(52	0$5=2	$%5,/	0$<2	-81,2	727$/
	,1&21)250,'$' &21 (/ &216802							
	'$726 *(15$/(6							
	&2%526 325 3520(',2							
	6863(16,21(6 7(0325$/(6 325 08782 $&8(5'2							
	,1&21)250,'$' 325 '(69,$&,21 6							
68%727$/								
5(&8562 '(5(326,&,Ï1 < (1 68%6,',2 '($3(/$&,Ï1								
&86		(1(52	)(%5(52	0$5=2	$%5,/	0$<2	-81,2	727$/
	&2%52 '(0(','25							
	&2%526 '(27526							
	6863(16,21 325 08782 $&8(5'2							
	&2%526 325 352							
	,1&21)250,'$' &21 (/ &216802							
	&2%52 325 &21							
	&2%52 325 6(59							
	2325781,'$' '(							
	,1&21)250,'$' 325 '(69,$&,21 6							
68%727$/								

)LQDOPHQWH HQ HO FDVR GH ODV TXHMDV GHVGH HO PHV GH DEULO XVXDULRV OD SUHVHQWDFLyQ GH ODV TXHMDV GH PDQHUD IRUPDO \ 6LVWHPD 7pFQLFR &RPHUFLDO (53 GDQGR FRPR UHVXOWDGR OD SUH HO VHUYLFLR GH DFXHGXFWR DVt

Tabla 73 Distribución Quejas asociadas al Servicio de Acueducto por Detalle Causal

'HWDOOH &DXVDO? 0HV 0D\R	-XQLR	7RWDO JHQHUDO
(QWUHJD LQRSRUWXQD R QR HQWUHJD GH OD IDFWXUD		
&REUR P~OWLSOH \ R DFXPXODGR		
&REUR SRU VHUYLFLRV QR SUHVWDGRV		
7RWDO JHQHUDO		

E 6HUYLFLR GH $OFDQWDULOODGR

Tabla 74 Resumen Estadísticas PQR por Servicio Alcantarillado

5(680(1 '((67$',67,&$6 '(345 $/&$17$5,//$'2								
3(7,&,Ï1								
&86		(1(52	)(%5(52	0$5=2	$%5,/	0$<2	-81,2	727$/
	62/,,&78' 18(9$							
	6863(16,Ï1 7(0325$/							
	&$0%,2 '('$726							
	7(50,1$&,21 '(&2175$72							
	3$*2 '26 9(&(6							
	5(9,6,Ï1 '($55(*/26							
	)8*$ (1 (/ ,108							
	3$*2 '(0(7526							
	5(9,6,21 358(%$							
	5(638(67$ 5(&8							
68%727$/								
5(&/0&,Ï1								
&86		(1(52	)(%5(52	0$5=2	$%5,/	0$<2	-81,2	727$/
	,1&21)250,'$' &21 (/ $)252							
	&2%526 '(2752							
	'(6&8(172 325							
	6863(16,21 7(0325$/							
	(675$72 ,1&255(&72							
	&/$6('(862 ,1&255(&725							
	7$5,)$,1&255(&							
	,1&21)250,'$' &21 (/ &216							
	&2%526 325 3520(',2							
	&2%52 '(&2168							
	3$*2 6,1 $%212							
	,1&21)250,'$' 325 '(69,$&,							
	&2%526 ,1232578126							
	)$//$ (1 /$ 35(67$&,21							
	)$//$ (1 /$ 35(67$&,21							
	7(50,1$&,21 '(&2175$72							
	12 &21(;,Ï1 '(/							
	&2%52 '(6&212							
	&2%526 325 6(59,&,26 12							
68%727$/								
727$/								

,QWHUSUHWDFLyQ

- (Q HO FDVR GH ODV SHWLFLRQHV D FRQWLQXDFLyQ VH GHWDC UHTXHULPLHQWRV GH DFXHUGR FRQ ORV FDXVDOHV VH SXHGH HY FDXVDOHV TXH DFXPXODQ HO GH ODV SHWLFLRQHV TXH UHD ,QFRQIRUPLGDG FRQ HO DIRUR HQ HO WULPHVWUH 6XVSHQ PXWXR DFXHUGR HQ HO WULPHVWUH 6ROLFLWXG 1XHYD VX WULPHVWUH ,QFRQIRUPLGDG FRQ OD PHGLFLyQ GHO FRQVXPR HQ HO WULPHVWUH \ &REURV LQRSRUWXQRV
- (Q HO FDVR GH ODV UHFODPDFLRQHV HO GH ODV UHFLELGD DVRFLDGDV D GRV FDXVDOHV ,QFRQIRUPLGDG FRQ OD PHGLFLyQ C IDFWXUDGR FRQ HO \ &REURV SRU SURPHGLR FRQ HO

(Q HO FDVR GH ODV TXHMDV GHVGH HO PHV GH DEULO VH YLHQH SUR SUHVHQWDFLyQ GH ODV TXHMDV GH PDQHUD IRUPDO \ TXH pVWDV V 7pFQLFR &RPHUFLDO (53 GDQGR FRPR UHVXOWDGR OD SUHVHQWDFLy GH DFXHGXFWR DVt

Tabla 75 Distribución Quejas asociadas al Servicio de Alcantarillado por Detalle Causal

'HWDOOH &DXVDO? 0HV -XQLR	7RWDO JHQHUDO
&REUR P~OWLSOH \ R DFXPXODGR	
(QWUHJD LQRSRUWXQD R QR HQWUHJD GH OD IDFWXUD	
&REUR SRU VHUYLFLRV QR SUHVWDGRV	
7RWDO	

/RV 5HFXUVR WLHQHQ OD VLJXLHQWH GLVWULEXFLyQ HQ HO VHPHVWU

Tabla 76 Resumen Estadísticas PQR por Servicio Alcantarillado

5(680(1 '((67$',67,&$6 '(345 $/&$17$5,//$'2								
5(&8562 '(5(326,&,Ï1								
&86		(1(52	)(%5(52	0$5=2	$%5,/	0$<2	-81,2	727$/
	,1&21)250,'$'							
	&2%526 325 3520(',2							
	,1&21)250,'$'							
	6863(16,21 7(0325$/							
68%727$/								
5(&8562 '(5(326,&,Ï1 < (1 68%6,',2 '($3(/$&,Ï1								
&86		(1(52	)(%5(52	0$5=2	$%5,/	0$<2	-81,2	727$/
	'(6&8(172 325							
	6863(16,Ï1 325							
	&2%526 325 352							
	,1&21)250,'$' &21 (/ &216							
	&2%526 325 6(59							
	,1&21)250,'$' 325 '(69,$&,							
68%727$/								

F 6HUYLFLR GH $VHR

Tabla 77 Resumen Estadísticas PQR por Servicio Aseo

5(680(1 '((67$',67,&$6 '(345 $6(2							
3(7,&,Ï1							
&86/	(1(52	)(%5(52	0$5=2	$%5,/	0$<2	-81,2	727$/
62/,&,78' 18(9$6							
&$0%,2 '('$726							
7(50,1$&,Ï1 '(&2175$72							
,108(%/('(6+$%,7$'2							
62/,&,78' '( ),1$1&,							
3$*2 '26 9(&(6							
68%727$/							
5(&/0&,Ï1							
&86/	(1(52	)(%5(52	0$5=2	$%5,/	0$<2	-81,2	727$/
68%6,',26 < &2175,%							
&2%52 '(27526							
'(6&8(172 325 35('2 '(							
&2%52 325 12 '(,1'(3(1',(17(6							
(675$72 ,1&255(&72							
&/$6('(862 ,1&255(&72							
7$5,)$,1&255(&7$							
,1&21)250,'$' &21 (/ &2							
&2%526 325 352							
3$*2 6,1 $%212 (1 &8(17$							
08/7,868$5,2 '(/ 6(59,&,2							
&2%526 ,12325781 26							
7(50,1$&,21 '(&2175$72							
&2%52 325 6(59,&,26 1							
&2%52 '(6&212							
)$//$ (1 /$ 35(67$&,21 '(/ 6(59,&,2 &217,18,'$'							
)$//$ (1 /$ /$ 35(67$&,Ï1 '(/ 6(59,&,2 &$/,'$'							
68%727$/							
727$/							

,QWHUSUHWDFLyQ

- (Q HO FDVR GH ODV SHWLFLRQHV D FRQWLQXDFLyQ VH GHWDC UHTXHULPLHQWRV GH DFXHUGR FRQ ORV FDXVDOHV VH SXHGH HY FDXVDOHV TXH DFXPXODQ HO GH ODV SHWLFLRQHV TXH UHI ,QFRQIRUPLGDG FRQ HO DIRUR HQ HO WULPHVWUH 6XVSHQ PXWXR DFXHUGR HQ HO WULPHVWUH 6ROLFLWXG 1XHYD VX WULPHVWUH &REURV LQRSRUWXQRV \ &$1&(/$&,21 727$/ '( ) '(/ 0(','25 < 27526 GHO WULPHVWUH
- (Q HO FDVR GH ODV UHFODPDFLRQHV HO GH ODV UHFLELGD DVRFLDGDV D FXDWUR FDXVDOHV ,QFRQIRUPLGDG FRQ OD PH SURGXFFLyQ IDFWXUDGR FRQ HO &REURV SRU SURPHGLR ,QFRQIRUPLGDG FRQ HO $IRUR FRQ HO \ 'HVFXHQWR SRU SUH HO

(Q HO FDVR GH ODV TXHMDV GHVGH HO PHV GH DEULO VH YLHQH SUR
SUHVHQWDFLyQ GH ODV TXHMDV GH PDQHUD IRUPDO \ TXH pVWDV
7pFQLFR &RPHUFLDO (53 GDQGR FRPR UHVXOWDGR OD SUHVHQWDFLy
GH DVHR DVt

Tabla 78 Distribución Quejas asociadas al Servicio de Aseo por Causal

'HWDOOH &DXVDO? 0HV 0D\R	-XQLR	7RWDO JHQHUDO
62/,&,78' 18(9$		
&REUR P~OWLSOH \ R DFXPXODGR		
,QWHUUXSFLRQHV HQ OD SUHVWDFLyQ GHO VHUYLFLR		
&REUR SRU VHUYLFLRV QR SUHVWDGRV		
(QWUHJD LQRSRUWXQD R QR HQWUHJD GH OD IDFWXUD		
7RWDO JHQHUDO		

/RV 5HFXUVR WLHQHQ OD VLJXLHQWH GLVWULEXFLyQ HQ HO VHPHVWU

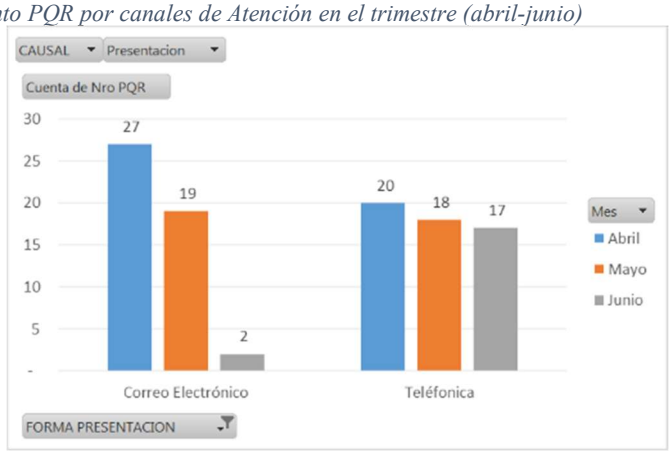
Tabla 79 Resumen Estadísticas PQR por Servicio Aseo

5(680(1 '((67$',67,&$6 '(345 $6(2							
5(&8562 '(5(326,&,Ï1							
&86/	(1(52	)(%5(52	0$5=2	$%5,/	0$<2	-81,2	727$/
,108(%/('(6+$%,7$'2							
'(6&8(172 325							
(675$72 ,1&255(&72							
68%727$/							
5(&8562 '(5(326,&,Ï1 < (1 68%6,',2 '($3(/$&,Ï1							
&86/							727$/
'(6&8(172 325 35(',2 '(							
&2%526 ,1232578126							
&2%52 325 12 '(,1'(3(1',(17(6							
&25%2 325 6(59							
7(50,1$&,21 '(&2175$72							
,1&21)250,'$' &21 (/ &216802 2 352'8&&,Ï1)$&785$'$							
68%727$/							

E &DQDOHV TXH WLHQH KDELOLWDGRV OD (PSUHVD SDUD OD DWHQF

/RV FDQDOHV GH FRPXQLFDFLyQ TXH ORV XVXDULRV SXHGHQ XWLOL
(PSUHVD VRQ DGHPiV GHO SXQWR GH DWHQFLyQ SUHVHQFLDO TXH
RILFLQDV HO FRUUHR STHO#HDDY\JRY FR OtQHD WHOHIyQLFD FH
\ OtQHD GH ZKDWVDSS \ HO FKDW LQWHUDFWLYR TXH DSDU
ZZZ HDDA\ JRY $R FRQWLQXDFLyQ VH SUHVHQWD OD JUiILFD FRQ HO FR
FDQDOHV GH DWHQFLyQ GH FRUUHR HOHFWUyQLFR \ OtQHD FHOXODU

Tabla 80 Comportamiento PQR por canales de Atención en el trimestre (abril-junio)



1RWD &RPR VH LQGLFy DQWHV GDGD OD HQWUDGD HQ RSHUDFLyQ C
7pFQLFR &RPHUFLDO (53 UHTXLVLFLRQHV IXHURQ UHJLVWUDGDV
FRQ HO ILQ GH OOHYDU D FDER HO DQiOLVLV VH WRPDURQ FRPR
HPEDUJR VH HVWDEOHFH FRPR RSRUWXQLGDG GH PHMRUD HO WUDED
OD FODVLILFDFLyQ DGHFXDGD GHO WLSR GH SUHVHQWDFLyQ

/D RILFLQD GH)LGHOL]DFLyQ \ 1XHYDV &XHQWDV WLHQH EDMR V
LQGLFDGRUHV ORV FXDOHV VH HQXPHUDQ D FRQWLQXDFLyQ

- ,QGLFDGRU GH YLQFXODFLRQHV HIHFWLYDV GH DVHR
- ,QGLFDGRU GH GHVYLQFXODFLRQHV UHFLELGDV GH DVHR
- ,QGLFDGRU XVXDULRV ILGHOL]DGRV
- $IURU UHVLGXRV VyOLGRV
- ,QGLFDGRU VXVFULSWRUHV SRU VHUYLFLR GH DVHR

(O VLJXLHQWH FXDGUR SUHVHQWD OD HYROXFLyQ GH FDGD XQR GH H
OR TXH YD FRUULGR GH OD YLJHQFLD

Tabla 81 Histórico Cifras Significativas

	(1(	)(%	0$5	$%5	0$<	-81	D • }v u Ç}Œ
9,1&8/$&,21(6 ()(&7,9$6 '($6(2	î(	ï(	î(	î(	í(	íí	&
,1',&$'25 9,1&8/$&,21(6 ()(&7,9$6 '($6(:	íôXóõ9	ïìXìì9	îíXòì9	ñîXíó9	òïXòð9	ðîXôò9	Dz
'(69,1&8/$&,21(6 5(&,%,'$6 '($6(2	ïì	ñ	î(	ò	ï(	îì	;
,1',&$'25 '(69,1&8/$&,21(6 5(&,%,'$6 '($6(:	óñXìì9	õóXìð9	õòXòó9	ôíXîô9	ôóXôì9	óòXòó9	&
868$5,26),'(/,=$'26	íõ(	îìï(	íò(	ïð	îõ	ñ	&
,1',&$'25 868$5,26),'(/,=$'26	ííðXò	íïïXð	íðíXò	îôïXò	íñïXò	íîXó	;
$)252 5(6,'826 62/,'26	ì	ì	ì	í	ì	ì	;
,1',&$'25 $)252 5(6,'826 62/,'26	ìXìì	ìXìì	ìXìì	íìXì	ìXìì	ìXìì	Z
686&5,3725(6 325 6(59,&,2 '($6(2	ïòU	ïòU	ïòU	ïòU	ïòU	ïòU	:h
,1',&$'25 686&5,3725(6 325 6(59,&,2 '($6(:	óñXôñ9	óñXõï9	óòXìî9	óñXõò9	óòXíî9	óòXîì9	:hE

,QWHUSUHWDFLyQ

- 9LQFXODFLRQHV GH DVHR $ SHVDU GH TXH HQ IHEUHUR VH GL YLQFXODFLRQHV HIHFWLYDV HO YDORU GH PD\R VH YLVXDOL]D FRPR XQ PD\RU FUHFLPLHQWR (VWR VH H[SOLFD HQ TXH HO LQGL Q~PHUR GH GHVYLQFXODFLRQHV TXH VH HQYtDQ D OD &RPSHWH SURFHVR GH GHVYLQFXODFLyQ GH VXV VHUYLFLRV \ SDUD PD\R H UHODFLyQ DO UHVWR GH PHVHV
- 'HVYLQFXODFLRQHV UHFLELGDV (O SURPHGLR GH VROLFLWXGH IXH VXSHULRU DO GHO SULPHU WULPHVWUH HVWR SX LQFRQYHQLHQWHV TXH VH SUHVHQWDURQ FRQ OD SUHVWDFLyQ \ PD\R
- 8VXDULRV)LGHOL]DGRV /RV XVXDULRV TXH UHTXLHUHQ ILGHO XVXDULRV GH OD FRPSHWHQFLD TXH HQ HO SHUtRGR UHTXLUL IDFWXUD GH VHUYLFLR GH DVHR (VWRV XVXDULRV VRQ REN ILGHOL]DFLyQ (Q HO FDVR GHO PHV GH MXQLR VH SUHVHQWy XQ HQ ODV RILFLQDV GH $WHQFLyQ GH 8VXDULRV VLQ HPEDUJR O SUHVHQWDURQ HQ OD SUHVWDFLyQ GHO VHUYLFLR HQ ORV PHVH OD UHFHSWLELOLGDG GH SDUWH GH HOORV SDUD UHDOL]DU HO P GH DVHR
- $IRUR GH UHVLGXRV VyOLGRV (Q OR TXH YD FRUULGR GHO DxR V GH DIRUR OD FXDO VH OOHYy D FDER D IHOL] WpUPLQR
- 6XVFULSWRUHV SRU VHUYLFLR GH DVHR (Q ORV ~OWLPRV WU WHQGHQFLD GH XQ GH SDUWLFLSDFLyQ HQ HO PHUFDGR GHO D FRQFXHUGD FRQ HO SURPHGLR GHO VHPHVWUH

5(63216$%,/,'$' 62&,$/

(Q DWHQFLyQ D OD SURSXHVWD GHO 3ODQ GH 0HMRUD VXJHULGR SRU VLWXDFLyQ GH OD (PSUHVD GH $FXHGXFWR $VHR \ $OFDQWDULOODGR SDUD UHODFLRQDPLHQWR FRPXQLWDULR \ VRFLDO HQ DUDV GH UHFX HQ OD HQWLGDG OD RILFLQD GH 5HVSRQVDELOLGDG 6RFLDO SDUWLFLS FRQ ORV OLGHUHV FRPXQDOHV \ OD $JHQWH (VSHFLDO ,QWHUYHQWRU H LQIRUPDU D OD FRPXQLGDG SRU LQWHUPHGLR GH VXV OLGHUHV VROXFLRQHV D OD FULVLV SRU OD TXH HVWi SDVDQGR OD HPSUHVD

'HQWUR GHO SURFHVR SDUD HO UHODFLRQDPLHQWR FRPXQLWDULR \ WUDEDMR FRQ ODV FRPXQLGDGHV GH ORV SXQWRV LQIOXHQFLD GH OD GH UHFXUVR KtGULFR R DIHFWDFLyQ SRU OD GLVSRVLFLyQ GH UHVLGX VH FRQWDFWDURQ ORV OLGHUHV GH ODV FRPXQLGDGHV DG\DFHQWHV \ &RUUHJLPLHQWR HO 0RUUR 37$5 9HUHGD 6DQ 5DIDHO &RUUHJLPL 6DQLWDULR &RUUHJLPLHQWR GH OD $OFDUDYiQ 1LDWD < %$55,26 '(/ $

$ FRQWLQXDFLyQ VH UHODFLRQDQ ODV DFWLYLGDGHV UHDOL]DGDV

Tabla 82 mesas de trabajo con las comunidades de los puntos influencia de la EAAAY

)(&+$	$&7,9,'$'	1R /,'(5(6 < 2 &2081,'$' $6,67(17(2 %(1(),&,$'$	7(0$7,&$	=21$ '(,1)/8(1&,$ %$55,26 < 2 9(5('$6	&2081$ 1R	&255(*,0,(172
	5(81,21 663' &21/$ &2081,'$' '(/$ 9(5'$ %8(1$ 9,67$ %$-$		680,1,6752 $*8$ 9(5('$	37$3 < 5(//(12 6$1,7$5,2		/$ 1,7
	9,6,7$ 9(5('$ /$ 1,7 5(81,21 5(35(617$17(6'(/$ &2081,'$''		&21752/ 75,1&+(5$6 0$1(-2 '(/,;,9,$'26 < 5(&2/(&&,21 5(6,'826 62/,'26	5(//(12 6$1,7$5,2		/$ 1,7
	5(81,21 /,'(5(6 &2081,7$5,26		5(&2/(&&,21 5(6,'826 6Ï/,'26	37$3		(/ 02552
	(1&8(1752 &2081,7$5,2		5(&2/(&&,21 5(6,'826 6Ï/,'26	&$6,48,$5(	&2081$	
	0(6$ '(75$%$-2 62&,$/,=$&,21 &$f2 86,9$5		/,03,(=$ &$f2	37$5		025,&+$/
	0(6$ 7(&1,&$ 62&,$/,=$&,21 $681726 '(6(*85,'$' < $6(2		5(&2/(&&,21 5(6,'826 6Ï/,'26	(/ /$*8,72	&2081$	
	(1&8(1752 &2081,7$5,2		5(&2/(&&,21 5(6,'826 6Ï/,'26	0217(&$5/2	&2081$	
	0(6$ '(75$%$-2		9,6,7$ 7(&1,&$ 680,1,6752 '($*8$	37$3 < 5(//(12 6$1,7$5,2		/$ 1,7
	5(81,21 /,'(5(6		5(&2/(&&,21 5(6,'826 6Ï/,'26 < /,03,(6$ =21$6 95'(6	7255(6 '(6$1 0$5&26	&2081$	
	5(81,21 $/&$/',$		352*50$&,21 -251$'$ '($6(2 < 251$72	72'$6 /$6 &2081$		
	0(6$ '(75$%$-2		5(&2/(&&,Ï1 5(6,'826 6Ï/,'26 < 680,1,6752 '($*8$	7255(6 '(/ 6,/(1&,2	&2081$	
	/$ ($$$< (1 78 %$55,2		$&7,9,'$' ,1)250$7,9$ < /8',&25(&5($7,9$	7255(6 '(6$1 0$5&26	&2081$	

35(16$ < &2081,&$&,21(6

(Q HO $QH[R 3UHQVD VH DGMXQWD LQIRUPH 1R GRQGH DFWLYLGDGHV GHVDUUROODGDV HQ OD LPSOHPHQWDFLyQ GHO SODQ

9,, &203520,626 021,725(2

,QIRUPDU ODV VLWXDFLRQHV UHOHYDQWHV HQ OD SUHVWDFLyQ FDUJR GH ($$$<

/D LQIRUPDFLyQ GH RSHUDFLyQ VH SUHVHQWD HQ HO FDStWXOR ,9 $V GH HVWH PLVPR GRFXPHQWR

,QIRUPDU HO DYDQFH HQ OD LGHQWLILFDFLyQ FODVLILFDFLyQ GRFXPHQWDFLyQ VRSRUWH GH OD GHXGD SUHWRPD

(Q HO DQH[R ILQDQFLHUD VH DGMXQWD PDWUL] GH SODQ GH WUDED DFWLYLGDG \ VH PXHVWUD HO DYDQFH GH LPSOHPHQWDFLyQ

5HPLWLU FRSLD GHO SODQ GH DXGLWRUtDV GH

/D LQIRUPDFLyQ VH SUHVHQWD HQ HO FDStWXOR ,,, $VSHFWRV $GPLQ

,QIRUPH UHVSHFWR GH ODV UHVSXHVWDV GDGDV D FRQWUDORUt QDFLRQDO IUHQWH D ODV DXGLWRUtDV UHDOL]DGDV HQ

/D LQIRUPDFLyQ VH SUHVHQWD HQ HO FDStWXOR ,,, $VSHFWRV $GPLQ

,QIRUPDU ORV DYDQFHV HQ HO FDUJXH GH LQIRUPDFLyQ DO 6LV ,QIRUPDFLyQ 68,

/D LQIRUPDFLyQ VH SUHVHQWD HQ HO FDStWXOR ,,, $VSHFWRV $GPLQ

&XDGUR GRQGH VH HVSHFLILTXHQ SRU IXHQWH GH FDSWDFLyQ SRWDELOL]DFLyQ ORV FDXGDOHV FDSWDGRV \ WUDWDGRV

(Q HO FDStWXOR ,9 RUGLQDO $ QXPHUDO YROXPHQ DJXD SRWDEOH OD LQIRUPDFLyQ VROLFLWDGD GH IRUPD GHWDOODGD

5HVXOWDGRV SDUWLFLSDFLyQ SURJUDPD 3,&$3

(O ODERUDWRULR GH DJXDV SDUWLFLSy HQ HO SURJUDPD 3,&&$3 URQ LQIRUPH QR KDQ HPLWLGR ORV UHVXOWDGRV SRU SDUWH GHO ,16

5HPLWLU FRSLD GHO SODQ GH DXGLWRUtDV GH

/D LQIRUPDFLyQ VH SUHVHQWD HQ HO FDStWXOR ,,, $VSHFWRV $GPLQ

,QIRUPH UHVSHFWR GH ODV UHVSXHVWDV GDGDV D FRQWUDORUt QDFLRQDO IUHQWH D ODV DXGLWRUtDV UHDOL]DGDV HQ

3iJLQD GH

/D LQIRUPDFLyQ VH SUHVHQWD HQ HO FDStWXOR ,,, $VSHFWRV $GPLQ

,QIRUPH 6LVWHPD JHVWLyQ GRFXPHQWDO TXH LQFOX\D HVWDGR
\ DSUREDFLyQ GH WDEODV UHWHQFLyQ GRFXPHQWDO Q~PHUR GH
\ SRUFHQWDMH GH GLJLWDOL]DFLyQ GH GRFXPHQWRV

(Q HO DQH[R $UFKLYR VH DGMXQWD LQIRUPH HPLWLGR
GHO iUHD GH DUFKLYR \ FRUUHVSRQGHQFLD

,QIRUPH GHWDOODGR SUREOHPiWLFD \ DYDQFHV GH LPSOHPHQ
6-7

6H DGMXQWD LQIRUPH 1R FRUUHVSRQGLHQWH DO LQ
1R VHJXQGD SDUWH

5HPLWLU SODQ GH FRPXQLFDFLRQHV

(Q HO $QH[R 3UHQVD VH DGMXQWD HO SODQ HVWUDWpJLFR GH FRPX
(63

&RUUHR 'H 'HQXQFLDV

6H UHSRUWDQ LQIRUPH FRQVROLGDGR GH GHQXQFLDV GHO PHV GH MX
2ILFLQD GH &RQWURO ,QWHUQR 'LVFLSOLQDULR D WUDYpV GH GLIHUH

&DXVDO	7RWDO
,UUHJXODULGDGHV HQ HO HMHUFLFLR GH VXV IXQFLRQHV	
,QFXPSOLPLHQWR GH VXV GHEHUHV	
3UHVXQWD IDOWD GLVFLSOLQDULD	
3UXHED GH DOFRKROHPLD SRVLWLYD	

(VWDGR	7RWDO
$SHUWXUD GH LQYHVWLJDFLyQ	
,QGDJDFLyQ SUHYLD	

$GLFLRQDOPHQWH VH UHPLWH IRUPDWR HQ ([FHO GH FLIUDV UHSUHV
\ UHSRUWH SURFHVRV MXGLFLDOHV

3iJLQD GH

Cifras_representativas_EAAAY

Reporte contractual OAJ

Reporte Procesos Judiciales OAJ

/RV DQH[RV PHQFLRQDGRV HQ HO SUHVHQWH GRFXPHQWR SXHGHQ VHU
OLQN

KWWSV GULYH JRRJOH FRP GULYH IROGHUV :: 5M- X 0P(5O5Y. 4]T0 ;V& SU,

$WHQWDPHQWH

-8'+< 67(//$ 9(/È648(= +(55(5$
$JHQWH (VSHFLDO ± ($$$< (,&((63
5HVROXFLyQ 663' 1R GH

&RQVROLGy $GULDQD &ULVWLQD 5RVDV 9DOGHUUDPD ± $VHVRU GH 3ODQHDF

(ODERUy VHJ~Q LQIRUPHV SUHVHQWDGRV SRU

&RPSRQHQWH -XUtGLFR

,YiQ 3DYHO 0DGHUR 3pUH]± $VHVRU -XUtGLFR <H\PP\ 'D\DQD 0DUtQ 5HLQD /tGHU (
1R

+HUPDQ $GROIR *R\HV 2FDPSR 6XEJHUHQWH $VXQWRV &RUSRUDWLYRV -RHO /ySH] ± /tG
± ,QIRUPH 1R

&RPSRQHQWH $GPLQLVWUDWLYR

/LGD =DUHW *DPERD *RQ]iOH] ± -HIH 2ILFLQD &RQWURO ,QWHUQR *HVWLyQ ± ,QIRUPH

&DUPHQ &ODXGLD 5REOHV =DUDWH ± /LGHU 7DOHQWR +XPDQR 7UDQVLWR 5RGUtJXH]
$1'5(6)(/,3('$=$ +,*(5$ 7HFQyORJR 7DOHQWR +XPDQR ± ,QIRUPH 1R

&RPSRQHQWH 7pFQLFR 2SHUDWLYR

&&$0,/2 &$67,//2 3,1('$ ± 68%*(5(17('(6(59,&,26 3Ò%/,&26 (
)DELDQ +XPEHUWR IDMDUGR 5HVWUHSR ± 'LUHFWRU 2SHUDWLYR $FXHGXFWR \ $OFDQW
/X] 0LUH\D 3DWLxR 6DOFHGR /tGHU 3RWDELOL]DFLyQ \ 6XPLQLVWUR GH $JXD ±

7DQLD 0pQGH] $UpYDOR 7pFQLFD HQ JHVWLyQ GH LQIUDHVWUXFWXUD \ SHUGLGDV ± ,
-RVp 5LFDUGR 0DULxR +HUUHUD ± /tGHU GH /DERUDWRULR GH $JXDV ,QIRUPH 1R
0DXULFLR &DUGRQD ± 7pFQLFR 'LUHFFLyQ 2SHUDWLYD ± ,QIRUPH
)UHG\ $OEHUWR 9DUJDV 8UEDQR 3URIHVLRQDO 8QLGDG $OFDQWDULOODGR 37$5 ± FRU

&DUORV $OEHLUR &DVWUR 6iQFKH] ± /tGHU 3URFHVRV 7pFQLFRV < 0DQWHQLPLHQWR ,
)5('< -29$11< +2/*8Ë1 'Ë$= ± 'LUHFWRU 2SHUDWLYR $VHR
/X] 0DU\ +HUQiQGH] &KDFyQ ± /tGHU 2SHUDFLyQ $VHR ± ,QIRUPH 1R

&RPSRQHQWH &RPHUFLDO

+(50$1 $'2/)2 *2<(6 2&$032 68%*(5(17('($681726 &25325$7,926
-XDQ %HUQDUGR 6DOGDUULDJD (ORU]D 'LUHFWRU *HVWLyQ GH 8VXDULRV \ &RPHUFLD
$QD &HFLOLD 5RGUtJXH])DUiQ 7HFQyORJR 2ILFLQD GH &DUWHUD ,QIRUPH 1R
=XOPD <RMDQD 3pUH] 5RMDV 7HFQyORJD 2ILFLQD GH IDFWXUDFLyQ \ FUtWLFD ,QIRUP
7DQLD %HDWUL] %RKyUTXH] 5RMDV ± /tGHU)LGHOL]DFLyQ \ 1XHYDV &XHQWDV ± FRUUHI
,QIRUPH 345 ,QIRUPH 1R
/DXUD)HUQDQGD 0XxR] & ± 7HFQyORJD 3UHQVD FRPXQLFDFLRQHV \ FRU
-XOLR 2UODQGR $UL]D %RUMD ± /tGHU *RELHUQR &RUSRUDWLYR 5HVSRQVDELOLGDG 6R

&RPSRQHQWH)LQDQFLHUR

/LQD 0DUJDULWD 'LD] =DPEUDQR ± -HIH 'HSDUWDPHQWR)LQDQFLHUR ± FRUUHR HOHFWU