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La Plata River Compact Delivery Study Colorado Water Supply Reserve Account Contract No. POGG1 PDAA 20150000000000000122

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1.0 INTRODUCTION/PURPOSE

The La Plata River Compact Water Delivery Study is intended to create a better understanding of the stream characteristics of the La Plata River along an approximately five-mile reach between Long Hollow and the New Mexico state line (see Figure 1). The study will aid in developing a plan for reservoir releases and improved stream administration. This study has been funded by a Colorado Water Supply Reserve Account (WSRA) grant authorized by the Southwest Basin Roundtable under Contract No. POGG1 PDAA 20150000000000000122. Matching funds and in-kind contributions were provided by the La Plata Water Conservancy District (LPWCD) and the Colorado Division of Water Resources (CDWR). Bikis Water Consultants, a division of SGM (BWC-SGM), was contracted by the LPWCD to conduct the study.

The 1922 La Plata River Compact (Compact) requires the State of Colorado (State) to deliver half of the daily mean flow of the La Plata River at the Hesperus gage to the New Mexico state line the following day. Historically, Colorado has not always been able to satisfy this compact due to a variety of factors, but primarily due to changing stream characteristics along the 31 miles of river channel between the Hesperus and State Line gages. The Bobby K. Taylor (BKT) (formerly Long Hollow) Reservoir was constructed in part to help improve the ability of Colorado to meet the Compact requirements. Releases from the reservoir can be made when streamflow in the La Plata is not sufficient to allow deliver through river sections in the area of Breen, Colorado, which routinely loses water. The challenge of delivering water under the Compact at certain times of the year has been documented in previous studies (Wright Water Engineers, Inc. (WWE) 2004).

Ideally, releases from the BKT Reservoir should:

- improve the State's ability to meet compact obligations, and
- improve the availability of irrigation water supplies in the basin.

2.0 SCOPE OF WORK

The scope of work for the study includes the following elements:

1. Assessment of groundwater conditions including:
    - Review of CDWR well records for nearby wells.

- Review of well logs for existing wells within the study area.
- Installation of one piezometer at the U.S. Bureau of Reclamation (USBR) site in the study area.
- Monitoring of groundwater levels in three wells and one piezometer (see Figure 2).

2. Collection of streamflow data obtained from a combination of field measurements and permanent gaging stations. Existing streamgages that were used included:

   - La Plata River on USBR property (Point A in Figure 2).
   - La Plata River State Line gage (Point D in Figure 2).

   Stream flow measurements were performed using a flow meter and wading rod by either BWC-SGM or CDWR at four locations on the La Plata River (Figure 2):

   - A site just downstream of the confluence with Long Hollow Creek on USBR property (Point A on Figure 2).
   - Near a groundwater monitoring location (Point B).
   - Near a second groundwater monitoring location (Point C).
   - A site near the State Line gage (Point D).

3. Assessment of geologic conditions in the study area included review of the literature, published U.S. Geological Survey (USGS) maps, and CDWR well logs from the area.

3.0 STUDY AREA DESCRIPTION

The study area is located approximately 25 miles southwest of Durango, Colorado (see Figure 1) in southwest La Plata County Colorado and northern San Juan County, New Mexico. It includes an approximately five-mile long reach of the La Plata River, below the confluence of Long Hollow from the existing streamgage on USBR property downstream to the State Line stream gage in New Mexico (see Figure 2).

The La Plata River originates high in the La Plata Mountains, a domed or laccolithic mountain range. Fed largely by winter snow pack in the mountains, the river leaves its canyon just north

of Hesperus and runs down through a broader valley to near Breen. South of Long Hollow, the river becomes more of an entrenched, meandering stream with streamside terraces as it flows into New Mexico.

The vegetation south of Breen is predominately piñon-juniper and sage on the uplands and riparian communities of cottonwoods and willows along water courses. This is the dominant vegetative community in the study area itself.

The surface topography in the study area is characterized by the presence of numerous canyons, gulches, hollows, and draws. The drainages to the west of the La Plata River tend to be larger than those to the east. The extent of drainages from the east is constrained by the outcrop of the Fruitland-Kirtland formations.

3.1 GEOLOGY

The La Plata River is classified as a sinuous stream channel in the study reach and the average gradient in the study area is 39 feet per mile or 0.74 percent. The drainage area above the State Line gage is approximately 310 square miles. Alluvial deposits dominate the river valley and the Lewis Shale and Cliff House Sandstone are exposed in outcrops along valley sides (Figure 3). These formations are believed to underlie the alluvium of the La Plata River in the study area.

The Lewis Shale is exposed throughout the Long Hollow reach. The river bed then moves down into the Cliff House Sandstone before the confluence of Long Hollow and La Plata River. Once Long Hollow meets with the La Plata River, the alluvium deposits overlay the Cliff House Sandstone. The alluvial deposits are generally 10 to 40 feet thick, although bedrock is exposed near and within the stream channel at various locations. Review of well logs near the La Plata River indicates bedrock ranges from 25 to 45 feet below the surface at short distances away from the river. The composition of the alluvium is boulders, gravel, and sand.

The Lewis Shale in the study area forms a northeast striking band that dips to the southeast and is comprised of dark gray clay shale with a few thin beds of yellowish-red concretionary limestone. The upper section contains light olive gray, very fine grained shaley sandstone. The thickness of the Lewis Shale at the state line is about 1,440 feet. The Lewis Shale, along with other formations of the outcrop include the Pictured Cliffs Sandstones, Fruitland Formation, Kirtland Shale (includes Farmington Sandstone), Animas Formation, and Nacimiento Formation,

form the Hogback Monocline that dips steeply to the southeast into the San Juan basin. The study area is located north of the Hogback Monocline.

3.2 GROUNDWATER

Groundwater in the study area is associated with the alluvial deposits along the river (see Figure 3). Additional deeper groundwater in lesser quantities exists in geologic formations underlying the alluvial deposits but this groundwater is not believed to influence stream conditions in the La Plata River.

There is additional shallow groundwater present in deposits overlying the mesas that surround the study area. The Red Mesa Aquifer occurs in terrace gravels and contributes to the surface flows in both the La Plata River and Long Hollow Creek (WWE 2002). Red Mesa Aquifer groundwater is derived primarily from irrigation return flows. This aquifer, although not present in the study area, is closely tied to conditions in the La Plata River alluvial aquifer.

3.3 SURFACE WATER

Major drainages in the study area include Long Hollow Creek, the La Plata River, and several named intermittent tributaries (Johnny Pond Arroyo, Morgan Canyon, Mefford Wash, Dawson Arroyo) as well as several unnamed drainages (see Figure 2). Drainages east of the La Plata River are generally smaller due to the presence of the Fruitland-Kirtland Outcrop and drainages to the west are moderately larger. Drainage from the west reaches the lower part of the study area, and the combination of watershed area and the occurrence of high intensity, localized precipitation events creates potentially large flows from these drainages.

The study area contains three surface water diversions for irrigation that were considered in the study (see Figure 2):

- Sooner Valley Ditch
- Pioneer Ditch
- Enterprise Enlargement Ditch

4.0 METHODS AND RESULTS

4.1 GROUNDWATER

Several investigations of groundwater conditions were conducted to evaluate the relationship between groundwater, streamflow, and losses in the study area. The characteristics of the structures used to monitor groundwater levels varied, and included one constructed piezometer at the USBR site; two existing constructed wells on property owned by Harvey Frost and Carol Baker; and a hand-dug well at Margaret Decker's property. The following were evaluated:

- Variations in groundwater levels with time (irrigation versus non-irrigation season).
- The relationship between groundwater elevation and streamflow.
- Groundwater levels as related to transmission losses for the reach where the wells were located.

Figures 4a to 4d are hydrographs of groundwater levels for the four monitoring wells. These figures show the elevation of groundwater with time. A similar trend is apparent in all the figures: groundwater elevations rose (the water table was closer to the ground surface) during the irrigation season, which also corresponds to the period of generally higher flows in the La Plata River. Groundwater typically rose in early March and receded by late July for the wells on the Frost and USBR properties, and by mid-August for the wells on the Baker and Decker properties.

Figures 5a to 5d show the relationship between streamflow and groundwater levels for the four wells. Flow from the streamgage or flow measuring location nearest the well was used in each plot. Groundwater elevation generally was directly related to flow at each location, as would be expected since each well is located in alluvium which is hydrologically connected to the river to some extent. The relationship between groundwater level and streamflow, as described by the regression equation shown, is significant at the 95 percent level of confidence, but is stronger (higher value for r) for the wells on the USBR and Decker sites (Figures 8a and 8d). These wells are more shallow and located closer to the river than the other wells.

The relation between groundwater levels and streamflow loss in cubic feet per second (cfs) per mile is shown for the wells in Figures 6a to 6d. While there tends to be a slight negative trend

with streamflow loss increasing with deeper groundwater, which would be expected, none of the relations are significant at the 95 percent level of confidence.

4.2 STREAMFLOW MEASUREMENTS

Streamflow measurements were initiated by BWC-SGM in 2014 to obtain measurements at variable flow rates to better characterize channel characteristics between the BKT Reservoir and the State Line gage. Pygmy and Price AA current meters, and USGS methodology were used for performing the flow measurements. Below is a description of stream measurement points:

- Point A: USBR site which is approximately 0.56 mile below Long Hollow and above the Animas La Plata (ALP) riparian corridor mitigation work for the ALP Project that included channel restoration work and planting. A monitoring hole was constructed approximately 47 feet east of the La Plata River for water table monitoring. This measurement point includes inflow into the study area from the La Plata River and Long Hollow.

- Point B: Located approximately 1.3 miles downstream of Point A and at the upstream end of land irrigated by the Sooner Valley Ditch. Measurement accounts for losses from Point A to Point B and diversions from Sooner Valley Ditch.

- Point C: Located 3.7 miles downstream of Point A and at the upstream end of lands irrigated by the Colorado Enterprise Enlargement Ditch. Measurement accounts for channel losses from Point A to Point C and diversions from Sooner Valley Ditch, Pioneer Ditch, and Enterprise Enlargement Ditch (Colorado and New Mexico), and return flows from Sooner Valley Ditch.

- Point D: Located approximately 4.7 miles downstream of Point A at the New Mexico state line. Measurement accounts for channel losses from Point A to Point D, diversions from Sooner Valley Ditch, Pioneer Ditch, and the Enterprise Enlargement Ditch (Colorado and New Mexico), and return flows from Sooner Valley Ditch and Enterprise Enlargement Ditch (Colorado).

Fourteen manual measurements were taken at the USBR gaging site during 2014. An additional thirteen measurements were performed extending to the end of the 2015 irrigation season. Therefore, the work in 2014 and 2015 covered both irrigation and non-irrigation seasons. 2015 measurements were coordinated with BWC-SGM and CDWR staff to collect data at the four designated sites in the study area.

CDWR staff involvement reflected the State's interest in working cooperatively on the development of an administrative framework related to the use of the BKT Reservoir for compact compliance, and staff involvement also served as in-kind contribution to the study. CDWR measurements also provided an independent check on the accuracy of both the USBR and State Line gages (Points A and D).

Some planned flow measurement events were limited or postponed by high flows and some events could not be scheduled with BWC-SGM and CDWR to occur simultaneously.

Streamflow measurements were tabulated and used to estimate transmission losses by individual reach (i.e., between the "Points" shown on Figure 2) and through the entire study reach. For each reach, an adjusted flow was calculated to account for any ditch diversions by adding the diversions to the downstream flow point. The loss for the reach was then calculated as the upstream flow minus the downstream flow adjusted for diversions.

Evaluation of individual reaches allowed for better analysis of the effects of geology on stream characteristics. Furthermore, it should be recognized that the estimated transmission losses include both channel losses and phreatophytic losses during the growing season.

The following were estimated for each reach:

- Total loss in cfs.
- Loss per mile in cfs.
- Total percent loss.
- Percent loss per mile.

Field sheets from the flow measurements are included in Appendix A. The calculations and results are shown in Table 1.

Figure 7 shows the streamflow at Point A versus the loss per mile through the study area (between Points A and D). This figure shows that the loss per mile is directly related to the streamflow in the reach. That is, the loss increases as the streamflow increases.

Streamflow measurements over the period of study reveal flow patterns ranging from small gains/losses to the stream, to occasional losses as high as 9 cfs per mile, depending on the reach segments and the time of year. However, the loss was less than 1 cfs per mile in each

reach most of the time, and there was a gain in streamflow on several occasions, probably due to irrigation return flows accruing to the river. The average loss through the study area for the period analyzed was 1.2 cfs per mile. The reach with the smallest average loss was from Point B to C (Frost to below the Enterprise Ditch) which had a loss of 0.8 cfs per mile. The reach with the largest average loss was from Point C to D (below the Enterprise Ditch to State Line) which had a loss of 2.5 cfs per mile (see Table 1).

Figure 8 shows the streamflow at Point A compared to percent loss per mile through the study area. Consistent with Figure 7, this figure shows that the percent loss is inversely related to streamflow: the amount of the loss relative to streamflow decreases as streamflow increases. That is, the percent loss is lower at higher flows.

The following average channel losses were observed:

- Reach A to B: 5.8 percent per mile (1.3 miles).
- Reach B to C: 11.5 percent per mile (2.5 miles).
- Reach C to D: 24.0 percent per mile (0.9 miles).
- Reach A to D (overall): 9.2 percent per mile (4.7 miles).

During the study period (February 17, 2014 to October 9, 2015), the average loss per mile for the entire stream section monitored (Reach A to D) was 9.2 percent with inflows at Point A ranging from 1.27 to 64.37 cfs.

The total loss in the study area (Reach A to D) was evaluated using linear and non-linear regression techniques. Regression analysis was deemed particularly appropriate based on its use for prediction. A non-linear (power) equation was found to provide the best fit for the data, with an associated correlation coefficient (r) value of 0.77, which is statistically significant at the 95 percent confidence level. The plot of total loss compared to streamflow is shown in Figure 9, which also shows the regression line and equation.

The regression equation was also used to predict the percent loss and the percent loss per mile. The predicted values are shown in the far-right columns of Table 1. While the individual predicted versus measured percent loss values vary to some extent with each measurement,

the average values of 9.2 versus 8.7 percent per mile are relatively close. This indicates that the regression equation provides a good predictor of streamflow loss over the long term.

4.3 BKT Reservoir Release Monitoring

Compact Pool releases were performed in the period between August 14 and October 6, 2015 from the BKT Reservoir. Two streamflow measurements were conducted during this period on August 18th and September 4th and were evaluated in the specific context of delivery to New Mexico. The results of this evaluation are shown in Table 2.

Table 2 shows that 4.2 and 6.0 cfs were released on August 18th and September 4th, respectively. There was more water in the river at the USBR gage (Point A) on both days than the sum of the reservoir release and the flow reported at the Cherry Creek gage upstream. This suggests that there were no large losses of water from the river from the confluence with Long Hollow to Point A on these days. However, the calculated loss of water in the river from Reach A to D was relatively high at 40.7 and 46.3 percent, respectively.

Lastly, the regression equation in Figure 9 was used to estimate transmission losses from Reach A to D on the two dates. As shown in Table 2, the predicted loss was higher than the measured loss on both dates, but was considerably higher on August 18th.

4.4 Historical Streamflow Data Review

One of the study tasks was to review historical streamflow data. Gage data for Long Hollow and the La Plata River at the USBR site and State Line were used in a streamflow mass balance to compare to transmission losses seen in the previous section. The period of record with data from all three sites is relatively limited: overlapping data only exist for 34 months during the period of March 2002 to September 2007. The data are not continuous. Diversions by the Sooner Valley Ditch, Pioneer Ditch for New Mexico, and the Enterprise Enlargement Ditch for Colorado and New Mexico were accounted for in the analysis. Return flows were included for the Sooner Valley Ditch.

As with Table 1, streamflow at the State Line gage was adjusted for diversions by adding diversions by the intervening ditches to the gaged flow. The transmission loss was then calculated as the flow at the USBR gage minus the adjusted flow at the State Line gage. The results of the streamflow water balance, which was completed on an acre-foot (AF) per month basis, are shown in Table 3.

The percent streamflow loss was determined between the USBR and State Line gages, which are Points A and D in the streamflow and channel loss evaluation in Section 4.4. The results of this evaluation found the average percent loss per mile for the entire study area was 7.5 percent, compared to 8.7 percent from the transmission loss study (Table 1); and the total percent loss was 35.4 percent, compared to 40.8 percent from the transmission loss study. These estimates are reasonably close, especially considering that the data used in each method was from a different period with no overlap. As discussed in Section 4.4, the amount of water lost from the river is related to the amount of flow in the river. In summary, the results of the historical stream flow evaluation generally support the findings from the streamflow and channel loss study.

4.5 GEOLOGY

Geologic mapping and literature were evaluated for conditions that might explain variations observed in the streamflow and groundwater data or provide insight into channel characteristics. The analysis of measured streamflow and channel morphology within the individual study area reaches suggest potential channel losses through the alluvium. The areal extent of the alluvium is relatively narrow in the stream segment from A to B, broadens somewhat in the reach from B to C, and broadens greatly moving downstream from Point C. There is a point in the reach from C to D where the stream has been anecdotally described as regularly “disappearing” into the alluvium (see Figure 3). Greater average transmission losses occur in stream reaches that exhibit a greater areal extent of alluvium as shown in the mapping. As shown in Table 1, the average loss per mile in Reaches A to B, B to C, and C to D, measures 0.9, 0.8, and 2.5 cfs, respectively. It should be recognized that the increasing extent of alluvium as the river continues into New Mexico would also be part of the reason for the highest losses in Reach C to D.

Moving south into New Mexico downstream of the study area, the alluvium broadens even more beyond Point D. The Hogback Monocline acts to constrict the extent of alluvium and may influence the water to daylight at what is known locally as the “living waters” in New Mexico. This term refers to the highly localized springs present where groundwater moving down-valley comes to the surface (U.S. Department of the Interior FEIS, 1984). The constriction of alluvium in New Mexico at the outcrop might be expected to increase streamflow.

Although the different average losses seen in the various reaches are helpful in understanding stream characteristics, the average loss through the entire reach (Reach A to D) is most important. It is this overall loss characteristic that is most useful in developing a plan for efficient

delivery of releases from BKT to New Mexico to meet compact obligations. As such, the equation in Figure 9 can be used to estimate losses for the study area and as the basis of the proposed plan for estimating reservoir releases.

5.0 ANALYSIS/CONCLUSIONS

The main conclusions from the study are:

1. The data collected for the study indicate some significant trends between streamflow, groundwater levels, and transmission losses in the study area that can be used to predict losses and improve the administration of releases from BKT Reservoir. Historical streamgage data is limited, but is generally consistent with the data collected for this study.

2. Groundwater levels varied by season, and were generally closer to the surface during the irrigation season. This likely is due to both raised groundwater from irrigation as well as higher flow in the river.

3. Streamflow is well correlated to groundwater levels in the wells monitored, with flow increasing when groundwater is closer to the ground surface. However, channel losses were not well correlated to groundwater elevations. This may be due to the limited number and location of the wells monitored. Other information indicates that water is lost from the channel in a limited reach, and the wells monitored may not be indicative of groundwater conditions in this reach.

4. Streamflow losses are significantly correlated with the amount of water in the river: the loss in cfs per mile is directly proportional to streamflow; the loss in percent or percent per mile is inversely proportional to streamflow. The correlation between percent water lost in the study area and the amount of flow at the USBR gage is statistically significant. The resulting regression equation can be used to predict the percent loss in the river from releases from BKT reservoir.

5. The channel losses are likely strongly associated with surficial geologic conditions, and the extent of the alluvium. Larger channel losses occur when the alluvium is broader.

6.0 PLAN FOR RESERVOIR RELEASES AND STREAM ADMINISTRATION

One goal of this study was to "develop a plan for reservoir releases and stream administration". Ultimately, stream administration (or implementation of releases) will depend on actual releases from BKT Reservoir and actual flows at the State Line gage. A plan is proposed to meet this goal based on the results of this study. The plan provides a basis for determining reservoir releases. It is possible the plan could be refined in the future based on additional data collection and analysis.

A method was developed to determine the amount of releases from BKT Reservoir needed to meet compact obligations using the results of the transmission loss study (Section 4.2), based on the amount of flow in the river. This method is shown in Table 4 and described in the following:

- Column 1 shows levels of potential delivery obligations. The values in Column 1 would be determined in practice by the gage readings at Hesperus and State Line.
- The values in Column 2 were arbitrarily selected for illustration purposes and would be determined in practice by actual State Line gage measurements.
- Column 3 is the difference between Column 1 and Column 2 divided by a 24-hour day to determine duration of release. It is not possible to meet the compact requirement at lower release rates, and this is indicated in the table.
- Column 4 is the estimated loss for releases from BKT Reservoir based on the non-linear regression equation developed in the study ($y=110.72x^{-0.431}$).
- Column 5 is the estimated loss from BKT Reservoir to the State Line in AF.
- Column 6 is the estimated level of the release needed to meet delivery obligations at the State Line.
- Column 7 is the reduction in total release compared to that at 2 cfs release.

It should be recognized that this approach uses a single transmission loss for the entire reach even though the data shows that the transmission loss varies in the respective reaches. Furthermore, the data on the possible loss in the reach from BKT Reservoir to Point A on the La

Plata River are limited, but indicate little to no loss in this reach. However, it is believed that using an average loss for the entire reach is a reasonable starting point for estimating delivery requirements, with future refinements possible based additional data and experience.

An additional evaluation was completed to evaluate how much losses could potentially be reduced by meeting a given compact requirement by releasing at a higher rate, since the channel loss study found that the percent water lost decreased with higher flow rates. This analysis was completed assuming a range of release rates from 2 to 50 cfs. The results of this evaluation are shown on Figure 10.

Table 4 and Figure 10 show that less water needs to be released from BKT Reservoir to meet a compact delivery requirement at higher release rates since the amount of transmission loss is reduced. For example, to provide 5 cfs of flow at the State Line gage (or approximately 10 AF in one day), the following amounts of water would need to be released from the reservoir, based on the results of this study (note that a Compact requirement of 10 AF cannot be met at a release rate of 2 cfs):

- 15.5 AF at 5 cfs,
- 14.1 AF at 10 cfs,
- 12.6 AF at 30 cfs, and
- 12.1 AF at 50 cfs.

The percent of water that could be saved based on the release rate from the reservoir was calculated compared to a release rate 2 cfs. The amount of water saved is shown in column 7 of Table 4; the percent of water savings, which is independent of the compact delivery requirement, is plotted in Figure 11.

As shown in column 7 of Table 4, almost 34 percent less water would need to be released to meet a compact delivery obligation if the water from BKT Reservoir was released at a rate of 50 cfs versus 2 cfs. However, the maximum efficiency in terms of release per cfs is from 2 to 20 cfs. This is evident from the slope of the graph in Figure 11 which is relatively steep in the range of 2 to 20 cfs, and considerably flatter for 20 to 50 cfs. Factors that need to be considered for compact deliveries include:

- the total amount of water to be delivered,
- delivery efficiencies,
- the bankfull capacity of the Long Hollow channel (approximately 18 cfs), and
- the desirability to provide more uniform releases for irrigators.

Considering these factors, it is recommended that a release rate of 20 to 25 cfs be used to the extent possible for meeting daily compact delivery requirements. This release rate helps to optimize the use of water stored in BKT Reservoir.

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Tables

Table 1. Transmission Loss Calculations - La Plata River Compact Water Delivery Study

La Plata Water Conservancy District

(All values in cubic feet per second unless otherwise noted)

Date	Point A (BOR Site)	Point B (SUIT-1 - Frost)	Point C (CDWR site - Below Enterprise Ditch)	Point D (CDWR - LAPMEXCO)	Point D - Adjusted for Irrigation Diversions	Reach A to B[1]					Reach B to C[2]						Reach C to D[3]				Reach A to D[4]				Reach A to D from Non-linear Regression Formula[5]	
						Total Reach Loss	Sooner Valley Ditch Diversion	Loss Per Mile	Total %	% per Mile	Total Reach Loss	Enterprise Ditch Co. Diversion	Pioneer Ditch Diversion	Loss Per Mile	Total %	% per Mile	Total Reach Loss	Loss Per Mile	Total %	% per Mile	Total Reach Loss	Loss Per Mile	Total %	% per Mile	Total %	% per Mile
2/17/2014	7.60	-	-	3.52	3.81	-	0.0	-	-	-	-	0.29	0.0	-	-	-	-	-	-	-	3.80	0.81	49.93	10.62	46.2	9.8
3/14/2014	14.94	-	-	7.78	7.78	-	0.0	-	-	-	-	0.0	0.0	-	-	-	-	-	-	-	7.16	1.52	47.93	10.20	34.5	7.3
4/4/2014	18.89	-	-	8.86	11.57	-	0.0	-	-	-	-	0.60	2.11	-	-	-	-	-	-	-	7.32	1.56	38.75	8.24	31.2	6.6
4/11/2014	23.92	-	-	9.51	13.05	-	0.0	-	-	-	-	1.10	2.44	-	-	-	-	-	-	-	10.87	2.31	45.43	9.67	28.2	6.0
4/18/2014	41.97	-	-	21.10	25.93	-	0.0	-	-	-	-	1.62	3.21	-	-	-	-	-	-	-	16.04	3.41	38.22	8.13	22.1	4.7
4/30/2014	31.79	-	-	20.50	25.65	-	1.3	-	-	-	-	1.46	2.37	-	-	-	-	-	-	-	6.14	1.31	19.32	4.11	24.9	5.3
5/7/2014	64.37	-	-	47.50	53.47	-	1.6	-	-	-	-	0.85	3.50	-	-	-	-	-	-	-	10.90	2.32	16.93	3.60	18.4	3.9
7/1/2014	5.71	-	-	3.00	4.84	-	0.0	-	-	-	-	0.01	1.83	-	-	-	-	-	-	-	0.87	0.19	15.24	3.24	52.3	11.1
8/22/2014	1.27	-	-	0.00	0.0	-	0.0	-	-	-	-	0.0	0.0	-	-	-	-	-	-	-	1.27	0.27	100.00	21.28	99.8	21.2
10/1/2014	17.79	-	-	10.50	10.50	-	0.0	-	-	-	-	0.0	0.0	-	-	-	-	-	-	-	7.29	1.55	40.98	8.72	32.0	6.8
10/7/2014	16.72	-	-	10.70	10.70	-	0.0	-	-	-	-	0.0	0.0	-	-	-	-	-	-	-	6.02	1.28	36.00	7.66	32.9	7.0
11/10/2014	9.29	-	-	6.93	6.93	-	0.0	-	-	-	-	0.0	0.0	-	-	-	-	-	-	-	2.36	0.50	25.40	5.41	42.4	9.0
12/1/2014	3.98	-	-	0.93	0.93	-	0.0	-	-	-	-	0.0	0.0		-	-	-	-	-	-	3.05	0.65	76.53	16.28	61.0	13.0
12/12/2014	3.37	3.06	1.28	0.75	0.76	0.31	0.0	0.24	9.20	7.08	1.77	0.01	0.0	0.71	57.72	23.09	0.53	0.59	41.41	46.01	2.61	0.55	77.34	16.45	65.6	14.0
2/10/2015	3.70	2.98	1.04	0.52	0.56	0.72	0.0	0.55	19.46	14.97	1.90	0.04	0.0	0.76	63.65	25.46	0.52	0.58	50.00	55.56	3.14	0.67	84.78	18.04	63.0	13.4
3/5/2015	4.45	3.96	1.87	1.19	1.19	0.49	0.0	0.38	11.01	8.47	2.09	0.00	0.0	0.84	52.78	21.11	0.68	0.76	36.36	40.40	3.26	0.69	73.26	15.59	58.2	12.4
3/23/2015	30.89	26.77	18.70	16.60	21.54	2.68	1.4	2.06	8.68	6.67	4.57	0.77	2.73	1.83	17.06	6.82	2.10	2.33	11.23	12.48	9.35	1.99	30.26	6.44	25.2	5.4
4/2/2015	35.68	33.35	-	22.80	28.88	0.53	1.8	0.41	1.49	1.14	-	1.25	3.03	-	-	-	-	-	-	-	6.80	1.45	19.05	4.05	23.7	5.0
4/17/2015	25.54	24.87	18.90	17.34	19.67	0.67	0.0	0.52	2.62	2.02	3.64	0.35	1.98	1.45	14.62	5.85	1.56	1.73	8.25	9.17	5.87	1.25	22.97	4.89	27.4	5.8
4/23/2015	14.63	17.42	-	9.30	11.15	-2.79	0.0	-2.15	-19.07	-14.67	-	0.0	1.85	-	-	-	-	-	-	-	3.48	0.74	23.79	5.06	34.8	7.4
5/8/2015	47.42	41.08	38.05	32.39	35.15	6.34	0.0	4.88	13.37	10.28	0.27	0.0	2.76	0.11	0.66	0.26	5.66	6.29	14.88	16.53	12.27	2.61	25.88	5.51	21.0	4.5
7/15/2015	58.16	55.60	55.72	47.70	51.22	2.56	0.0	1.97	4.40	3.39	-3.64	1.41	2.11	-1.46	-6.55	-2.62	8.02	8.91	14.39	15.99	6.94	1.48	11.93	2.54	19.2	4.1
7/31/2015	15.79	14.60	8.24	8.25	10.11	1.19	0.0	0.92	7.54	5.80	4.50	0.0	1.86	1.80	30.82	12.33	-0.01	-0.01	-0.12	-0.13	5.68	1.21	35.97	7.65	33.7	7.2
8/18/2015	6.46	6.50	4.68	3.83	3.83	-0.04	0.0	-0.03	-0.62	-0.48	1.82	0.0	0.0	0.73	28.00	11.20	0.85	0.94	18.16	20.18	2.63	0.56	40.71	8.66	49.5	10.5
9/4/2015	6.48	5.32	-	3.48	3.48	1.16	0.0	0.89	17.90	13.77	-	0.0	0.0	-	-	-	-	-	-	-	3.00	0.64	46.30	9.85	49.5	10.5
10/9/2015	3.55	2.78	-	0.15	0.59	0.77	0.0	0.59	21.69	16.68	-	0.0	0.43	-	-	-	-	-	-	-	2.96	0.63	83.44	17.75	64.1	13.6
					Average:	**1.12**		**0.9**	**7.5**	**5.8**	**1.9**			**0.8**	**28.8**	**11.5**	**2.2**	**2.5**	**24.0**	**24.0**	**5.8**	**1.2**	**43.3**	**9.2**	**40.8**	**8.7**

Notes:
BOR = U.S. Bureau of Reclamation.
CDWR = Colorado Division of Water Resources.
LAPMEXCO = La Plata River at the Colorado-New Mexico Stateline monitoring site.
Point A streamflow measurement taken approximately 150 feet upstream of the BOR Bridge below the confluence of Long Hollow.
Point B streamflow measurement taken approximately 150 feet west of house.
Point C measurement taken at La Plata River below Enterprise Ditch waste way.
Point D measurement taken 37 to 104 feet below Colorado-New Mexico Stateline gage.
Percent (%) = amount of loss from Point A
Empty cells indicate no measurements taken.
A loss with a negative sign indicates a gain.

Footnotes:
1) Reach A to B distance = 1.3 miles - used 60% irrigation efficiency for Sooner Valley Ditch.
2) Reach B to C distance = 2.5 miles - used 60% irrigation efficiency for Enterprise Ditch CO.
3) Reach C to D distance = 0.9 miles.
4) Reach A to D distance = 4.7 miles.
5) Non-linear regression formula: $y = 110.72x^{(-0.431),}$ where x = streamflow at Point A, and y = total loss.

Table 2. Compact Pool Release Monitoring

La Plata Water Conservancy District

(All values in cubic feet per second unless otherwise noted.)

Date	LONBLOCO	LAPCHECO	USBR (Point A)	LAPMEXCO (Point D)	Calculated % Loss[(1)]	Predicted % Loss[(2)]
8/18/2015	4.2	1.71	6.46	3.83	40.7	60.9
9/4/2015	6.0	0.0	6.48	3.48	46.3	51.5

Notes:
LAPCHECO = La Plata River below mouth of Cherry Creek near Red Mesa.
LAPMEXCO = La Plata River at the Colorado-New Mexico Stateline monitoring site.
LONBOLOCO = Long Hollow below Long Hollow Reservoir.
USBR = U.S. Bureau of Reclamation

Footnotes:
1) Calcuated percent loss from Table 1.
2) Predicted percent loss is from regression equation, Figure 6, $y=110.72x^{(-0.431)}$.

Table 3. Historical Streamflow Mass Balance Analysis (La Plata River Below Long Hollow to State Line)

La Plata Water Conservancy District

(All values in acre-feet, unless otherwise noted.)

Date	(1) USBR Gage	(2) Sooner Valley Ditch	(3) Pioneer Ditch	(4) Enterprise Enlargement Ditch	(5) State Line Gage	(6) Transmission Loss	(7) Transmission Loss (%)	(8) Transmission Loss (%/Mile)
Mar-02	522.1	38.5	107.0	6.8	242.3	127.4	24.4	5.2
Apr-02	1,282.0	12.4	93.0	68.7	603.4	504.4	39.3	8.4
May-02	912.8	5.1	105.0	88.3	515.5	198.9	21.8	4.6
Jun-02	173.5	0.0	1.0	0.0	166.2	6.4	3.7	0.8
Jul-02	110.8	0.0	0.0	0.0	76.4	34.3	31.0	6.6
Aug-02	121.1	0.0	0.0	0.0	76.7	44.4	36.7	7.8
Sep-02	214.3	0.0	0.0	0.0	102.1	112.2	52.3	11.1
Oct-02	261.6	0.0	0.0	0.0	172.8	88.7	33.9	7.2
Nov-02	288.2	0.0	0.0	6.6	205.3	76.2	26.5	5.6
Jan-03	410.4	0.0	0.0	2.5	409.5	-1.5	-0.4	-0.1
Feb-03	361.2	5.4	0.0	38.3	139.0	178.5	49.4	10.5
Mar-03	717.6	52.3	0.0	24.6	358.6	282.1	39.3	8.4
Apr-03	2,238.2	52.7	172.0	195.7	1,297.1	520.7	23.3	4.9
May-03	4,498.4	37.0	213.0	240.4	3,524.3	483.7	10.8	2.3
Jun-03	2,511.5	6.3	166.0	149.1	1,611.6	578.5	23.0	4.9
Jul-03	151.9	7.4	12.0	0.8	21.8	109.9	72.4	15.4
Aug-03	203.9	26.9	1.0	6.4	81.5	88.1	43.2	9.2
Oct-03	501.8	0.0	12.0	83.1	180.5	226.2	45.1	9.6
Nov-03	320.5	0.0	0.0	15.3	221.1	84.1	26.2	5.6
Mar-06	740.9	19.4	34.0	100.2	318.7	268.6	36.3	7.7
Apr-06	3,010.0	49.7	78.0	189.4	1,751.3	941.5	31.3	6.7
May-06	6,029.2	26.3	182.0	181.2	3,529.4	2,110.3	35.0	7.4
Jun-06	3,592.5	1.0	139.0	138.3	895.1	2,419.2	67.3	14.3
Jul-06	1,439.5	16.0	96.0	90.0	355.5	882.1	61.3	13.0
Aug-06	402.7	8.8	84.0	24.4	132.1	153.5	38.1	8.1
Sep-06	1,062.0	8.4	96.0	52.9	597.7	307.0	28.9	6.2
Oct-06	3,009.8	82.2	16.0	148.1	2,297.8	465.7	15.5	3.3
Mar-07	2,561.5	53.9	0.0	142.3	967.6	1,397.6	54.6	11.6
Apr-07	2,762.6	41.6	140.0	203.1	1,110.2	1,267.7	45.9	9.8
May-07	3,912.9	46.4	208.0	284.0	3,513.2	-138.8	-3.5	-0.8
Jun-07	3,203.2	14.6	126.0	167.6	2,290.9	604.1	18.9	4.0
Jul-07	2,198.7	8.0	116.0	115.9	571.8	1,387.1	63.1	13.4
Aug-07	2,355.7	4.7	116.0	100.7	1,002.0	1,132.2	48.1	10.2
Sep-07	2,052.8	8.4	113.0	117.4	554.9	1,259.1	61.3	13.1
					Average:	**535.3**	**35.4**	**7.5**

Notes:
CDWR = Colorado Division of Water Resources
LPR = La Plata River
USBR = U.S. Bureau of Reclamation

Column Notes:
1) Equals Flow data from LPR USBR Stevens Recorder below confluence of Long Hollow.
2) Equals CDWR diversion data from Sooner Valley Ditch; used 60% irrigation efficiency.
3) Equals CDWR diversion data for Pioneer Ditch (PIODTICO).
4) Equals CDWR diversion data for Enterprise Enlargement Ditch (ENDITCO) includes Colorado and New Mexico diversions; irrigation efficiency was not applied due to lack of data to separate diversions between Colorado and New Mexico.
5) Equals Flow data from CDWR Colorado/New Mexico gage (LAPMEXCO).
6) Equals Column (1) - Column () + Column (2) + Column (3) + Column (4).
7) Equals Column (6) / Column (1) x 100.
8) Equals Column (7) / 4.7 miles.

Table 4. Reservoir Release Plan
La Plata Water Conservancy District

(1)	(2)	(3)	(4)	(5)	(6)	(7)	
Daily Delivery Obligation (AF)	Possible Release Rate (cfs)	Duration of Release (hours)	Calculated % Loss	Estimated Total Loss (AF)	Estimated Release (AF)	Water Savings per Release	
						%	AF
5	2	30*					
	5	12	55.3	2.8	7.8	14.7	1.3
	10	6	41.0	2.1	7.1	22.6	2.1
	20	3	30.4	1.5	6.5	28.4	2.6
	30	2	25.6	1.3	6.3	31.1	2.8
	40	1.5	22.6	1.1	6.1	32.7	3.0
	50	1.2	20.5	1.0	6.0	33.8	3.1
10	2	60*					
	5	24	55.3	5.5	15.5	14.7	2.7
	10	12	41.0	4.1	14.1	22.6	4.1
	20	6	30.4	3.0	13.0	28.4	5.2
	30	4	25.6	2.6	12.6	31.1	5.7
	40	3	22.6	2.3	12.3	32.7	6.0
	50	2	20.5	2.1	12.1	33.8	6.2
20	2	121*					
	5	48*					
	10	24	41.0	8.2	28.2	22.6	8.2
	20	12	30.4	6.1	26.1	28.4	10.3
	30	8	25.6	5.1	25.1	31.1	11.3
	40	6	22.6	4.5	24.5	32.7	11.9
	50	5	20.5	4.1	24.1	33.8	12.3
50	2	302*					
	5	121*					
	10	60*					
	20	30*					
	30	20	25.6	12.8	62.8	31.1	28.3
	40	15	22.6	11.3	61.3	32.7	29.8
	50	12	20.5	10.3	60.3	33.8	30.8

Notes:
* = cannot meet daily delivery obligation at this release rate
AF = acre feet
cfs = cubic feet per second

Column Notes:
1) Based on flow at Hesperus gage.
2) Possible release rate in cubic feet per second for the purpose of illustrating release scenarios.
3) Equals Column (1) / ((Column (2) * 1.9835)/24).
4) Loss calculated using the following equation: Percent loss = $110.72\ x^{(-0.431)}$, where x = the flow in Column (2).
5) Equals Column (1) x Column (4) / 100.
6) Equals Column (1) + (Column (5).
7) Reduction in total release required compared to that at 2 cfs release.

Figures

Hesperus

Hesperus Gage

160

Durango

141

Lake Nighthorse

Breen

Long Hollow Creek

140

La Plata River

550

Bobby K. Taylor Reservoir

Colorado

State Line Gage

New Mexico

Map Legend

- Stream Gage
- Approximate Study Area
- La Plata County
- Stream/River
- US Highway
- State Highway

Map Sources:
Background Image - ESRI
Road Data - La Plata County GIS
Rivers - Colorado Division of Wildlife
Stream Gage - CDWR

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(970) 385-2340ph 385-2341fx
www.BikisWater.com

0 6,000 12,000 24,000 Feet

1 inch = 12,000 feet

Designed by: SCV
Checked by: EAB
Date: 12/2/2015
Scale: 1:144,000

Vicinity Map of Study Area

Figure 1

P:\Project Files\002-06 LPWCD\Mapping\ArcMap_files\2015\Water Delivery Study\Fig1 Vicinity 11x17.mxd

Map Legend

- USBR Piezometer
- Stream Gage
- Well
- BWC Stream Monitoring Location
- CDWR Stream Monitoring Location
- River/Stream
- State Highway
- Approximate Study Area
- State Line
- Bobby K. Taylor Reservoir

108°13'W 108°12'30"W 108°12'W 108°11'30"W 108°11'W 108°10'30"W 108°10'W 108°9'30"W 108°9'W

37°5'N 37°4'30"N 37°4'N 37°3'30"N 37°3'N 37°2'30"N 37°2'N 37°1'30"N 37°1'N 37°0'30"N 37°0'N 36°59'30"N

Mooney Draw
Church Hollow
First Canyon
La Plata River
Government Draw
Long Hollow
Bobby K. Taylor Reservoir
Bragg Draw
Point A
Johnson Canyon
Johnny Pond Arroyo
Point B
140
Point C
Morgan Canyon
Point D
Mefford Wash
Colorado
New Mexico
Cinder Gulch

Map Sources:
Aerial Photograph - NAIP Sept 20, 2013
Boundary and Road Data - La Plata County GIS
Rivers - Colorado Division of Wildlife
Monitoring Locations - BWC/CDWR GPS

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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0 1,100 2,200 4,400 Feet

1 inch = 2,200 feet

Designed by: SCV
Checked by: EAB
Date: 12/30/2015
Scale: 1:26,400

Study Area

Figure 2

P:\Project Files\002-06 LPWCD\Mapping\ArcMap_files\2015Water Delivery Study\Fig2 Study Area 11x17.mxd

Map Legend

- "River Disappears"
- County Road
- State Highway
- StateLine
- River/Stream
- Area of "Living Springs"
- Approximate Study Area
- Bobby K. Taylor Resrvoir

Point A
Point B
Point C
Point D

Colorado
New Mexico

Silva Draw
La Plata River
Wilden Draw
Church Hollow
Mooney Draw
Butch Henry Draw
Cannibal Canyon
Third Canyon
First Canyon
Government Draw
Long Hollow
Bragg Draw
Cinder Gulch
Johnny Pond Arroyo
Post Canyon
Johnson Canyon
Morgan Canyon
Mefford Wash
Dawson Arroyo

RED HORSE SYNCLINE
MONOCLINE
HOGBACK

Redmesa
Landfill

COUNTY 136 ROAD
140

Kch
Kl
Qg
Qp
Qa
Kmf
Kf
Kpc
Kkl
Kkf
Kku
Tka
Tn
TKa

Map Sources:
Geology - Condon, 1990
State Line & Road Data - La Plata County GIS
Rivers - Colorado Division of Wildlife
Monitoring Locations - BWC/CDWR GPS
Section Data - PLSS

Geologic Legend
Qa - Alluvium
Qg - Terrace gravel
Qp - Pediment deposit
Tn - Nacimiento Formation
Tka - Animas Formation
Kku - Kirtland Shale (upper member)
Kkf - Farmington Sandstone
Kkl - Kirtland Shale (lower member)
Kf - Fruitland Formation
Kpc - Pictured Cliffs Sandstone
Kl - Lewis Shale
Kch - Cliffhouse Sandstone
Kmf - Menefee Formation
- Fault

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0 2,000 4,000 8,000 Feet

1 inch = 4,000 feet

Designed by: SCV
Checked by: EAB
Date: 12/30/2015
Scale: 1:48,000

Surficial Geology

Figure 3

P:\Project Files\002-06 LPWCD\Mapping\ArcMap_files\2015\Water Delivery Study\Fig3 Surficial Geo 11x17.mxd

Figure 4a. Hydrograph for USBR Well (GW-1)

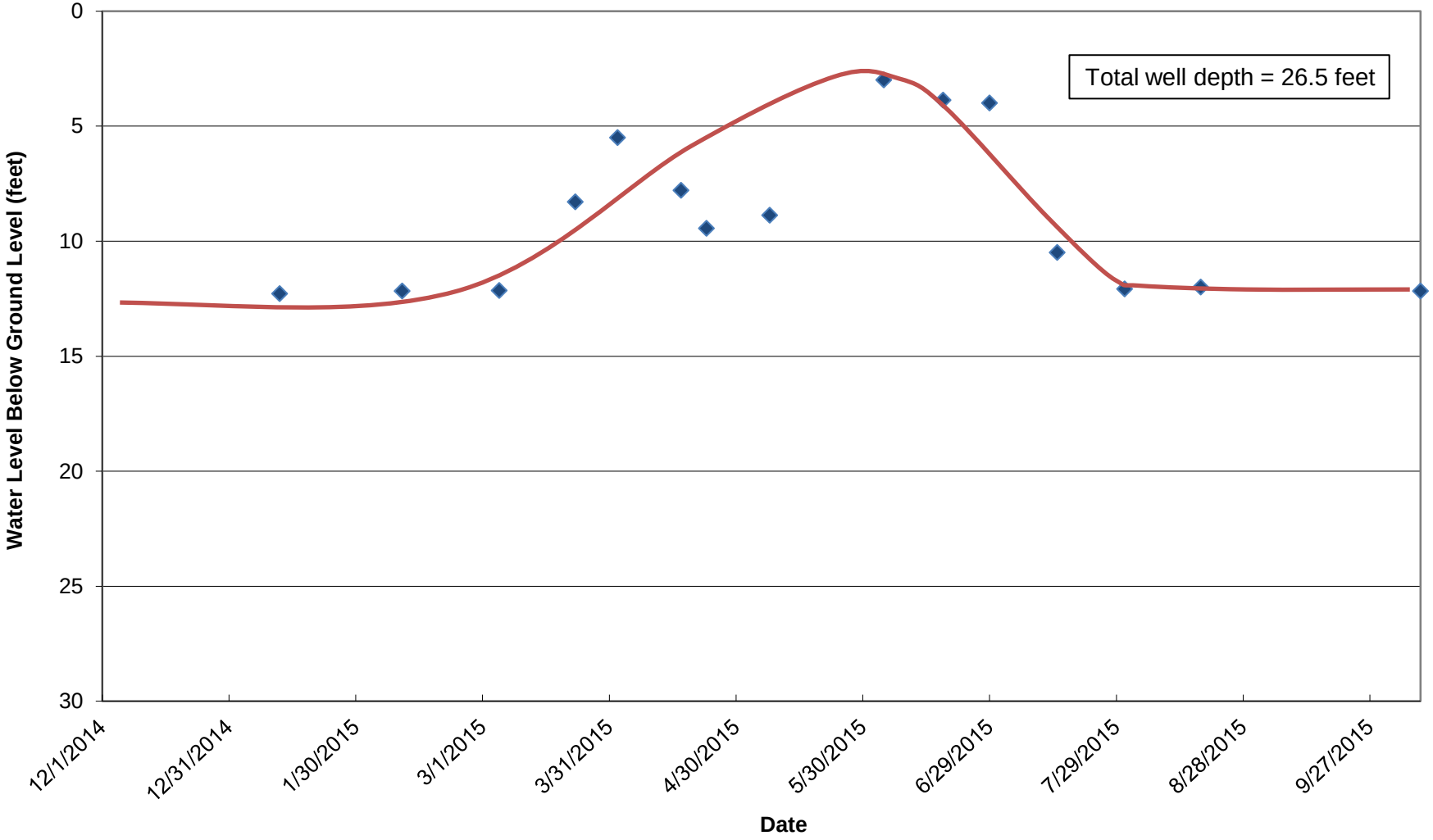


Figure 4b. Hydrograph for Frost Well - GW-2 (102205A)

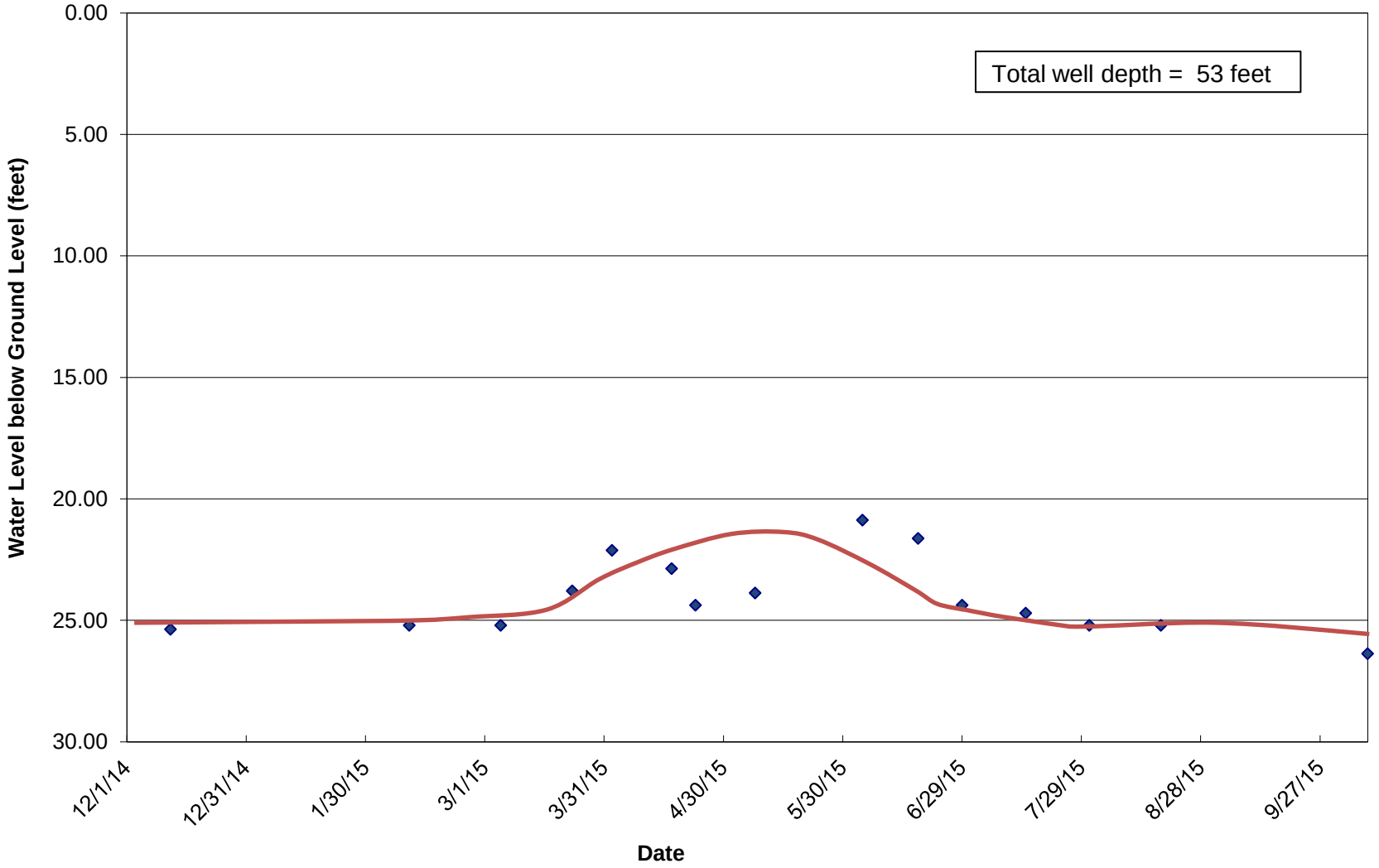


Figure 4c. Hydrograph for Baker Well - GW-3 (52683-F)

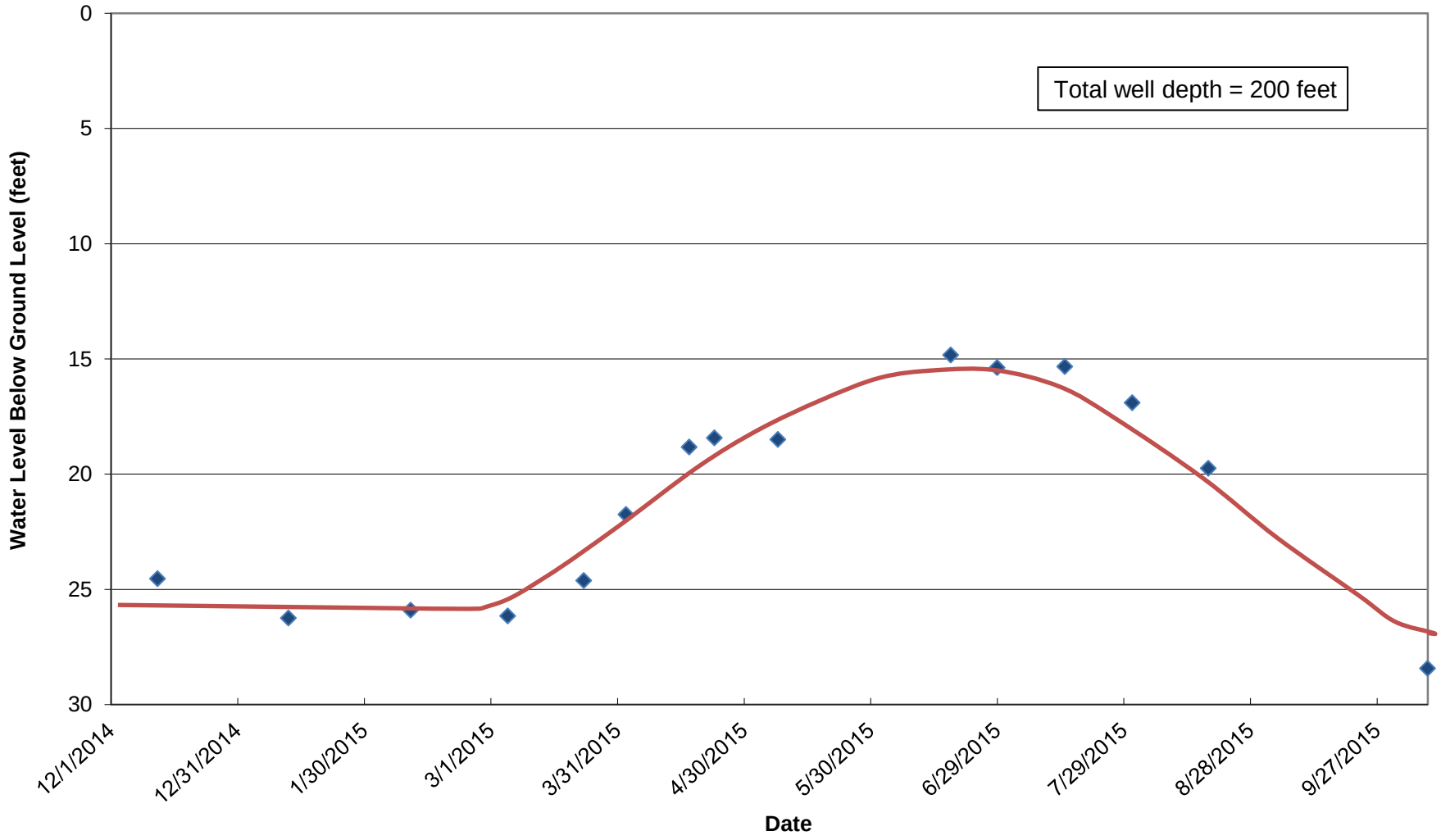
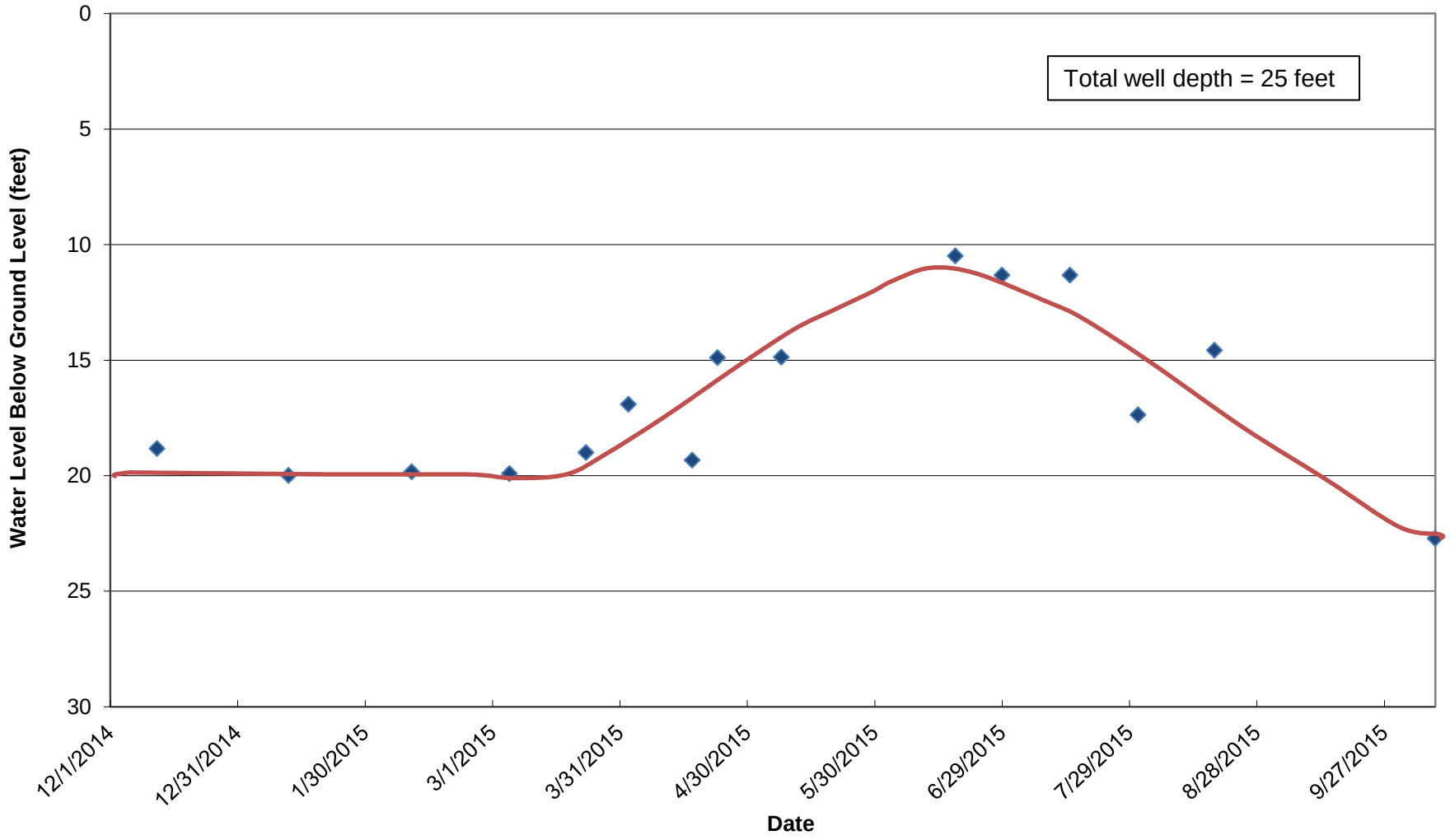


Figure 4d. Hydrograph for Decker Well (GW-4)



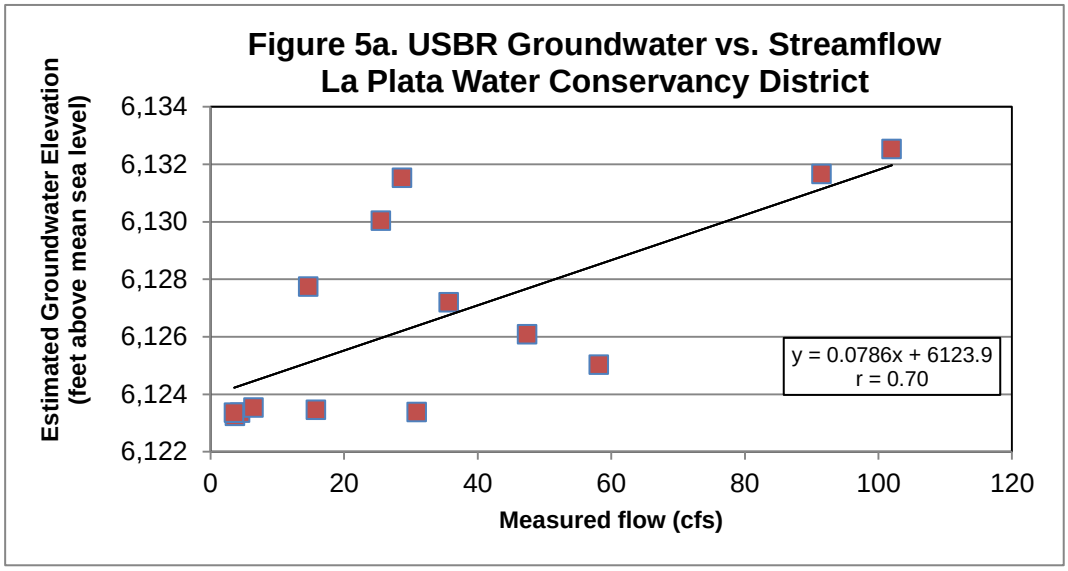


Figure 5a. USBR Groundwater vs. Streamflow
La Plata Water Conservancy District
Estimated Groundwater Elevation (feet above mean sea level)
6,134
6,132
6,130
6,128
6,126
6,124
6,122
0
20
40
60
80
100
120
Measured flow (cfs)
y = 0.0786x + 6123.9
r = 0.70

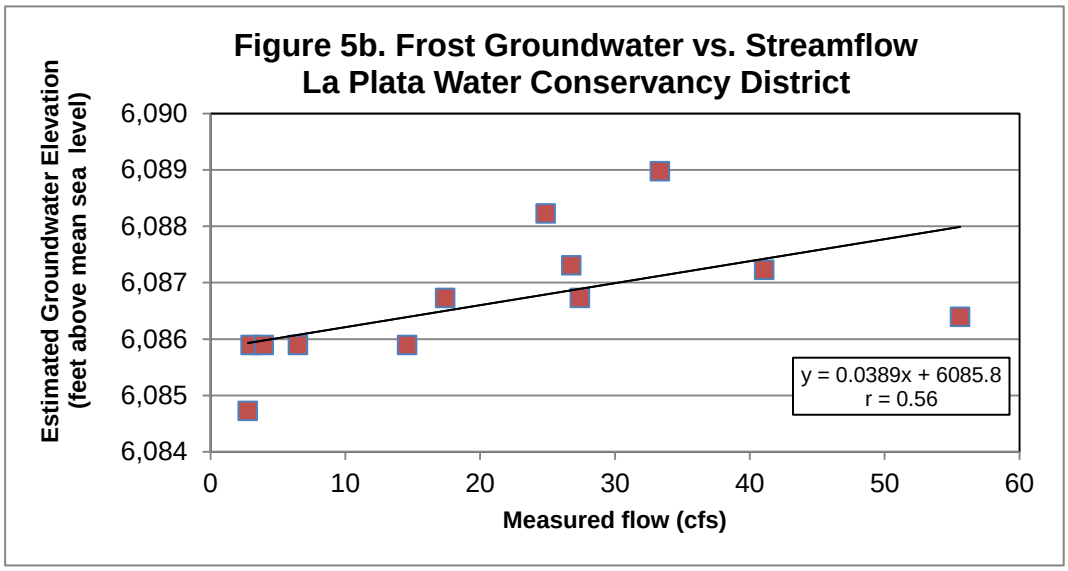


Figure 5b. Frost Groundwater vs. Streamflow
La Plata Water Conservancy District
Estimated Groundwater Elevation (feet above mean sea level)
6,090
6,089
6,088
6,087
6,086
6,085
6,084
0
10
20
30
40
50
60
Measured flow (cfs)
y = 0.0389x + 6085.8
r = 0.56

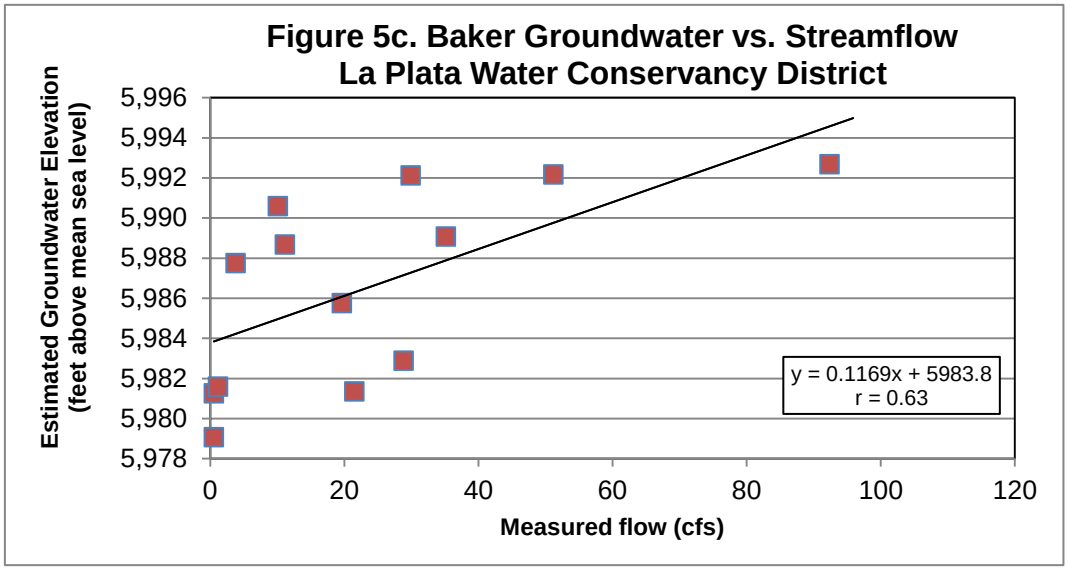


Figure 5c. Baker Groundwater vs. Streamflow
La Plata Water Conservancy District
Estimated Groundwater Elevation (feet above mean sea level)
5,996
5,994
5,992
5,990
5,988
5,986
5,984
5,982
5,980
5,978
0
20
40
60
80
100
120
Measured flow (cfs)
y = 0.1169x + 5983.8
r = 0.63

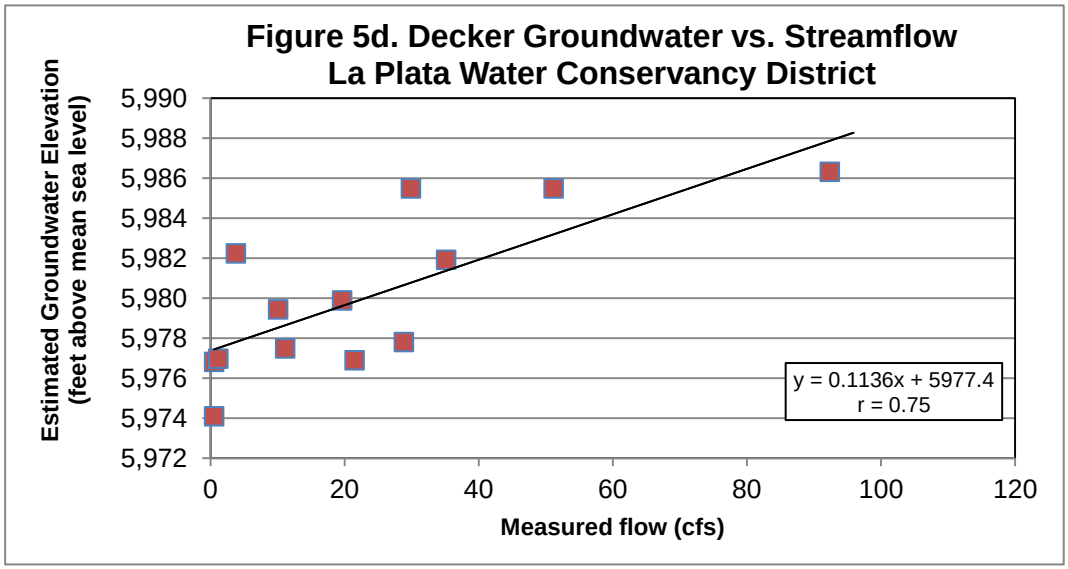


Figure 5d. Decker Groundwater vs. Streamflow
La Plata Water Conservancy District
Estimated Groundwater Elevation (feet above mean sea level)
5,990
5,988
5,986
5,984
5,982
5,980
5,978
5,976
5,974
5,972
0
20
40
60
80
100
120
Measured flow (cfs)
y = 0.1136x + 5977.4
r = 0.75

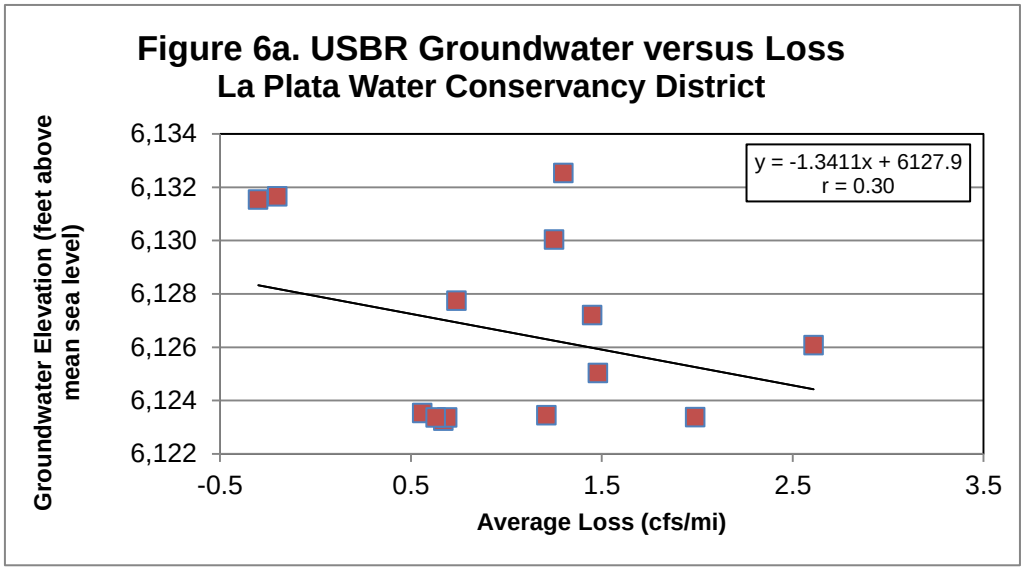


Figure 6a. USBR Groundwater versus Loss
La Plata Water Conservancy District
Groundwater Elevation (feet above mean sea level)
6,134
6,132
6,130
6,128
6,126
6,124
6,122
-0.5
0.5
1.5
2.5
3.5
Average Loss (cfs/mi)
y = -1.3411x + 6127.9
r = 0.30

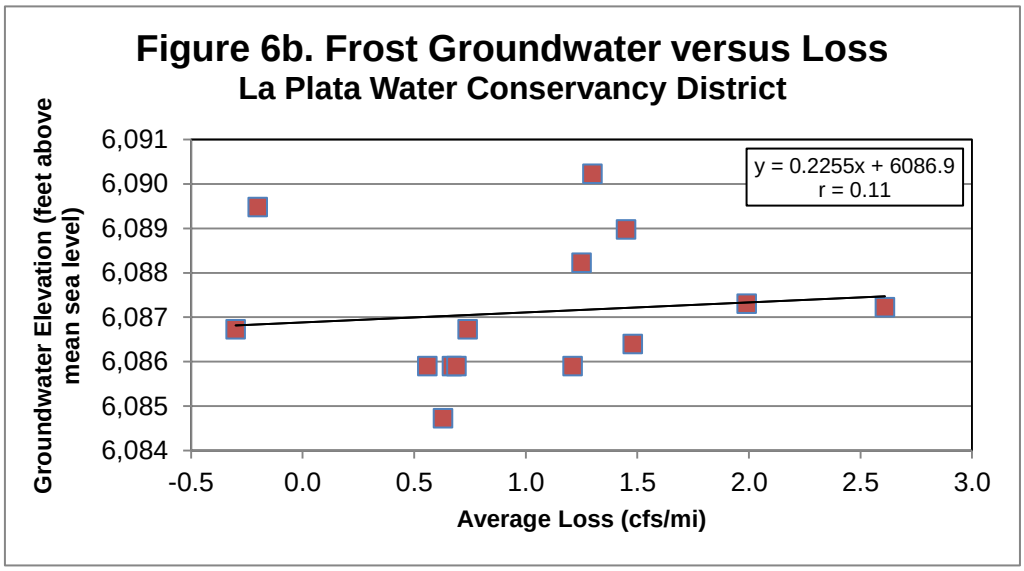


Figure 6b. Frost Groundwater versus Loss
La Plata Water Conservancy District
Groundwater Elevation (feet above mean sea level)
6,091
6,090
6,089
6,088
6,087
6,086
6,085
6,084
-0.5
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Average Loss (cfs/mi)
y = 0.2255x + 6086.9
r = 0.11

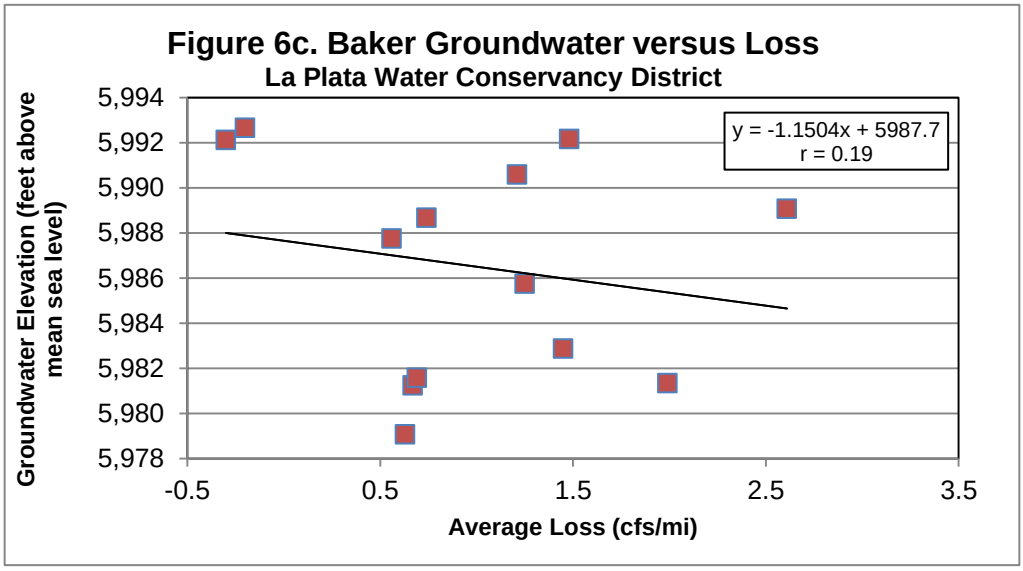


Figure 6c. Baker Groundwater versus Loss
La Plata Water Conservancy District
Groundwater Elevation (feet above mean sea level)
5,994
5,992
5,990
5,988
5,986
5,984
5,982
5,980
5,978
-0.5
0.5
1.5
2.5
3.5
Average Loss (cfs/mi)
y = -1.1504x + 5987.7
r = 0.19

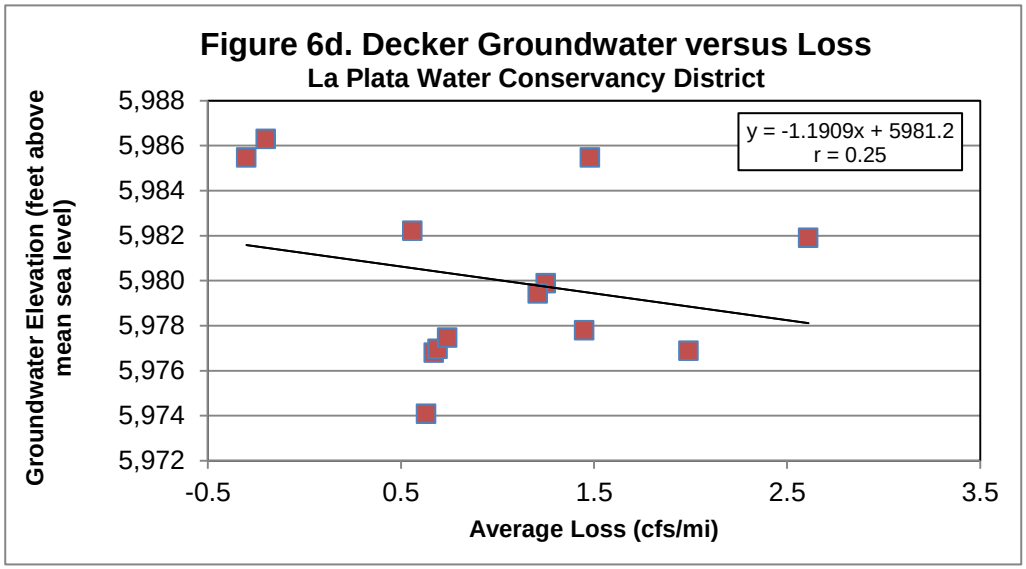


Figure 6d. Decker Groundwater versus Loss
La Plata Water Conservancy District
Groundwater Elevation (feet above mean sea level)
5,988
5,986
5,984
5,982
5,980
5,978
5,976
5,974
5,972
-0.5
0.5
1.5
2.5
3.5
Average Loss (cfs/mi)
y = -1.1909x + 5981.2
r = 0.25

Figure 7. Streamflow vs. Loss Per Mile Through Study Area Reach (cfs)

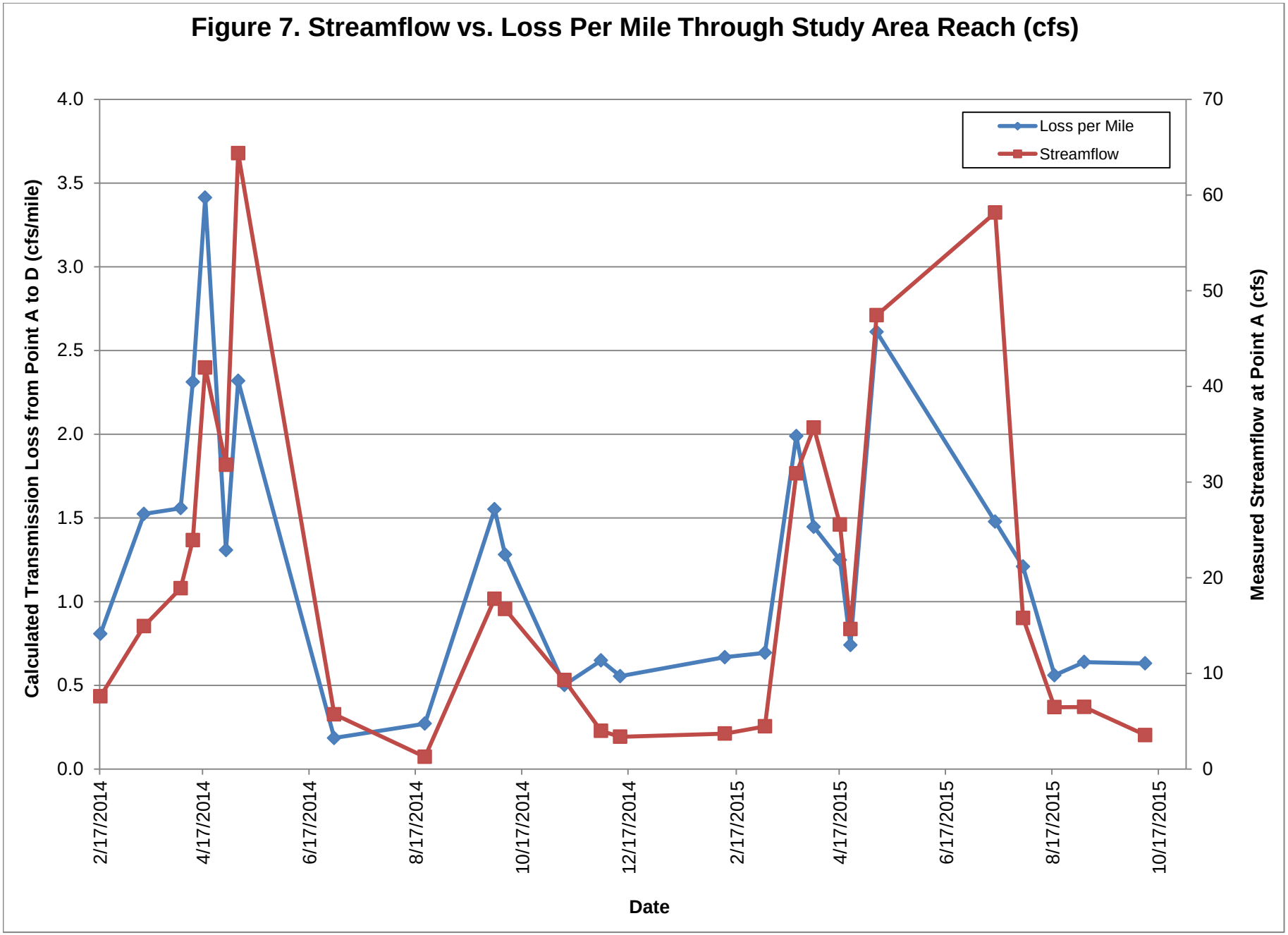


Figure 8. Streamflow vs. Percent Loss Per MileThrough Study Area Reach

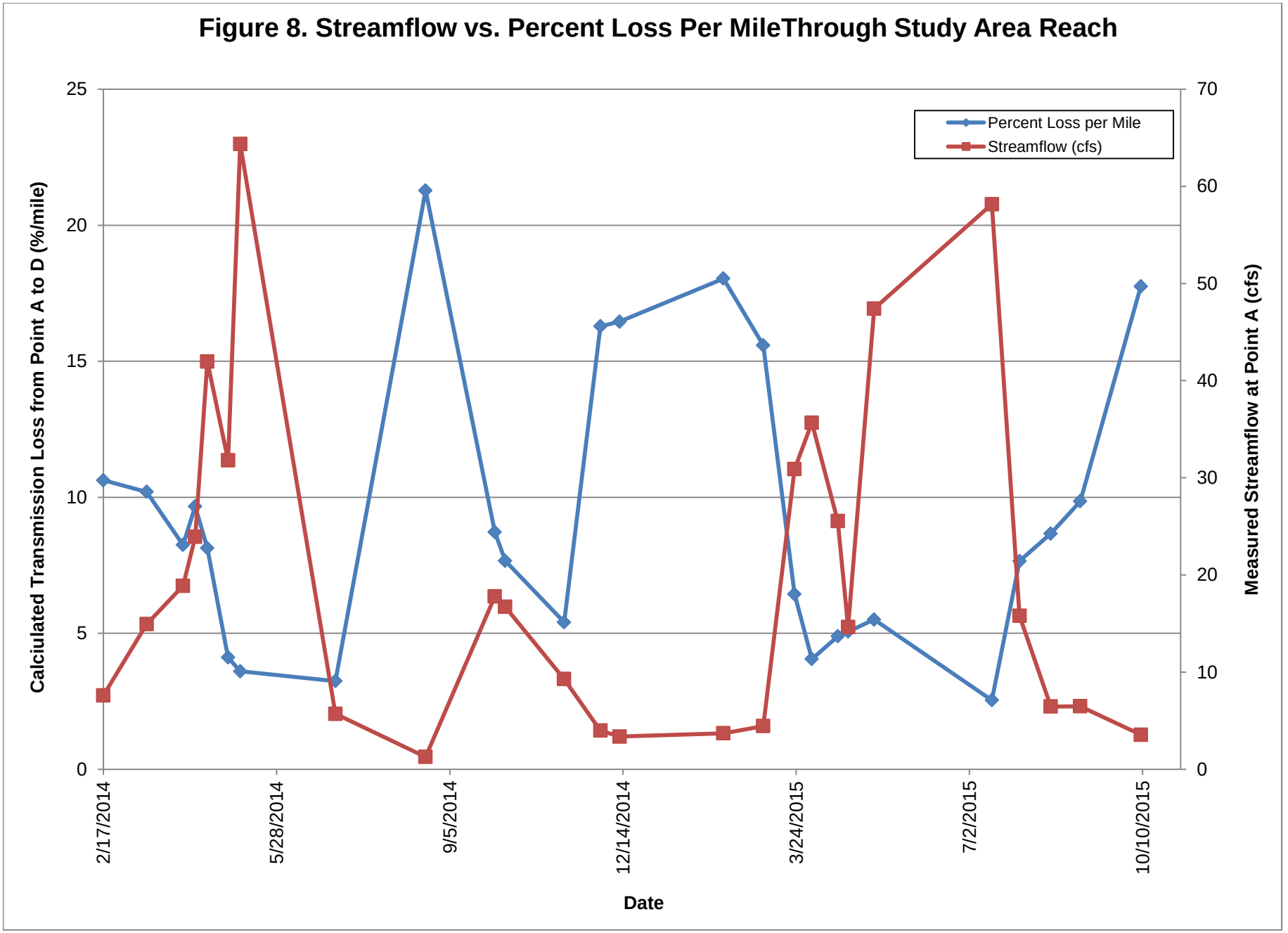


Figure 9. Streamflow vs. Total Percent Loss (Reach A to D)

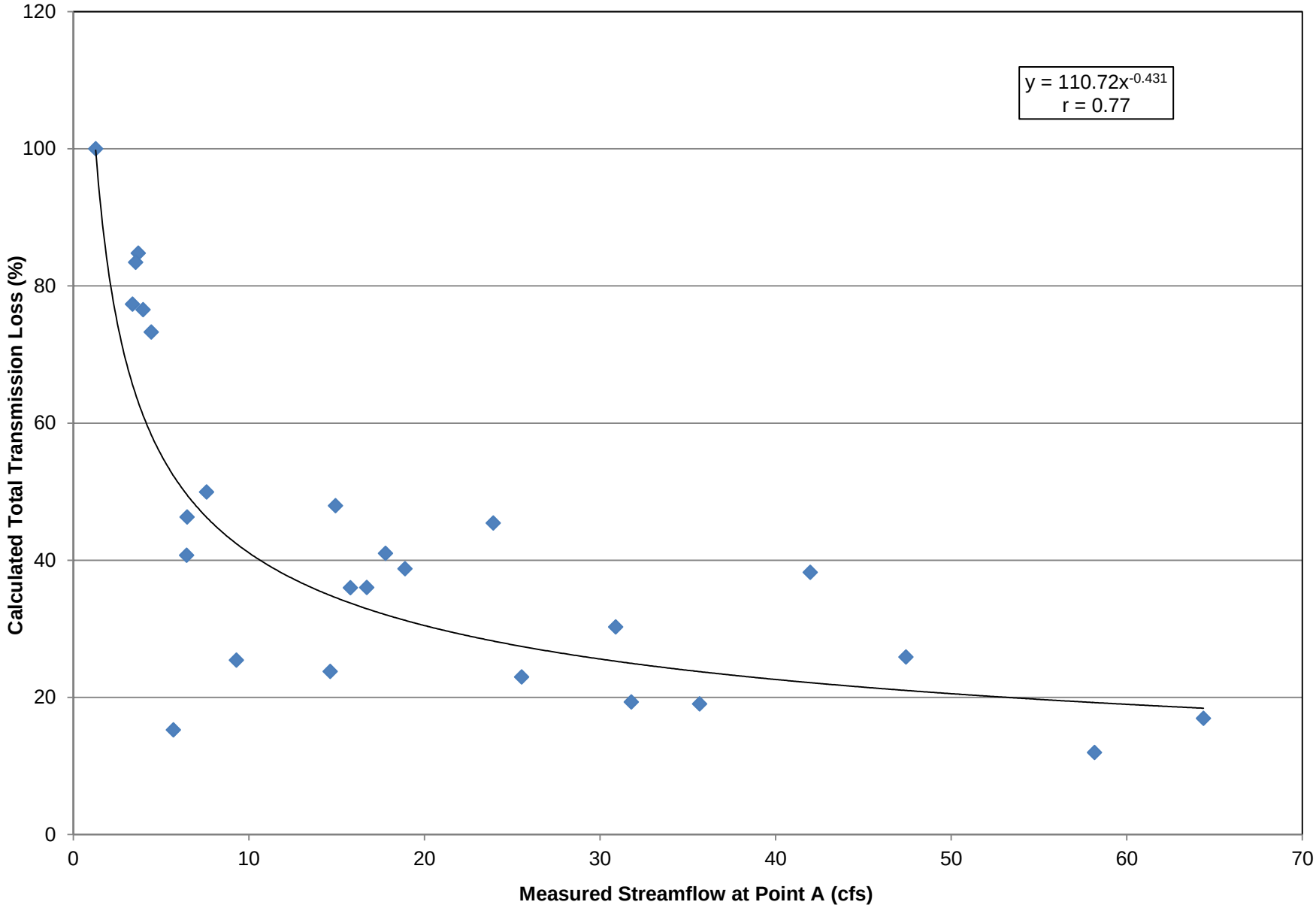


Figure 10. Total Release Needed to Meet Delivery Obligation at Various Release Rates

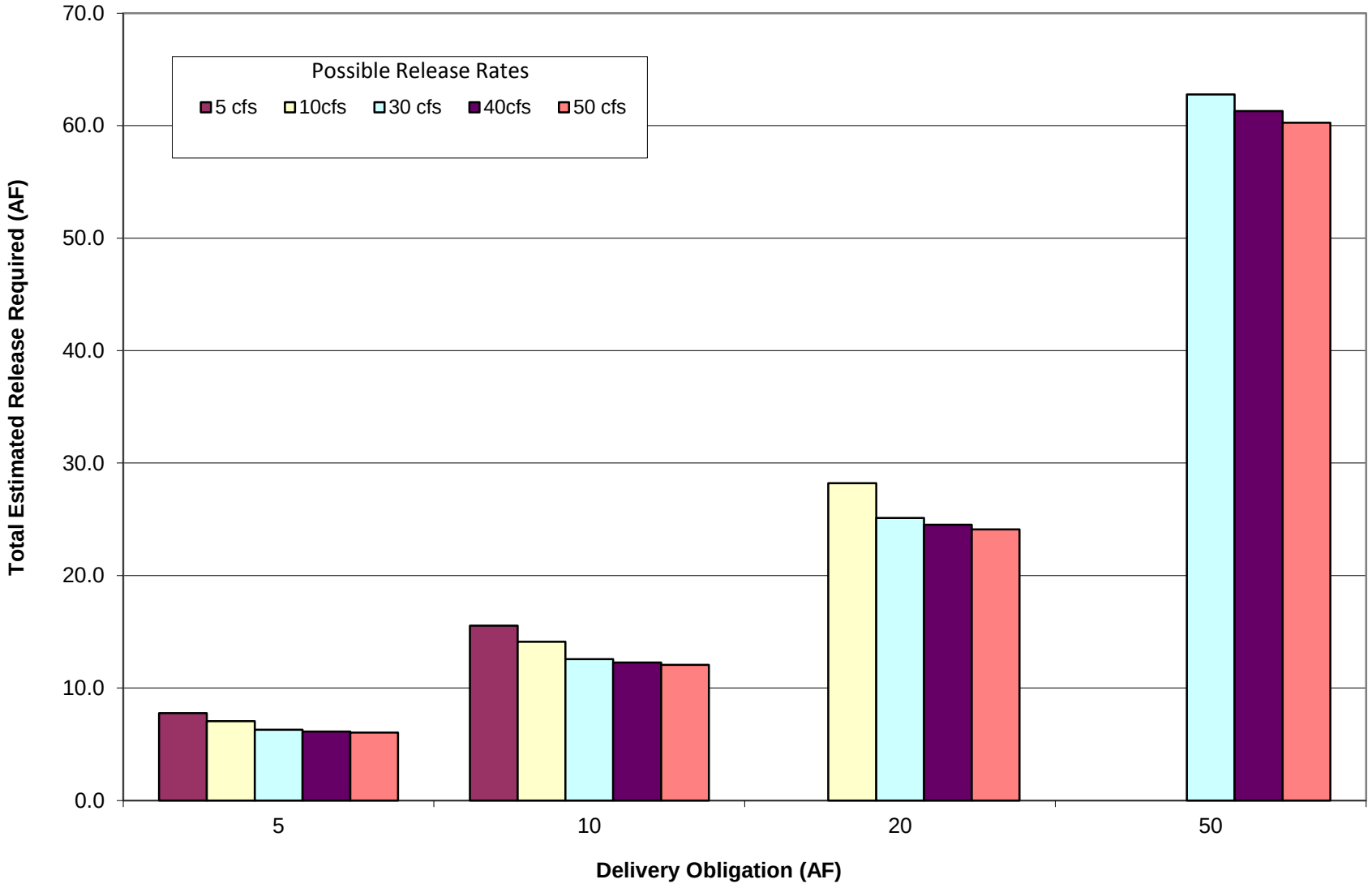
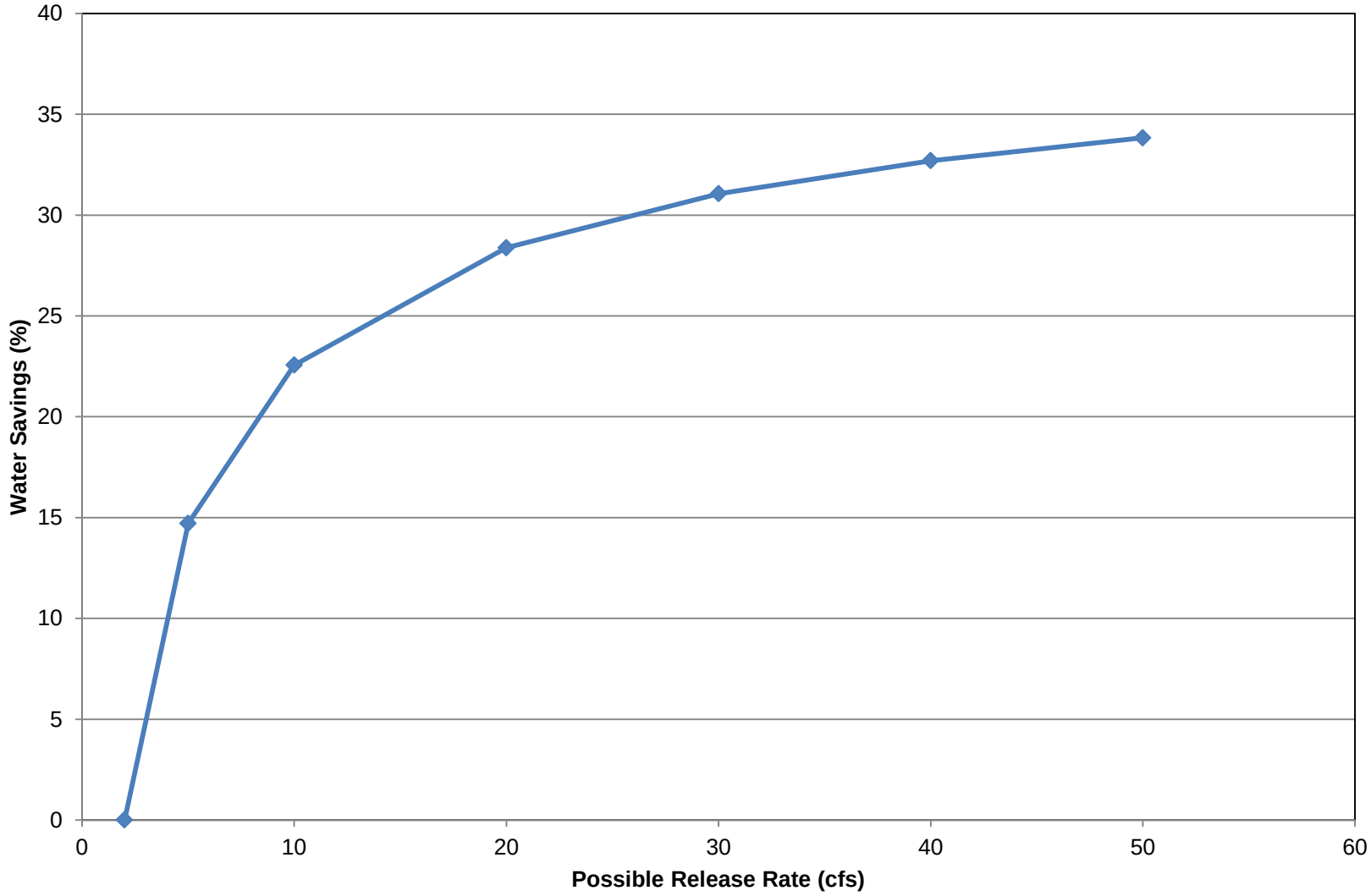


Figure 11. Percent Water Savings per Release Rate*



* These savings pertain to any amount of release obligation.

Appendix A:
Field Data from Transit Loss Study

STATE OF COLORADO

Division of Water Resource

CURRENT METER NOTE

GAGE READINGS | SENSOR READINGS

Time	Outside	Inside	Primary	Other
14:30		3.19	3.19	
14:48				
15:02				
15:08		3.19	3.19	

Intake Flushed: No No.: 0

Record Removed: No

Measured

Wading Downstream 37 feet Below Gage

Starting Time/Gage Height	14:48	3.19
Ending Time/Gage Height	15:02	3.19
Weighted M.G.H.		3.19
G.H. Correction		0.00
Correct M.G.H.		3.19

Meter No.: P3427 - Digitizer

ADV Type: FlowTracker

ADV QC: yes Errors: no

B.M. Levels Obtained: No

Measurement Rating: Poor (over 8%) based on the following conditions

Cross Section: Cobble Flow: Steady and Even

Weather: Overcast, mild and calm

Control (kind-condition): Concrete ramp flume - clear - no ice

Remarks: Channel and well clear - no ice. 100% water in low flow notch.

Dist. From Initial Point	Width	Depth	Depth of Obs	Angle Coef	Revs	Time in Secs	Time Vert	Point Velocity	Mean Velocity	Area	Discharge	Pct. of Total Flow
1.30	0.25	0.00	.0	1.00			14:48	0.00	0.00	0.00	0.00	0.00
1.80	0.40	0.18	.6	1.00			14:48	0.75	0.75	0.07	0.05	6.67
2.10	0.30	0.22	.6	1.00			14:49	0.88	0.88	0.07	0.06	8.00
2.40	0.30	0.28	.6	1.00			14:51	0.99	0.99	0.08	0.08	10.67
2.70	0.30	0.31	.6	1.00			14:52	0.96	0.96	0.09	0.09	12.00
3.00	0.30	0.32	.6	1.00			14:53	0.98	0.98	0.10	0.10	13.33
3.30	0.30	0.32	.6	1.00			14:54	0.97	0.97	0.10	0.10	13.33
3.60	0.30	0.33	.6	1.00			14:55	0.88	0.88	0.10	0.09	12.00
3.90	0.30	0.32	.6	1.00			14:56	0.62	0.62	0.10	0.06	8.00
4.20	0.35	0.30	.6	1.00			14:59	0.45	0.45	0.10	0.04	5.33
4.60	0.45	0.20	.6	-1.00			15:02	-0.91	0.91	0.09	0.08	10.67
5.10	0.25	0.00	.0	1.00			15:02	0.00	0.00	0.00	0.00	0.00
	3.80								**0.83**	**0.90**	**0.75**	

Measurement No.: 1481 Final / Adj Shift: 0.00

Rating: LAPMEXCO33 Computed Shift: 0.01 % Diff.: 5.49

Width: 3.80 Area: 0.900 Vel.: 0.83 G.H.: 3.19 Disch.: 0.75

Method: .6 No. Secs: 12 G.H. Change: 0.00 in 0.23 hrs. Susp.: TopSetRod

Method coef.: 1.00 Hor. angle coef.: varies Susp. coef.: 1.00

Water Temp: 38 at 1443 Sensor Temp: 38.97 at

Station: LA PLATA RIVER AT THE COLORADO-NEW MEXICO STATELINE

Measurement Date: 12/12/2014 14:48 Division: 7 District: 33

Measurement By: BKB Notes By: BKB Reviewed By:

Discharge Correction: 0.00

Total Discharge: 0.75

Max. Discharge Section (%): 13.3

STATE OF COLORADO

Division of Water Resource

CURRENT METER NOTE

GAGE READINGS | SENSOR READINGS

Time	Outside	Inside	Primary	Other
10:40		3.13	3.13	
11:24		3.12	3.12	

Intake Flushed: No No.: 0

Record Removed: No

Measured: Wading Downstream 104 feet Below Gage

Starting Time/Gage Height	10:53	3.13
Ending Time/Gage Height	11:18	3.13
Weighted M.G.H.		3.13
G.H. Correction		0.00
Correct M.G.H.		3.13

Meter No.: P3427 - Digitizer

ADV Type: FlowTracker

ADV QC: yes Errors: no

B.M. Levels Obtained: No

Measurement Rating: Fair (8%) based on the following conditions

Cross Section: Cobble Flow: Steady, clear and even

Weather: Sunny, mild and calm

Control (kind-condition): Concrete ramp flume - clear

Remarks: All water is in low flow notch. No ice anywhere

Dist. From Initial Point	Width	Depth	Depth of Obs	Angle Coef	Revs	Time in Secs	Time Vert	Point Velocity	Mean Velocity	Area	Discharge	Pct. of Total Flow
1.00	0.30	0.00	.0	1.00			10:53	0.00	0.00	0.00	0.00	0.00
1.60	0.50	0.41	.6	1.00			10:53	0.01	0.01	0.20	0.00	0.00
2.00	0.40	0.51	.6	1.00			10:55	0.01	0.01	0.20	0.00	0.00
2.40	0.40	0.51	.6	1.00			10:56	0.01	0.01	0.20	0.00	0.00
2.80	0.35	0.51	.6	1.00			10:57	0.07	0.07	0.18	0.01	1.92
3.10	0.30	0.54	.6	1.00			10:58	0.10	0.10	0.16	0.02	3.85
3.40	0.30	0.52	.6	1.00			10:59	0.12	0.12	0.16	0.02	3.85
3.70	0.30	0.52	.6	1.00			11:00	0.16	0.16	0.16	0.03	5.77
4.00	0.30	0.52	.6	1.00			11:01	0.19	0.19	0.16	0.03	5.77
4.30	0.30	0.53	.6	1.00			11:02	0.23	0.23	0.16	0.04	7.69
4.60	0.30	0.51	.6	1.00			11:03	0.29	0.29	0.15	0.04	7.69
4.90	0.30	0.49	.6	1.00			11:04	0.30	0.30	0.15	0.04	7.69
5.20	0.30	0.44	.6	1.00			11:05	0.30	0.30	0.13	0.04	7.69
5.50	0.30	0.40	.6	1.00			11:06	0.35	0.35	0.12	0.04	7.69
5.80	0.30	0.37	.6	1.00			11:07	0.35	0.35	0.11	0.04	7.69
6.10	0.30	0.31	.6	1.00			11:09	0.32	0.32	0.09	0.03	5.77
6.40	0.30	0.28	.6	1.00			11:10	0.39	0.39	0.08	0.03	5.77
6.70	0.30	0.28	.6	1.00			11:11	0.41	0.41	0.08	0.03	5.77
7.00	0.30	0.29	.6	1.00			11:14	0.28	0.28	0.09	0.03	5.77
7.30	0.40	0.24	.6	1.00			11:16	0.24	0.24	0.10	0.02	3.85
7.80	0.55	0.21	.6	1.00			11:18	0.24	0.24	0.12	0.03	5.77
8.40	0.30	0.00	.0	1.00			11:18	0.00	0.00	0.00	0.00	0.00
	7.40								**0.19**	**2.80**	**0.52**	

Measurement No.: 1483 Final / Adj Shift:

Rating: LAPMEXCO33 Computed Shift: 0.00 % Diff.:

Width: 7.40 Area: 2.80 Vel.: 0.19 G.H.: 3.13 Disch.: 0.52

Method: .6 No. Secs: 22 G.H. Change: 0.00 in 0.42 hrs. Susp.: TopSetRod

Method coef.: 1 Hor. angle coef.: varies Susp. coef.: 1.00

Water Temp: 41 at 1120 Sensor Temp: 40.56 at

Station: LA PLATA RIVER AT THE COLORADO-NEW MEXICO STATELINE

Measurement Date: 02/10/2015 10:53 Division: 7 District: 33

Measurement By: BKB Notes By: RTC,BKB Reviewed By:

Discharge Correction: 0.00

Total Discharge: 0.52

Max. Discharge Section (%): 7.7

STATE OF COLORADO

Division of Water Resource

CURRENT METER NOTE

GAGE READINGS | SENSOR READINGS

Time	Outside	Inside	Primary	Other
11:05		3.33	3.32	
11:06		3.33	3.33	
11:57		3.32	3.32	

Intake Flushed: Yes No. 1

Record Removed: No

Measured

Wading Downstream 102 feet Below Gage

Starting Time/Gage Height	11:23	3.33
Ending Time/Gage Height	11:51	3.33
Weighted M.G.H.		3.33
G.H. Correction		0.00
Correct M.G.H.		3.33

Meter No. P3427 - Digitizer

ADV Type FlowTracker

ADV QC yes Errors no

B.M. Levels Obtained No

Measurement Rating Fair (8%) based on the following conditions

Cross Section Cobble Flow Steady, clear and even

Weather Sunny, cool and breezy

Control (kind-condition) Concrete Ramp Flume - clear

Remarks

Dist. From Initial Point	Width	Depth	Depth of Obs	Angle Coef	Revs	Time in Secs	Time Vert	Point Velocity	Mean Velocity	Area	Discharge	Pct. of Total Flow
0.60	0.30	0.00	.0	1.00			11:23	0.00	0.00	0.00	0.00	0.00
1.20	0.45	0.65	.6	1.00			11:24	0.00	0.00	0.29	0.00	0.00
1.50	0.30	0.72	.6	1.00			11:26	-0.02	-0.02	0.22	0.00	0.00
1.80	0.30	0.68	.6	1.00			11:27	0.00	0.00	0.20	0.00	0.00
2.10	0.30	0.68	.6	1.00			11:28	0.14	0.14	0.20	0.03	2.52
2.40	0.30	0.69	.6	1.00			11:29	0.28	0.28	0.21	0.06	5.04
2.70	0.30	0.72	.6	1.00			11:30	0.45	0.45	0.22	0.10	8.40
3.00	0.30	0.71	.6	1.00			11:32	0.48	0.48	0.21	0.10	8.40
3.30	0.30	0.72	.6	1.00			11:33	0.38	0.38	0.22	0.08	6.72
3.60	0.30	0.72	.6	1.00			11:34	0.49	0.49	0.22	0.11	9.24
3.90	0.30	0.70	.6	1.00			11:35	0.43	0.43	0.21	0.09	7.56
4.20	0.30	0.71	.6	1.00			11:36	0.42	0.42	0.21	0.09	7.56
4.50	0.30	0.63	.6	1.00			11:37	0.42	0.42	0.19	0.08	6.72
4.80	0.30	0.60	.6	1.00			11:38	0.47	0.47	0.18	0.08	6.72
5.10	0.30	0.52	.6	1.00			11:39	0.42	0.42	0.16	0.07	5.88
5.40	0.30	0.47	.6	1.00			11:40	0.36	0.36	0.14	0.05	4.20
5.70	0.30	0.43	.6	1.00			11:41	0.34	0.34	0.13	0.04	3.36
6.00	0.30	0.47	.6	1.00			11:42	0.28	0.28	0.14	0.04	3.36
6.30	0.30	0.43	.6	1.00			11:43	0.31	0.31	0.13	0.04	3.36
6.60	0.30	0.46	.6	1.00			11:44	0.23	0.23	0.14	0.03	2.52
6.90	0.35	0.38	.6	1.00			11:45	0.24	0.24	0.13	0.03	2.52
7.30	0.40	0.38	.6	1.00			11:47	0.19	0.19	0.15	0.03	2.52
7.70	0.60	0.25	.6	1.00			11:48	0.15	0.15	0.15	0.02	1.68
8.50	0.80	0.22	.6	1.00			11:49	0.04	0.04	0.18	0.01	0.84
9.30	1.15	0.18	.6	1.00			11:51	0.04	0.04	0.21	0.01	0.84
10.80	0.75	0.00	.0	1.00			11:51	0.00	0.00	0.00	0.00	0.00
	10.20								**0.27**	**4.44**	**1.19**	

Measurement No. 1484 Final / Adj Shift -0.02

Rating: LAPMEXCO33 Computed Shift -0.02 % Diff.

Width 10.2 Area 4.44 Vel. 0.27 G.H. 3.33 Disch. 1.19

Method .6 No. Secs 26 G.H. Change 0.00 in 0.47 hrs. Susp. TopSetRod

Method coef. 1 Hor. angle coef. varies Susp. coef. 1.00

Water Temp 36 at 1120 Sensor Temp 37.44 at

Station LA PLATA RIVER AT THE COLORADO-NEW MEXICO STATELINE

Measurement Date 03/05/2015 11:23 Division 7 District 33

Measurement By BKB Notes By RTC,BKB Reviewed By

Discharge Correction: 0.00

Total Discharge: 1.19

Max. Discharge Section (%) 9.2

STATE OF COLORADO

Division of Water Resource

CURRENT METER NOTE

GAGE READINGS | SENSOR READINGS

Time	Outside	Inside	Primary	Other
13:51		3.73	3.73	
14:43		3.73	3.73	

Intake Flushed: No No.: 0

Record Removed: No

Measured

Wading Upstream 4 feet Above Gage

Starting Time/Gage Height	14:01	3.73
Ending Time/Gage Height	14:38	3.73
Weighted M.G.H.		3.73
G.H. Correction		0.00
Correct M.G.H.		3.73

Meter No.: P3427 - Digitizer

ADV Type: FlowTracker

ADV QC: yes Errors: no

B.M. Levels Obtained: No

Measurement Rating: Good (5%) based on the following conditions

Cross Section: Cobble Flow: Steady and even

Weather: Partly cloudy, breezy and cool

Control (kind-condition): Concrete ramp flume - clear

Remarks

Dist. From Initial Point	Width	Depth	Depth of Obs	Angle Coef	Revs	Time in Secs	Time Vert	Point Velocity	Mean Velocity	Area	Discharge	Pct. of Total Flow
0.70	0.30	0.00	.0	1.00			14:01	0.00	0.00	0.00	0.00	0.00
1.30	0.65	1.49	.6	1.00			14:01	0.67	0.67	0.97	0.65	3.75
2.00		1.51	.2	1.00			14:03	0.86				
2.00	0.70	1.51	.8	1.00			14:03	0.62	0.74	1.06	0.78	4.50
2.70		1.50	.2	1.00			14:07	1.24				
2.70	0.60	1.50	.8	1.00			14:07	0.92	1.08	0.90	0.97	5.59
3.20	0.45	1.40	.6	1.00			14:09	1.32	1.32	0.63	0.83	4.79
3.60	0.40	1.43	.6	1.00			14:10	1.26	1.26	0.57	0.72	4.15
4.00	0.45	1.48	.6	1.00			14:11	1.36	1.36	0.67	0.91	5.25
4.50	0.50	1.46	.6	1.00			14:12	1.08	1.08	0.73	0.79	4.56
5.00	0.50	1.46	.6	1.00			14:13	1.13	1.13	0.73	0.82	4.73
5.50	0.50	1.34	.6	1.00			14:14	1.00	1.00	0.67	0.67	3.86
6.00	0.55	1.20	.6	1.00			14:15	1.01	1.01	0.66	0.67	3.86
6.60	0.60	1.20	.6	1.00			14:17	1.20	1.20	0.72	0.86	4.96
7.20	0.55	1.14	.6	1.00			14:18	1.43	1.43	0.63	0.90	5.19
7.70	0.55	1.09	.6	1.00			14:19	1.33	1.33	0.60	0.80	4.61
8.30	0.55	1.10	.6	1.00			14:20	1.27	1.27	0.60	0.76	4.38
8.80	0.55	1.08	.6	1.00			14:22	1.24	1.24	0.59	0.73	4.21
9.40	0.60	1.01	.6	1.00			14:23	1.13	1.13	0.61	0.69	3.98
10.00	0.60	1.01	.6	1.00			14:24	1.09	1.09	0.61	0.66	3.81
10.60	0.65	0.94	.6	1.00			14:25	0.97	0.97	0.61	0.59	3.40
11.30	0.75	0.98	.6	1.00			14:26	0.87	0.87	0.74	0.64	3.69
12.10	0.80	0.95	.6	1.00			14:27	0.74	0.74	0.76	0.56	3.23
12.90	0.80	0.89	.6	1.00			14:28	0.73	0.73	0.71	0.52	3.00
13.70	0.85	0.79	.6	1.00			14:29	0.73	0.73	0.67	0.49	2.83
14.60	0.90	0.76	.6	1.00			14:31	0.73	0.73	0.68	0.50	2.88
15.50	0.95	0.72	.6	1.00			14:32	0.63	0.63	0.68	0.43	2.48
16.50	0.90	0.65	.6	1.00			14:33	0.41	0.41	0.58	0.24	1.38
17.30	0.90	0.44	.6	-1.00			14:38	-0.40	0.40	0.40	0.16	0.92
18.30	0.50	0.00	.0	1.00			14:38	0.00	0.00	0.00	0.00	0.00
	17.60								0.97	17.78	17.34	

Measurement No.: 1486 Final / Adj Shift: 0.00

Rating: LAPMEXCO33 Computed Shift: 0.00 % Diff.:

Width: 17.6 Area: 17.8 Vel.: 0.97 G.H.: 3.73 Disch.: 17.3

Method: .6/.2/.8 No. Secs: 28 G.H. Change: 0.00 in 0.62 hrs. Susp.: TopSetRod

Method coef.: 1.00 Hor. angle coef.: varies Susp. coef.: 1.00

Water Temp: 44 at 1348 Sensor Temp: 45.76 at

Station: LA PLATA RIVER AT THE COLORADO-NEW MEXICO STATELINE

Measurement Date: 04/17/2015 14:01 Division: 7 District: 33

Measurement By: BKB Notes By: JST,KJO Reviewed By:

Discharge Correction: 0.00

Total Discharge: 17.34

Max. Discharge Section (%): 5.6

STATE OF COLORADO

Division of Water Resource

CURRENT METER NOTE

GAGE READINGS | SENSOR READINGS

Time	Outside	Inside	Primary	Other
10:19		3.92	3.92	
11:38		3.93	3.92	
11:40		3.93	3.93	

Intake Flushed: No No.: 0

Record Removed: No

Measured

Wading Upstream 3 feet Above Gage

Starting Time/Gage Height	10:37	3.92
Ending Time/Gage Height	11:24	3.92
Weighted M.G.H.		3.92
G.H. Correction		0.00
Correct M.G.H.		3.92

Meter No.: P3427 - Digitizer

ADV Type: FlowTracker

ADV QC: yes Errors: no

B.M. Levels Obtained: No

Measurement Rating: Good (5%) based on the following conditions

Cross Section: Cobble Flow: Steady and even

Weather: Mostly cloudy, breezy and mild

Control (kind-condition): Concrete ramp flume - clear

Remarks: +0.003 IC(SDR) @ 1020 removed at end of measurement. The difference in SDR and tape reading was caused by the SDR float tape and wheel - fixed.

Measurement No.: 1487 Final / Adj Shift: 0.00

Rating: LAPMEXCO33 Computed Shift: 0.00 % Diff.:

Width: 18.5 Area: 21.6 Vel.: 1.50 G.H.: 3.92 Disch.: 32.4

Method: .2/.6/.8 No. Secs: 26 G.H. Change: 0.00 in 0.78 hrs. Susp.: TopSetRod

Method coef.: 1 Hor. angle coef.: varies Susp. coef.: 1.00

Water Temp: 55 at 1135 Sensor Temp: 54.54 at

Station: LA PLATA RIVER AT THE COLORADO-NEW MEXICO STATELINE

Measurement Date: 05/08/2015 10:37 Division: 7 District: 33

Measurement By: BKB Notes By: BKB Reviewed By:

Dist. From Initial Point	Width	Depth	Depth of Obs	Angle Coef	Revs	Time in Secs	Time Vert	Point Velocity	Mean Velocity	Area	Discharge	Pct. of Total Flow
0.50	0.35	0.00	.0	1.00			10:37	0.00	0.00	0.00	0.00	0.00
1.20		1.70	.2	1.00			10:37	0.91				
1.20	0.75	1.70	.8	1.00			10:37	0.62	0.77	1.28	0.99	3.06
2.00		1.71	.2	1.00			10:41	1.27				
2.00	0.70	1.71	.8	1.00			10:41	0.74	1.00	1.20	1.20	3.70
2.60		1.71	.2	1.00			10:42	1.63				
2.60	0.60	1.71	.8	1.00			10:42	1.24	1.44	1.03	1.48	4.57
3.20		1.61	.2	1.00			10:49	1.98				
3.20	0.55	1.61	.8	1.00			10:49	1.64	1.81	0.89	1.61	4.97
3.70		1.67	.2	1.00			10:51	2.16				
3.70	0.50	1.67	.8	1.00			10:51	1.68	1.92	0.84	1.61	4.97
4.20		1.64	.2	1.00			10:55	2.28				
4.20	0.50	1.64	.8	1.00			10:55	1.67	1.97	0.82	1.62	5.00
4.70		1.68	.2	1.00			10:57	2.33				
4.70	0.50	1.68	.8	1.00			10:57	1.42	1.88	0.84	1.58	4.88
5.20		1.61	.2	1.00			11:01	2.10				
5.20	0.50	1.61	.8	1.00			11:01	1.33	1.71	0.80	1.37	4.23
5.70		1.51	.2	1.00			11:02	2.03				
5.70	0.50	1.51	.8	1.00			11:02	1.35	1.69	0.76	1.28	3.95
6.20	0.50	1.48	.6	1.00			11:05	1.60	1.60	0.74	1.18	3.64
6.70	0.50	1.39	.6	1.00			11:06	1.81	1.81	0.70	1.27	3.92
7.20	0.55	1.32	.6	1.00			11:08	2.07	2.07	0.73	1.51	4.66
7.80	0.60	1.30	.6	1.00			11:09	2.11	2.11	0.78	1.65	5.09
8.40	0.60	1.25	.6	1.00			11:10	1.97	1.97	0.75	1.48	4.57
9.00	0.60	1.22	.6	1.00			11:12	1.91	1.91	0.73	1.39	4.29
9.60	0.70	1.20	.6	1.00			11:13	1.78	1.78	0.84	1.50	4.63
10.40	0.80	1.12	.6	1.00			11:15	1.81	1.81	0.90	1.63	5.03
11.20	0.80	1.18	.6	1.00			11:16	1.55	1.55	0.94	1.46	4.51
12.00	0.90	1.05	.6	1.00			11:18	1.47	1.47	0.94	1.38	4.26
13.00	1.00	1.07	.6	1.00			11:19	1.30	1.30	1.07	1.39	4.29
14.00	1.10	0.98	.6	1.00			11:20	1.43	1.43	1.08	1.54	4.75
15.20	1.20	0.92	.6	1.00			11:22	1.14	1.14	1.10	1.25	3.86
16.40	1.20	0.91	.6	1.00			11:23	0.75	0.75	1.09	0.82	2.53
17.60	1.30	0.58	.6	1.00			11:24	0.27	0.27	0.75	0.20	0.62
19.00	0.70	0.00	.0	1.00			11:24	0.00	0.00	0.00	0.00	0.00
	18.50								**1.50**	**21.60**	**32.39**	

Discharge Correction: 0.00

Total Discharge: 32.39

Max. Discharge Section (%): 5.1

STATE OF COLORADO

Division of Water Resource

CURRENT METER NOTE

GAGE READINGS | SENSOR READINGS

Time	Outside	Inside	Primary	Other
13:27				
13:52				

Intake Flushed: No No.: 0

Record Removed: No

Measured

Starting Time/Gage Height: 13:27

Ending Time/Gage Height: 13:52

Weighted M.G.H.:

G.H. Correction: 0.00

Correct M.G.H.:

Meter No.: P3427 - Digitizer

ADV Type: SonTekFlowTracker

ADV QC: yes Errors: no

B.M. Levels Obtained: No

Measurement Rating: Fair (8%) based on the following conditions

Cross Section: Cobble Flow: Steady, clear and even

Weather: Overcast, mild and calm

Control (kind-condition): Cobble riffle - clear - no ice

Remarks: LA PLATA RIVER BELOW ENTERPRISE WASTEWAY. Meas. sect. @ 12S 750088E; 4099673N NAD83. Trickle in waste way ~ 1 to 3 gpm by eye. Enterprise Ditch GH = 0.04, Q = 0.05 per rating.

Dist. From Initial Point	Width	Depth	Depth of Obs	Angle Coef	Revs	Time in Secs	Time Vert	Point Velocity	Mean Velocity	Area	Discharge	Pct. of Total Flow
0.70	0.40	0.00	.0	1.00			13:27	0.00	0.00	0.00	0.00	0.00
1.50	0.65	0.27	.6	1.00			13:27	0.00	0.00	0.18	0.00	0.00
2.00	0.50	0.36	.6	1.00			13:29	0.04	0.04	0.18	0.01	0.78
2.50	0.50	0.40	.6	1.00			13:30	0.25	0.25	0.20	0.05	3.91
3.00	0.45	0.39	.6	1.00			13:31	0.34	0.34	0.18	0.06	4.69
3.40	0.35	0.40	.6	1.00			13:32	0.36	0.36	0.14	0.05	3.91
3.70	0.30	0.47	.6	1.00			13:33	0.28	0.28	0.14	0.04	3.13
4.00	0.30	0.51	.6	1.00			13:34	0.32	0.32	0.15	0.05	3.91
4.30	0.30	0.51	.6	1.00			13:35	0.34	0.34	0.15	0.05	3.91
4.60	0.30	0.55	.6	1.00			13:36	0.38	0.38	0.16	0.06	4.69
4.90	0.30	0.50	.6	1.00			13:37	0.40	0.40	0.15	0.06	4.69
5.20	0.30	0.50	.6	1.00			13:38	0.39	0.39	0.15	0.06	4.69
5.50	0.30	0.57	.6	1.00			13:39	0.36	0.36	0.17	0.06	4.69
5.80	0.30	0.55	.6	1.00			13:41	0.48	0.48	0.16	0.08	6.25
6.10	0.30	0.48	.6	1.00			13:42	0.65	0.65	0.14	0.09	7.03
6.40	0.30	0.41	.6	1.00			13:43	0.67	0.67	0.12	0.08	6.25
6.70	0.30	0.42	.6	1.00			13:44	0.65	0.65	0.13	0.08	6.25
7.00	0.30	0.42	.6	1.00			13:45	0.65	0.65	0.13	0.08	6.25
7.30	0.30	0.42	.6	1.00			13:46	0.56	0.56	0.13	0.07	5.47
7.60	0.30	0.47	.6	1.00			13:47	0.47	0.47	0.14	0.07	5.47
7.90	0.30	0.45	.6	1.00			13:48	0.48	0.48	0.14	0.07	5.47
8.20	0.35	0.34	.6	1.00			13:50	0.40	0.40	0.12	0.05	3.91
8.60	0.40	0.25	.6	1.00			13:51	0.45	0.45	0.10	0.04	3.13
9.00	0.55	0.23	.6	1.00			13:52	0.19	0.19	0.13	0.02	1.56
9.70	0.35	0.00	.0	1.00			13:52	0.00	0.00	0.00	0.00	0.00
	9.00								**0.38**	**3.39**	**1.28**	

Measurement No.: 1 Final / Adj Shift:

Rating: Computed Shift: % Diff.:

Width: 9.00 Area: 3.39 Vel.: 0.38 G.H.: Disch.: 1.28

Method: .6 No. Secs: 25 G.H. Change: in 0.42 hrs. Susp.: TopSetRod

Method coef.: 1 Hor. angle coef.: varies Susp. coef.: 1.00

Water Temp: 39 at 1321 Sensor Temp: 39.37 at

Station: LA PLATA RIVER BELOW ENTERPRISE DITCH WASTE WAY

Measurement Date: 12/12/2014 13:27 Division: 7 District: 33

Measurement By: BKB Notes By: BKB Reviewed By:

Discharge Correction: 0.00

Total Discharge: 1.28

Max. Discharge Section (%): 7.0

STATE OF COLORADO

Division of Water Resource

CURRENT METER NOTE

GAGE READINGS | SENSOR READINGS

Time	Outside	Inside	Primary	Other

Intake Flushed: No No.: 0

Record Removed: No

Measured

Starting Time/Gage Height: 12:38

Ending Time/Gage Height: 13:04

Weighted M.G.H.:

G.H. Correction: 0.00

Correct M.G.H.:

Meter No.: P3427 - Digitizer

ADV Type: FlowTracker

ADV QC: yes Errors: no

B.M. Levels Obtained: No

Measurement Rating: Fair (8%) based on the following conditions

Cross Section: Cobble Flow: Steady, clear and even

Weather: Sunny, mild and calm

Control (kind-condition): Cobble riffle - clear - no ice

Remarks: LA PLATA RIVER BELOW ENTERPRISE WASTEWAY. Meas. sect. @ 12S 750088E; 4099673N NAD83. Enterprise Ditch GH = 0.05 ft., Q = 0.08 cfs per rating.

Dist. From Initial Point	Width	Depth	Depth of Obs	Angle Coef	Revs	Time in Secs	Time Vert	Point Velocity	Mean Velocity	Area	Discharge	Pct. of Total Flow
1.70	0.40	0.00	.0	1.00			12:38	0.00	0.00	0.00	0.00	0.00
2.50	0.75	0.29	.6	1.00			12:38	0.00	0.00	0.22	0.00	0.00
3.20	0.60	0.34	.6	1.00			12:40	0.06	0.06	0.20	0.01	0.96
3.70	0.50	0.36	.6	1.00			12:43	0.07	0.07	0.18	0.01	0.96
4.20	0.40	0.41	.6	1.00			12:44	0.23	0.23	0.16	0.04	3.85
4.50	0.30	0.43	.6	1.00			12:45	0.18	0.18	0.13	0.02	1.92
4.80	0.30	0.47	.6	1.00			12:46	0.35	0.35	0.14	0.05	4.81
5.10	0.30	0.50	.6	1.00			12:47	0.23	0.23	0.15	0.03	2.88
5.40	0.30	0.43	.6	1.00			12:49	0.33	0.33	0.13	0.04	3.85
5.70	0.30	0.45	.6	1.00			12:50	0.43	0.43	0.14	0.06	5.77
6.00	0.30	0.48	.6	1.00			12:51	0.20	0.20	0.14	0.03	2.88
6.30	0.30	0.49	.6	1.00			12:52	0.40	0.40	0.15	0.06	5.77
6.60	0.30	0.47	.6	1.00			12:53	0.45	0.45	0.14	0.06	5.77
6.90	0.30	0.47	.6	1.00			12:54	0.41	0.41	0.14	0.06	5.77
7.20	0.30	0.49	.6	1.00			12:55	0.54	0.54	0.15	0.08	7.69
7.50	0.30	0.50	.6	1.00			12:56	0.56	0.56	0.15	0.08	7.69
7.80	0.30	0.50	.6	1.00			12:57	0.58	0.58	0.15	0.09	8.65
8.10	0.30	0.49	.6	1.00			12:58	0.54	0.54	0.15	0.08	7.69
8.40	0.30	0.49	.6	1.00			13:00	0.34	0.34	0.15	0.05	4.81
8.70	0.30	0.49	.6	1.00			13:00	0.46	0.46	0.15	0.07	6.73
9.00	0.30	0.38	.6	1.00			13:02	0.32	0.32	0.11	0.04	3.85
9.30	0.40	0.30	.6	1.00			13:03	0.28	0.28	0.12	0.03	2.88
9.80	0.65	0.23	.6	1.00			13:04	0.33	0.33	0.15	0.05	4.81
10.60	0.40	0.00	.0	1.00			13:04	0.00	0.00	0.00	0.00	0.00
	8.90								**0.32**	**3.30**	**1.04**	

Measurement No.: 2 Final / Adj Shift:

Rating: Select Table Computed Shift: % Diff.:

Width: 8.90 Area: 3.30 Vel.: 0.32 G.H.: Disch.: 1.04

Method: .6 No. Secs: 24 G.H. Change: in 0.43 hrs. Susp.: TopSetRod

Method coef.: 1 Hor. angle coef.: varies Susp. coef.: 1

Water Temp: 43 at 1237 Sensor Temp: 43.47 at

Station: LA PLATA RIVER BELOW ENTERPRISE DITCH WASTE WAY

Measurement Date: 02/10/2015 12:38 Division: 7 District: 33

Measurement By: BKB Notes By: BKB,RTC Reviewed By:

Discharge Correction: 0.00

Total Discharge: 1.04

Max. Discharge Section (%): 8.7

STATE OF COLORADO

Division of Water Resource

CURRENT METER NOTE

GAGE READINGS | SENSOR READINGS

Time	Outside	Inside	Primary	Other

Intake Flushed: No No.: 0

Record Removed: No

Measured

Starting Time/Gage Height: 10:10

Ending Time/Gage Height: 10:36

Weighted M.G.H.:

G.H. Correction: 0.00

Correct M.G.H.:

Meter No.: P3427 - Digitizer

ADV Type: FlowTracker

ADV QC: yes Errors: no

B.M. Levels Obtained: No

Measurement Rating: Fair (8%) based on the following conditions

Cross Section: Cobble Flow: Steady, clear and even

Weather: Sunny, cool and calm

Control (kind-condition): Cobble riffle - clear - no ice

Remarks: LA PLATA RIVER BELOW ENTERPRISE WASTEWAY. Meas. sect. @ 12S 750088E; 4099673N NAD83. Enterprise Ditch GH = 0.09 ft., Q = 0.19 cfs per rating.

Dist. From Initial Point	Width	Depth	Depth of Obs	Angle Coef	Revs	Time in Secs	Time Vert	Point Velocity	Mean Velocity	Area	Discharge	Pct. of Total Flow
1.20	0.45	0.00	.0	1.00			10:10	0.00	0.00	0.00	0.00	0.00
2.10	0.75	0.37	.6	1.00			10:10	0.01	0.01	0.28	0.00	0.00
2.70	0.60	0.37	.6	1.00			10:12	0.30	0.30	0.22	0.07	3.74
3.30	0.50	0.42	.6	1.00			10:14	0.51	0.51	0.21	0.11	5.88
3.70	0.35	0.50	.6	1.00			10:15	0.45	0.45	0.18	0.08	4.28
4.00	0.35	0.48	.6	1.00			10:17	0.48	0.48	0.17	0.08	4.28
4.40	0.35	0.51	.6	1.00			10:19	0.58	0.58	0.18	0.10	5.35
4.70	0.30	0.57	.6	1.00			10:20	0.51	0.51	0.17	0.09	4.81
5.00	0.30	0.55	.6	1.00			10:21	0.52	0.52	0.16	0.08	4.28
5.30	0.30	0.57	.6	1.00			10:22	0.50	0.50	0.17	0.08	4.28
5.60	0.30	0.58	.6	1.00			10:23	0.52	0.52	0.17	0.09	4.81
5.90	0.30	0.56	.6	1.00			10:24	0.53	0.53	0.17	0.09	4.81
6.20	0.30	0.51	.6	1.00			10:25	0.61	0.61	0.15	0.09	4.81
6.50	0.30	0.52	.6	1.00			10:26	0.61	0.61	0.16	0.10	5.35
6.80	0.30	0.50	.6	1.00			10:27	0.77	0.77	0.15	0.12	6.42
7.10	0.30	0.51	.6	1.00			10:28	0.79	0.79	0.15	0.12	6.42
7.40	0.30	0.52	.6	1.00			10:29	0.83	0.83	0.16	0.13	6.95
7.70	0.30	0.52	.6	1.00			10:30	0.54	0.54	0.16	0.09	4.81
8.00	0.30	0.52	.6	1.00			10:31	0.56	0.56	0.16	0.09	4.81
8.30	0.30	0.50	.6	1.00			10:32	0.53	0.53	0.15	0.08	4.28
8.60	0.35	0.42	.6	1.00			10:33	0.42	0.42	0.15	0.06	3.21
9.00	0.45	0.30	.6	1.00			10:34	0.54	0.54	0.14	0.08	4.28
9.50	0.55	0.29	.6	1.00			10:36	0.23	0.23	0.16	0.04	2.14
10.10	0.30	0.00	.0	1.00			10:36	0.00	0.00	0.00	0.00	0.00
	8.90								**0.50**	**3.77**	**1.87**	

Measurement No.: 3 Final / Adj Shift:

Rating: Computed Shift: % Diff.:

Width: 8.90 Area: 3.77 Vel.: 0.50 G.H.: Disch.: 1.87

Method: .6 No. Secs: 24 G.H. Change: in 0.43 hrs. Susp.: TopSetRod

Method coef.: 1 Hor. angle coef.: 1.00 Susp. coef.: 1.00

Water Temp: 34 at 1038 Sensor Temp: 34.22 at

Station: LA PLATA RIVER BELOW ENTERPRISE DITCH WASTE WAY

Measurement Date: 03/05/2015 10:10 Division: 7 District: 33

Measurement By: BKB Notes By: RTC,BKB Reviewed By:

Discharge Correction: 0.00

Total Discharge: 1.87

Max. Discharge Section (%): 7.0

STATE OF COLORADO

Division of Water Resource

ACOUSTIC PROFILER DISCHARGE MEASUREMENT NOTES

GAGE READINGS | SENSOR READINGS

Time	Outside	Inside	Primary	Other

Intake Flushed: No — No.: 0

Record Removed: No

Measured

Serial No.: SP895

ADCP Model: SPRO

Float: SMALL/HULL

ADCP Depth: 0.17

Firmware: 31.13 — Software: WinRiver II 2.12

Diag Test? Y

Errors? N

B.M. Levels Obtained: N

Starting Time/Gage Height: 12:52 — 0.00

Ending Time/Gage Height: 13:14 — 0.00

Weighted M.G.H.:

G.H. Correction:

Correct M.G.H.:

Measurement Rating: Fair (8%) based on the following conditions

Cross Section: Cobble — Flow: Steady and even

Weather: Sunny, warm and calm — Wind Speed: — Direction:

Control (kind-condition): Cobble riffle

Remarks: LA PLATA RIVER BELOW ENTERPRISE WASTEWAY. Meas. sect. @ 12S 750104 E; 4099649 N NAD83. Enterprise Ditch GH = 0.47 ft., Q = 2.71 cfs measured.

Measurement No.: 4 — Final/ Adj. Shift:

Rating: Select Table — Computed Shift: — % DIFF:

Width: 13.9 — Area: 17.0 — Velocity: 1.10 — G.H.: — Discharge: 18.7

G.H. Change: 0.00 in 0.37

ADCP File Name: LAPENTCO_4.mmt — Compass Calib.: N/A

GPS Used: — Mag Var Used: — Mag Var Method: N/A

Moving Bed: Y — Method: SMBA — % MB Corr.: 0.08

Salinity: uS/cm at

Water Temp: 51 F at 1319 — Sensor Temp: 51.1 F at

Station: DIVISION 7 ADHOC MEASURING STATION

Measurement Date: 03/23/2015 12:52 — Division: 7 — District: 33

Measurement By: BKB — Notes By: RTC,BKB — Processed By: BKB — Checked By:

Left Bank: 0.500 — Right Bank: 0.500

Pwr Coef: 0.167 — Top Extrap: Constant — Bottom Extrap: No Slip

Transect Number	Start Bank	Start Time	Start Distance	End Distance	End Time	Width	Depth	Mean Velocity	Area	Discharge
0	L	1252	1.00	1.00	1253	14.18	1.21	1.24	17.21	21.42
1	R	1254	1.00	1.00	1255	13.65	1.24	1.22	16.99	20.67
2	L	1255	1.00	1.00	1257	14.03	1.23	1.09	17.19	18.72
3	R	1257	1.00	1.00	1259	14.10	1.22	1.04	17.26	17.90
4	L	1300	1.00	1.00	1302	13.98	1.22	0.98	17.06	16.76
5	R	1302	1.00	1.00	1304	14.24	1.24	1.01	17.62	17.82
6	L	1304	1.00	1.00	1307	13.45	1.21	1.02	16.32	16.63
7	R	1307	1.00	1.00	1309	13.11	1.23	1.14	16.14	18.39
8	L	1309	1.00	1.00	1312	13.76	1.23	1.11	16.96	18.76
9	R	1312	1.00	1.00	1314	14.15	1.24	1.16	17.51	20.22
Mean Values								**1.10**	**17.00**	**18.73**
SDEV										**1.60**
SDEV/MEAN										**.09**

Notes:

Discharge Correction: 0.00

Total Discharge: 18.73

STATE OF COLORADO

Division of Water Resource

ACOUSTIC PROFILER DISCHARGE MEASUREMENT NOTES

GAGE READINGS | SENSOR READINGS

Time	Outside	Inside	Primary	Other
12:09	0.58			
13:00	0.58			

Intake Flushed: No No.:

Record Removed: No

Measured

Serial No.: SP895

ADCP Model: SPRO

Float: SMALL/HULL

ADCP Depth: 0.15

Firmware: 31.13 Software: WinRiver II 2.12

Diag Test?: Y

Errors?: N

B.M. Levels Obtained: N

Starting Time/Gage Height: 12:38

Ending Time/Gage Height: 12:57

Weighted M.G.H.:

G.H. Correction:

Correct M.G.H.:

Measurement Rating: Good (5%) based on the following conditions

Cross Section: Cobble Flow: Steady and even

Weather: Mostly cloudy, cool and breezy Wind Speed: Direction:

Control (kind-condition): Cobble riffle

Remarks: LA PLATA RIVER BELOW ENTERPRISE WASTEWAY. Meas. Sect. @ 12S; 750104 E; 4099649 N; NAD 83. Enterprise Ditch GH = 0.52 ft. Q = 2.99 cfs rating.

Measurement No.: 5 Final/ Adj. Shift:

Rating: Computed Shift: % DIFF:

Width: 15.5 Area: 18.4 Velocity: 1.03 G.H.: Discharge: 18.9

G.H. Change: 0.00 in 0.32

ADCP File Name: LAPENTCO_5.mmt Compass Calib.: N/A

GPS Used: Mag Var Used: Mag Var Method: N/A

Moving Bed: N Method: SMBA % MB Corr.: 0.01

Salinity: uS/cm at

Water Temp: 44.0 F at 1210 Sensor Temp: 44.2 F at 1238

Station: LA PLATA RIVER BELOW ENTERPRISE DITCH WASTEWAY

Measurement Date: 04/17/2015 12:38 Division: 7 District: 33

Measurement By: BKB Notes By: JST,KJO Processed By: BKB Checked By:

Left Bank: Sloping Right Bank: Sloping

Pwr Coef: 0.167 Top Extrap: . Power Bottom Extrap: Power

Transect Number	Start Bank	Start Time	Start Distance	End Distance	End Time	Width	Depth	Mean Velocity	Area	Discharge
0	R	1238	1.50	1.50	1239	15.26	1.19	1.03	18.09	18.70
1	L	1239	1.50	1.50	1241	15.04	1.17	1.02	17.62	17.88
2	R	1241	1.50	1.50	1243	15.54	1.19	1.02	18.45	18.88
3	L	1243	1.50	1.50	1245	15.69	1.18	1.04	18.58	19.36
4	R	1245	1.50	1.50	1247	15.98	1.19	0.96	18.97	18.12
5	L	1247	1.50	1.50	1249	16.01	1.20	1.04	19.14	19.93
6	R	1249	1.50	1.50	1251	15.19	1.19	1.03	18.12	18.74
8	L	1255	1.50	1.50	1257	15.29	1.17	1.08	17.91	19.40
					Mean Values			1.03	18.36	18.88
					SDEV					.68
					SDEV/MEAN					.04

Notes:

Discharge Correction: 0.00

Total Discharge: 18.88

04/19/2015 BKB

STATE OF COLORADO

Division of Water Resource

ACOUSTIC PROFILER DISCHARGE MEASUREMENT NOTES

GAGE READINGS | SENSOR READINGS

Time	Outside	Inside	Primary	Other
13:54	0.45			
14:22				
14:42				
14:47	0.46			

Intake Flushed: No No.:

Record Removed: No

Measured

Meas. Sect. @ 13S; 216,247.2 E; 4,100,710.5 N; NAD 83

Serial No.: SP895

ADCP Model: SPRO

Float: SMALL HULL

ADCP Depth: 0.15

Firmware: 31.13 Software: WinRiver II 2.12

Diag Test? Y

Errors? N

B.M. Levels Obtained: N

Starting Time/Gage Height: 14:22 0.45

Ending Time/Gage Height: 14:42 0.45

Weighted M.G.H.:

G.H. Correction:

Correct M.G.H.:

Measurement Rating: Fair (8%) based on the following conditions

Cross Section: cobble Flow: faster, smooth waves

Weather: Mostly cloudy, warm, calm Wind Speed: Direction:

Control (kind-condition): Cobble riffle - clear

Remarks: LA PLATA RIVER BELOW ENTERPRISE DITCH WASTEWAY. Enterprise Ditch GH = 0.46 ft., Q = 2.57 cfs measured. Outside gage is temporary, used to monitor stage during measurement.

Measurement No.: 6 Final/ Adj. Shift:

Rating: Computed Shift: % DIFF:

Width: 15.3 Area: 22.6 Velocity: 1.68 G.H.: 0 Discharge: 38.0

G.H. Change: 0.00 in: 0.33

ADCP File Name: LAPENTCO_6.mmt Compass Calib.: N/A

GPS Used: None Mag Var Used: Mag Var Method: N/A

Moving Bed: N Method: SMBA % MB Corr.: 0.15

Salinity: uS/cm at

Water Temp: 59 F at 1415 Sensor Temp: 59.6 F at 1422

Station: LA PLATA RIVER BELOW ENTERPRISE DITCH WASTEWAY

Measurement Date: 05/08/2015 14:22 Division: 7 District: 33

Measurement By: BML Notes By: BML Processed By: Checked By:

Left Bank: 0.700 Right Bank: 0.500

Pwr Coef: 0.281 Top Extrap: Power Bottom Extrap: Power

Transect Number	Start Bank	Start Time	Start Distance	End Distance	End Time	Width	Depth	Mean Velocity	Area	Discharge
0	R	1422	1.20	1.00	1424	15.58	1.49	1.51	23.25	35.18
1	L	1425	1.00	1.20	1427	14.35	1.48	1.79	21.24	37.93
2	R	1427	1.20	1.00	1429	15.65	1.48	1.62	23.22	37.54
5	L	1434	1.00	1.20	1437	15.03	1.48	1.77	22.26	39.38
6	R	1437	1.20	1.00	1440	16.01	1.47	1.73	23.55	40.72
7	L	1440	1.00	1.20	1442	15.14	1.48	1.68	22.36	37.55
					Mean Values			**1.68**	**22.60**	**38.05**
					SDEV					**1.88**
					SDEV/MEAN					**.05**

Notes: 003 & 004 not used in processed values.

Discharge Correction: 0.00

Total Discharge: 38.05

STATE OF COLORADO

Division of Water Resource

CURRENT METER NOTE

GAGE READINGS | SENSOR READINGS

Time	Outside	Inside	Primary	Other
14:16	0.30			
14:48	0.30			

Intake Flushed: No No.: 0

Record Removed: No

Measured

@ 13S: 216,247.2 E; 4,100,710.5 N; NAD 83

Starting Time/Gage Height: 14:22

Ending Time/Gage Height: 14:42

Weighted M.G.H.:

G.H. Correction: 0.00

Correct M.G.H.:

Meter No.: SP895 - Digitizer

ADV Type: ADCP SxS

ADV QC: no Errors: n/a

B.M. Levels Obtained: No

Measurement Rating: Fair (8%) based on the following conditions

Cross Section: Cobble Flow: Steady

Weather: Partly cloudy, humid, very warm and calm

Control (kind-condition): Channel - clear.

Remarks: LA PLATA RIVER BELOW ENTERPRISE DITCH WASTEWAY. Enterprise Ditch GH = 0.70; Q = 4.70 cfs per rating and shift.

Dist. From Initial Point	Width	Depth	Depth of Obs	Angle Coef	Revs	Time in Secs	Time Vert	Point Velocity	Mean Velocity	Area	Discharge	Pct. of Total Flow
0.50	0.80	0.00	0.000	1.00			14:22	0.00	0.00	0.00	0.00	0.00
2.10	1.50	1.31	0.150	1.00			14:22	0.10	0.10	1.96	0.20	0.36
3.50	1.20	1.70	0.150	1.00			14:23	0.20	0.20	2.04	0.41	0.74
4.50	0.75	1.97	0.150	1.00			14:24	1.26	1.26	1.48	1.86	3.34
5.00	0.50	2.05	0.150	1.00			14:43	1.92	1.92	1.02	1.96	3.52
5.50	0.60	2.08	0.150	1.00			14:25	2.59	2.59	1.25	3.24	5.81
6.20	0.65	2.09	0.150	1.00			14:26	2.61	2.61	1.36	3.55	6.37
6.80	0.60	2.06	0.150	1.00			14:27	2.86	2.86	1.24	3.55	6.37
7.40	0.60	2.06	0.150	1.00			14:28	2.74	2.74	1.24	3.40	6.10
8.00	0.60	2.01	0.150	1.00			14:29	3.04	3.04	1.21	3.68	6.60
8.60	0.60	1.98	0.150	1.00			14:30	3.04	3.04	1.19	3.62	6.50
9.20	0.60	1.94	0.150	1.00			14:31	3.08	3.08	1.16	3.57	6.41
9.80	0.60	1.92	0.150	1.00			14:32	3.10	3.10	1.15	3.56	6.39
10.40	0.60	1.85	0.150	1.00			14:33	2.96	2.96	1.11	3.29	5.90
11.00	0.60	1.79	0.150	1.00			14:34	2.98	2.98	1.07	3.19	5.73
11.60	0.65	1.75	0.150	1.00			14:35	2.75	2.75	1.14	3.14	5.64
12.30	0.70	1.68	0.150	1.00			14:36	2.55	2.55	1.18	3.01	5.40
13.00	0.70	1.62	0.150	1.00			14:37	2.16	2.16	1.13	2.44	4.38
13.70	0.75	1.62	0.150	1.00			14:38	1.83	1.83	1.22	2.23	4.00
14.50	0.80	1.64	0.150	1.00			14:39	1.80	1.80	1.31	2.36	4.24
15.30	0.90	1.63	0.150	1.00			14:40	1.50	1.50	1.47	2.20	3.95
16.30	0.75	1.43	0.150	1.00			14:41	1.18	1.18	1.07	1.26	2.26
16.80	0.25	0.00	0.000	1.00			14:42	0.00	0.00	0.00	0.00	0.00
	16.30								**2.06**	**27.00**	**55.72**	

Measurement No.: 7 Final / Adj Shift:

Rating: Computed Shift: % Diff.:

Width: 16.3 Area: 27.0 Vel.: 2.06 G.H.: Disch.: 55.7

Method: SxS No. Secs: 23 G.H. Change: 0.00 in 0.33 hrs. Susp.: Boat

Method coef.: 1 Hor. angle coef.: 1.00 Susp. coef.: 1.00

Water Temp: at: Sensor Temp: at:

Station: LA PLATA RIVER BELOW ENTERPRISE DITCH WASTEWAY

Measurement Date: 07/15/2015 14:22 Division: 7 District: 33

Measurement By: BKB Notes By: RTC,KJO Reviewed By:

Discharge Correction: 0.00

Total Discharge: 55.72

Max. Discharge Section (%): 6.6

STATE OF COLORADO

Division of Water Resource

CURRENT METER NOTE

GAGE READINGS | SENSOR READINGS

Time	Outside	Inside	Primary	Other
15:01	0.50			
15:32	0.50			

Intake Flushed: No No.: 0

Record Removed: No

Measured

@ 13S: 216,247.2 E; 4,100,710.5 N; NAD 83

Starting Time/Gage Height: 15:03

Ending Time/Gage Height: 15:30

Weighted M.G.H.:

G.H. Correction: 0.00

Correct M.G.H.:

Meter No.: P3427 - Digitizer

ADV Type: FlowTracker

ADV QC: yes Errors: no

B.M. Levels Obtained: No

Measurement Rating: Good (5%) based on the following conditions

Cross Section: Cobble Flow: Steady, smooth, even and translucent

Weather: Mostly cloudy, calm, humid and warm

Control (kind-condition):

Remarks: LA PLATA RIVER BELOW ENTERPRISE DITCH WASTEWAY. Enterprise Ditch = 0.44 ft., (Q = 2.32 cfs) per rating and shift @ 1450.

Dist. From Initial Point	Width	Depth	Depth of Obs	Angle Coef	Revs	Time in Secs	Time Vert	Point Velocity	Mean Velocity	Area	Discharge	Pct. of Total Flow
0.60	0.50	0.00	.0	1.00			15:03	0.00	0.00	0.00	0.00	0.00
1.60	0.85	0.71	.6	1.00			15:03	0.21	0.21	0.60	0.13	1.58
2.30	0.70	0.92	.6	1.00			15:04	0.47	0.47	0.64	0.30	3.64
3.00	0.70	1.00	.6	1.00			15:05	0.53	0.53	0.70	0.37	4.49
3.70	0.75	1.00	.6	1.00			15:06	0.38	0.38	0.75	0.28	3.40
4.50	0.80	0.93	.6	1.00			15:07	0.51	0.51	0.74	0.38	4.61
5.30	0.65	0.95	.6	1.00			15:08	0.74	0.74	0.62	0.46	5.58
5.80	0.55	1.01	.6	1.00			15:09	0.73	0.73	0.56	0.41	4.98
6.40	0.55	1.09	.6	1.00			15:10	0.71	0.71	0.60	0.43	5.22
6.90	0.55	1.12	.6	1.00			15:11	0.58	0.58	0.62	0.36	4.37
7.50	0.55	1.19	.6	1.00			15:12	0.74	0.74	0.65	0.48	5.83
8.00	0.45	1.21	.6	1.00			15:14	0.84	0.84	0.54	0.45	5.46
8.40	0.40	1.22	.6	1.00			15:15	0.81	0.81	0.49	0.40	4.85
8.80	0.40	1.28	.6	1.00			15:16	0.81	0.81	0.51	0.41	4.98
9.20	0.40	1.30	.6	1.00			15:17	0.71	0.71	0.52	0.37	4.49
9.60	0.40	1.30	.6	1.00			15:18	0.70	0.70	0.52	0.36	4.37
10.00	0.40	1.34	.6	1.00			15:19	0.77	0.77	0.54	0.42	5.10
10.40	0.40	1.39	.6	1.00			15:20	0.83	0.83	0.56	0.46	5.58
10.80	0.40	1.35	.6	1.00			15:21	0.66	0.66	0.54	0.36	4.37
11.20	0.45	1.35	.6	1.00			15:22	0.56	0.56	0.61	0.34	4.13
11.70	0.55	1.41	.6	1.00			15:24	0.56	0.56	0.78	0.44	5.34
12.30	0.55	1.48	.6	1.00			15:25	0.53	0.53	0.81	0.43	5.22
12.80	0.60	1.40	.6	1.00			15:27	0.28	0.28	0.84	0.24	2.91
13.50	0.80	1.31	.6	1.00			15:28	0.16	0.16	1.05	0.17	2.06
14.40	0.90	1.16	.6	1.00			15:29	-0.06	-0.06	1.04	-0.06	-0.73
15.30	0.90	0.85	.6	1.00			15:30	-0.20	-0.20	0.76	-0.15	-1.82
16.20	0.45	0.00	.0	1.00			15:30	0.00	0.00	0.00	0.00	0.00
	15.60								0.50	16.59	8.24	

Measurement No.: 8 Final / Adj Shift:

Rating: Computed Shift: % Diff.:

Width: 15.6 Area: 16.6 Vel.: 0.50 G.H.: Disch.: 8.24

Method: .6 No. Secs: 27 G.H. Change: 0.00 in 0.45 hrs. Susp.: TopSetRod

Method coef.: 1 Hor. angle coef.: Varies Susp. coef.: 1.00

Water Temp: at: Sensor Temp: 70.35 at:

Station: LA PLATA RIVER BELOW ENTERPRISE DITCH WASTEWAY.

Measurement Date: 07/31/2015 15:03 Division: 7 District: 33

Measurement By: BKB Notes By: KJO,BKB Reviewed By:

Discharge Correction: 0.00

Total Discharge: 8.24

Max. Discharge Section (%): 5.8

STATE OF COLORADO

Division of Water Resource

CURRENT METER NOTE

GAGE READINGS | SENSOR READINGS

Time	Outside	Inside	Primary	Other

Intake Flushed: No No.: 0

Record Removed: No

Measured @ 13S: 216,247.2 E; 4,100,710.5 N; NAD 83

Starting Time/Gage Height: 13:16

Ending Time/Gage Height: 13:44

Weighted M.G.H.:

G.H. Correction: 0.00

Correct M.G.H.:

Meter No.: P3427 - Digitizer

ADV Type: FlowTracker

ADV QC: yes Errors: no

B.M. Levels Obtained: No

Measurement Rating: Fair (8%) based on the following conditions

Cross Section: Cobble Flow: Translucent, smooth and even

Weather: Sunny, warm and breezy

Control (kind-condition):

Remarks: LA PLATA RIVER BELOW ENTERPRISE DITCH WASTEWAY. Enterprise Ditch Q = 0.00 cfs (dry). There is an eddy on the left-edge-of-water.

Dist. From Initial Point	Width	Depth	Depth of Obs	Angle Coef	Revs	Time in Secs	Time Vert	Point Velocity	Mean Velocity	Area	Discharge	Pct. of Total Flow
0.40	0.50	0.00	.0	1.00			13:16	0.00	0.00	0.00	0.00	0.00
1.40	0.85	0.62	.6	1.00			13:16	0.10	0.10	0.53	0.05	1.07
2.10	0.75	0.80	.6	1.00			13:17	0.28	0.28	0.60	0.17	3.63
2.90	0.80	0.93	.6	1.00			13:18	0.33	0.33	0.74	0.24	5.13
3.70	0.80	0.90	.6	1.00			13:19	0.32	0.32	0.72	0.23	4.91
4.50	0.70	0.83	.6	1.00			13:20	0.49	0.49	0.58	0.28	5.98
5.10	0.60	0.87	.6	1.00			13:21	0.45	0.45	0.52	0.23	4.91
5.70	0.55	0.99	.6	1.00			13:22	0.47	0.47	0.54	0.25	5.34
6.20	0.50	1.10	.6	1.00			13:24	0.35	0.35	0.55	0.19	4.06
6.70	0.45	1.13	.6	1.00			13:25	0.53	0.53	0.51	0.27	5.77
7.10	0.40	1.18	.6	1.00			13:26	0.52	0.52	0.47	0.24	5.13
7.50	0.40	1.20	.6	1.00			13:27	0.53	0.53	0.48	0.25	5.34
7.90	0.40	1.12	.6	1.00			13:28	0.51	0.51	0.45	0.23	4.91
8.30	0.40	1.10	.6	1.00			13:29	0.54	0.54	0.44	0.24	5.13
8.70	0.40	1.06	.6	1.00			13:30	0.47	0.47	0.42	0.20	4.27
9.10	0.40	1.01	.6	1.00			13:31	0.56	0.56	0.40	0.22	4.70
9.50	0.40	1.12	.6	1.00			13:32	0.52	0.52	0.45	0.23	4.91
9.90	0.40	1.08	.6	1.00			13:33	0.52	0.52	0.43	0.22	4.70
10.30	0.40	1.10	.6	1.00			13:35	0.58	0.58	0.44	0.26	5.56
10.70	0.40	1.10	.6	1.00			13:36	0.49	0.49	0.44	0.22	4.70
11.10	0.40	1.20	.6	1.00			13:37	0.37	0.37	0.48	0.18	3.85
11.50	0.40	1.20	.6	1.00			13:38	0.32	0.32	0.48	0.15	3.21
11.90	0.40	1.27	.6	1.00			13:39	0.21	0.21	0.51	0.11	2.35
12.30	0.50	1.22	.6	1.00			13:40	0.12	0.12	0.61	0.07	1.50
12.90	0.75	1.12	.6	1.00			13:41	0.04	0.04	0.84	0.03	0.64
13.80	0.85	0.91	.6	1.00			13:43	-0.04	-0.04	0.77	-0.03	-0.64
14.60	0.85	0.60	.6	1.00			13:44	-0.10	-0.10	0.51	-0.05	-1.07
15.50	0.45	0.00	.0	1.00			13:44	0.00	0.00	0.00	0.00	0.00
	15.10								0.34	13.91	4.68	

Measurement No.: 9 Final / Adj Shift:

Rating: Computed Shift: % Diff.:

Width: 15.1 Area: 13.9 Vel.: 0.34 G.H.: Disch.: 4.68

Method: .6 No. Secs: 28 G.H. Change: in 0.47 hrs. Susp.: TopSetRod

Method coef.: 1 Hor. angle coef.: varies Susp. coef.: 1.00

Water Temp: 66 at 1317 Sensor Temp: 67.31 at

Station: LA PLATA RIVER BELOW ENTERPRISE DITCH WASTEWAY

Measurement Date: 08/18/2015 13:16 Division: 7 District: 33

Measurement By: BKB Notes By: RTC,BKB Reviewed By:

Discharge Correction: 0.00

Total Discharge: 4.68

Max. Discharge Section (%): 6.0

Table 1a. La Plata River at USBR Gage Site
February 17, 2014

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
3.0							
3.5	0.75	0.50	90	60	1.47	0.38	0.55
4.5	1.00	0.45	124	60	2.02	0.45	0.91
5.5	1.00	0.50	119	60	1.94	0.50	0.97
6.5	1.00	0.45	116	60	1.89	0.45	0.85
7.5	1.25	0.55	125	60	2.03	0.69	1.40
9.0	1.00	0.50	120	60	1.95	0.50	0.98
10.0	1.00	0.35	112	60	1.82	0.35	0.64
11.0	1.00	0.30	109	60	1.78	0.30	0.53
12.0	1.00	0.25	64	60	1.06	0.25	0.26
13.0	1.00	0.30	64	60	1.06	0.30	0.32
14.0	1.25	0.20	47	60	0.78	0.25	0.20
15.5							
Total						**4.41**	**7.60**

Table 1b. La Plata River at USBR Gage Site
March 14, 2014

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
0.0							
0.9	0.92	0.25	107	60	1.74	0.23	0.40
1.9	1.00	0.50	185	60	2.99	0.50	1.50
2.9	1.00	0.65	190	60	3.07	0.65	2.00
3.9	1.00	0.60	172	60	2.78	0.60	1.67
4.9	1.00	0.65	144	60	2.34	0.65	1.52
5.9	1.00	0.70	137	60	2.22	0.70	1.56
6.9	1.00	0.70	190	60	3.07	0.70	2.15
7.9	1.00	0.65	133	60	2.16	0.65	1.40
8.9	1.00	0.50	121	60	1.97	0.50	0.98
9.9	1.00	0.45	138	60	2.24	0.45	1.01
10.9	1.00	0.30	85	60	1.39	0.30	0.42
11.9	1.00	0.30	57	60	0.94	0.30	0.28
12.9	1.00	0.15	18	60	0.32	0.15	0.05
13.7							
	Δ				**Total**	**6.38**	**14.94**

Table 1c. La Plata River at USBR Gage Site
April 4, 2014

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
4.0							
5.0	1.00	0.55	69	60	2.55	0.55	1.40
6.0	1.00	0.80	74	60	2.74	0.80	2.19
7.0	1.00	0.85	74	60	2.74	0.85	2.33
8.0	1.00	0.70	71	60	2.63	0.70	1.84
9.0	1.00	0.85	80	60	2.96	0.85	2.51
10.0	1.00	0.80	72	60	2.66	0.80	2.13
11.0	1.00	0.80	49	60	1.82	0.80	1.45
12.0	1.00	0.75	52	60	1.93	0.75	1.45
13.0	1.00	0.65	51	60	1.89	0.65	1.23
14.0	1.00	0.45	62	60	2.30	0.45	1.03
15.0	1.00	0.50	37	60	1.38	0.50	0.69
16.0	1.00	0.40	31	60	1.16	0.40	0.46
17.0	1.00	0.25	18	60	0.68	0.25	0.17
18.0							
	Δ				**Total**	**8.35**	**18.89**

Table 1d. La Plata River at USBR Gage Site
April 11, 2014

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
3.5							
4.5	1.00	0.45	63	60	2.33	0.45	1.05
5.5	1.00	0.75	65	60	2.41	0.75	1.80
6.5	1.00	0.90	83	60	3.07	0.90	2.76
7.5	1.00	0.90	81	60	2.99	0.90	2.69
8.5	1.00	0.85	74	60	2.74	0.85	2.33
9.5	1.00	1.00	72	60	2.66	1.00	2.66
10.5	1.00	0.90	91	60	3.36	0.90	3.03
11.5	1.00	0.85	57	60	2.11	0.85	1.80
12.5	1.00	0.75	69	60	2.55	0.75	1.91
13.5	1.00	0.65	69	60	2.55	0.65	1.66
14.5	1.00	0.55	53	60	1.97	0.55	1.08
15.5	1.00	0.45	46	60	1.71	0.45	0.77
16.5	1.00	0.35	29	60	1.08	0.35	0.38
17.5							
	Δ				**Total**	**9.35**	**23.92**

Table 1e. La Plata River at USBR Gage Site
April 18, 2014

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
3.3							
4.3	1.00	0.45	63	60	2.33	0.45	1.05
5.3	1.00	0.90	102	60	3.77	0.90	3.39
6.3	1.00	1.10	91	60	3.36	1.10	3.70
7.3	1.00	1.15	92	60	3.40	1.15	3.91
8.3	1.00	1.15	93	60	3.44	1.15	3.95
9.3	1.00	1.35	103	60	3.80	1.35	5.13
10.3	1.00	1.30	99	60	3.66	1.30	4.75
11.3	1.00	1.10	69	60	2.55	1.10	2.81
12.3	1.00	0.95	96	60	3.55	0.95	3.37
13.3	1.00	1.00	74	60	2.74	1.00	2.74
14.3	1.00	0.85	86	60	3.18	0.85	2.70
15.3	1.00	0.80	77	60	2.85	0.80	2.28
16.3	1.00	0.75	79	60	2.92	0.75	2.19
17.3	1.00	0.45	23	60	0.86	0.45	0.39
17.5							
	Δ				**Total**	**13.30**	**41.97**

Table 1f. La Plata River at USBR Gage Site
April 30, 2014

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
3.5							
4.5	1.00	0.55	71	60	2.63	0.55	1.44
5.5	1.00	0.90	98	60	3.62	0.90	3.26
6.5	1.00	1.05	93	60	3.44	1.05	3.61
7.5	1.00	1.00	87	60	3.21	1.00	3.21
8.5	1.00	1.10	92	60	3.40	1.10	3.74
9.5	1.00	1.10	79	60	2.92	1.10	3.21
10.5	1.00	0.95	94	60	3.47	0.95	3.30
11.5	1.00	0.90	93	60	3.44	0.90	3.09
12.5	1.00	0.80	71	60	2.63	0.80	2.10
13.5	1.00	0.70	60	60	2.22	0.70	1.56
14.5	1.00	0.65	69	60	2.55	0.65	1.66
15.5	1.00	0.60	56	60	2.08	0.60	1.25
16.5	1.00	0.40	24	60	0.90	0.40	0.36
17.5							
	Δ				**Total**	**10.70**	**31.79**

Table 1g. La Plata River at USBR Gage Site
May 7, 2014

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
4.0							
5.0	1.00	0.70	54	60	2.00	0.70	1.40
6.0	1.00	1.10	118	60	4.35	1.10	4.79
7.0	1.00	1.45	125	60	4.61	1.45	6.69
8.0	1.00	1.45	111	60	4.10	1.45	5.94
9.0	1.00	1.45	100	60	3.69	1.45	5.35
10.0	1.00	1.50	104	60	3.84	1.50	5.76
11.0	1.00	1.40	120	60	4.43	1.40	6.20
12.0	1.00	1.40	105	60	3.88	1.40	5.43
13.0	1.00	1.20	113	60	4.17	1.20	5.00
14.0	1.00	1.15	111	60	4.10	1.15	4.71
15.0	1.00	1.05	113	60	4.17	1.05	4.38
16.0	1.00	1.00	97	60	3.58	1.00	3.58
17.0	1.00	0.90	84	60	3.10	0.90	2.79
18.0	1.00	0.75	58	60	2.15	0.75	1.61
19.0	1.00	0.45	44	60	1.63	0.45	0.74
20.0							
	Δ				**Total**	**15.75**	**64.37**

Table 1h. La Plata River at USBR Gage Site
July 1, 2014

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
5.0							
6.0	1.00	0.50	95	60	1.55	0.50	0.78
7.0	1.00	0.50	80	60	1.31	0.50	0.66
8.0	1.00	0.40	121	60	1.97	0.40	0.79
9.0	1.00	0.50	101	60	1.65	0.50	0.82
10.0	1.00	0.50	100	60	1.63	0.50	0.82
11.0	1.00	0.40	95	60	1.55	0.40	0.62
12.0	1.00	0.30	84	60	1.38	0.30	0.41
13.0	1.00	0.20	113	60	1.84	0.20	0.37
14.0	1.00	0.20	32	60	0.54	0.20	0.11
15.0	1.00	0.20	104	60	1.70	0.20	0.34
16.0							
	Δ				**Total**	**3.70**	**5.71**

Table 1i. La Plata River at USBR Gage Site
August 22, 2014

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
5.0							
6.0	1.00	0.20	76	60	1.25	0.20	0.25
7.0	1.00	0.10	57	60	0.94	0.10	0.09
8.0	1.00	0.20	30	60	0.51	0.20	0.10
9.0	1.00	0.20	81	60	1.33	0.20	0.27
10.0	1.00	0.30	101	60	1.65	0.30	0.49
11.0	1.00	0.20	19	60	0.34	0.20	0.07
12.0	1.00	0.00		60	0.03	0.00	0.00
13.0	1.00			60	0.03	0.00	0.00
14.0	1.00			60	0.03	0.00	0.00
15.0	1.00			60	0.03	0.00	0.00
16.0							
	Δ				**Total**	**1.20**	**1.27**

Table 1j. La Plata River at USBR Gage Site
October 01, 2014

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
4.00							
4.83	0.92	0.20	40	60	1.49	0.18	0.27
5.83	1.00	0.80	69	60	2.55	0.80	2.04
6.83	1.00	0.80	77	60	2.85	0.80	2.28
7.83	1.00	0.70	59	60	2.19	0.70	1.53
8.83	1.00	0.70	92	60	3.40	0.70	2.38
9.83	1.00	0.80	102	60	3.77	0.80	3.01
10.83	1.00	0.80	59	60	2.19	0.80	1.75
11.83	1.00	0.60	58	60	2.15	0.60	1.29
12.83	1.00	0.50	41	60	1.52	0.50	0.76
13.83	1.00	0.50	47	60	1.74	0.50	0.87
14.83	1.00	0.50	60	60	2.22	0.50	1.11
15.83	1.00	0.30	44	60	1.63	0.30	0.49
16.83							
	Δ				**Total**	**7.18**	**17.79**

Table 1k. La Plata River at USBR Gage Site
October 07, 2014

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
5.0							
6.0	1.00	0.80	62	60	2.30	0.80	1.84
7.0	1.00	0.85	72	60	2.66	0.85	2.26
8.0	1.00	0.85	67	60	2.48	0.85	2.11
9.0	1.00	0.80	76	60	2.81	0.80	2.25
10.0	1.00	0.75	54	60	2.00	0.75	1.50
11.0	1.00	0.80	58	60	2.15	0.80	1.72
12.0	1.00	0.65	49	60	1.82	0.65	1.18
13.0	1.00	0.60	60	60	2.22	0.60	1.33
14.0	1.00	0.50	66	60	2.44	0.50	1.22
15.0	1.00	0.50	38	60	1.41	0.50	0.71
16.0	1.00	0.40	40	60	1.49	0.40	0.60
17.0							
	Δ				**Total**	**7.50**	**16.72**

Table 1l. La Plata River at USBR Gage Site
November 10, 2014

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
5.0							
6.0	1.00	0.60	71	60	1.17	0.60	0.70
7.0	1.00	0.70	134	60	2.18	0.70	1.52
8.0	1.00	0.65	66	60	1.09	0.65	0.71
9.0	1.00	0.70	116	60	1.89	0.70	1.32
10.0	1.00	0.65	111	60	1.81	0.65	1.18
11.0	1.00	0.70	100	60	1.63	0.70	1.14
12.0	1.00	0.50	124	60	2.02	0.50	1.01
13.0	1.00	0.50	74	60	1.22	0.50	0.61
14.0	1.00	0.40	88	60	1.44	0.40	0.58
15.0	1.00	0.35	74	60	1.22	0.35	0.43
16.0	1.00	0.20	26	60	0.45	0.20	0.09
17.0							
	Δ				**Total**	**5.95**	**9.28**

Table 1m. La Plata River at USBR Gage Site
December 1, 2014

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
4.8							
5.3	0.50	0.35	31	60	0.53	0.18	0.09
5.8	0.50	0.50	70	60	1.15	0.25	0.29
6.3	0.50	0.50	132	60	2.14	0.25	0.54
6.8	0.50	0.40	68	60	1.12	0.20	0.22
7.3	0.50	0.50	66	60	1.09	0.25	0.27
7.8	0.50	0.40	70	60	1.15	0.20	0.23
8.3	0.50	0.40	48	60	0.80	0.20	0.16
8.8	0.50	0.40	92	60	1.50	0.20	0.30
9.3	0.50	0.40	112	60	1.82	0.20	0.36
9.8	0.50	0.50	79	60	1.30	0.25	0.32
10.3	0.50	0.40	101	60	1.65	0.20	0.33
10.8	0.50	0.40	45	60	0.75	0.20	0.15
11.3	0.50	0.35	22	60	0.38	0.18	0.07
11.8	0.50	0.20	53	60	0.88	0.10	0.09
12.3	0.50	0.30	51	60	0.85	0.15	0.13
12.8	0.50	0.25	66	60	1.09	0.13	0.14
13.3	0.50	0.20	46	60	0.77	0.10	0.08
13.8	0.50	0.20	58	60	0.96	0.10	0.10
14.3	0.50	0.20	35	60	0.59	0.10	0.06
14.8	0.50	0.15	28	60	0.48	0.08	0.04
15.3	0.70	0.05	37	60	0.62	0.04	0.02
16.0							
	Δ				Total	3.54	3.98

Table 1n. La Plata River at USBR Gage Site
December 12, 2014

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
5.0							
5.5	0.75	0.20	43	60	0.72	0.15	0.11
6.5	1.00	0.45	132	60	2.14	0.45	0.96
7.5	1.00	0.50	74	60	1.22	0.50	0.61
8.5	1.00	0.40	14	60	0.26	0.40	0.10
9.5	1.00	0.40	81	60	1.33	0.40	0.53
10.5	1.00	0.40	84	60	1.38	0.40	0.55
11.5	1.00	0.40	13	60	0.24	0.40	0.10
12.5	1.00	0.25	40	60	0.67	0.25	0.17
13.5	1.00	0.20	56	60	0.93	0.20	0.19
14.5	1.50	0.10	20	60	0.35	0.15	0.05
16.5							
	Δ				**Total**	**3.30**	**3.37**

Notes:
cfs = cubic feet per second
sec = second
USBR = U.S. Bureau of Reclamation

Table 2a. La Plata River at USBR Gage Site
January 12, 2015

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
5.0							
6.0	1.00	0.30	50	60	0.83	0.30	0.25
7.0	1.00	0.50	55	60	0.91	0.50	0.46
7.7	1.00	0.45	46	60	0.77	0.45	0.35
9.0	1.00	0.40	65	60	1.07	0.40	0.43
10.0	1.00	0.45	76	60	1.25	0.45	0.56
11.0	1.00	0.40	76	60	1.25	0.40	0.50
12.0	1.00	0.20	30	60	0.51	0.20	0.10
13.0	1.00	0.20	23	60	0.40	0.20	0.08
14.0	1.00	0.15	14	60	0.26	0.15	0.04
15.0	1.00	0.10	14	60	0.26	0.10	0.03
16.0							
	Δ				**Total**	**3.15**	**2.79**

Table 2b. La Plata River at USBR Gage Site
February 10, 2015

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
3.0							
4.0	1.00	0.20	46	60	0.77	0.20	0.15
5.0	1.00	0.20	49	60	0.82	0.20	0.16
6.0	1.00	0.20	63	60	1.04	0.20	0.21
7.0	1.00	0.20	99	60	1.62	0.20	0.32
8.0	1.00	0.25	62	60	1.02	0.25	0.26
9.0	1.00	0.30	90	60	1.47	0.30	0.44
10.0	1.00	0.40	78	60	1.28	0.40	0.51
11.0	1.00	0.40	76	60	1.25	0.40	0.50
12.0	1.00	0.30	106	60	1.73	0.30	0.52
13.0	1.00	0.30	88	60	1.44	0.30	0.43
14.0	1.00	0.20	46	60	0.77	0.20	0.15
15.0	1.00	0.10	21	60	0.37	0.10	0.04
16.0							
	Δ				**Total**	**3.05**	**3.70**

Table 2c. La Plata River at USBR Gage Site
March 5, 2015

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
5.0							
6.0	1.00	0.50	66	60	1.09	0.50	0.54
7.0	1.00	0.50	54	60	0.90	0.50	0.45
8.0	1.00	0.40	75	60	1.23	0.40	0.49
9.0	1.00	0.40	98	60	1.60	0.40	0.64
10.0	1.00	0.50	149	60	2.42	0.50	1.21
11.0	1.00	0.40	55	60	0.91	0.40	0.36
12.0	1.00	0.30	86	60	1.41	0.30	0.42
13.0	1.00	0.20	48	60	0.80	0.20	0.16
14.0	1.00	0.15	50	60	0.83	0.15	0.12
15.0	1.00	0.10	25	60	0.43	0.10	0.04
16.0							
	Δ				**Total**	**3.45**	**4.45**

Table 2d. La Plata River at USBR Gage Site
March 23, 2015

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
4.0							
5.0	1.00	0.60	88	60	3.25	0.60	1.95
6.0	1.00	1.00	82	60	3.03	1.00	3.03
7.0	1.00	1.00	71	60	2.63	1.00	2.63
8.0	1.00	1.00	91	60	3.36	1.00	3.36
9.0	1.00	1.00	99	60	3.66	1.00	3.66
10.0	1.00	1.00	89	60	3.29	1.00	3.29
11.0	1.00	1.00	81	60	2.99	1.00	2.99
12.0	1.00	0.80	89	60	3.29	0.80	2.63
13.0	1.00	0.80	80	60	2.96	0.80	2.37
14.0	1.00	0.75	86	60	3.18	0.75	2.38
15.0	1.00	0.60	61	60	2.26	0.60	1.36
16.0	1.00	0.50	58	60	2.15	0.50	1.07
17.0	1.50	0.30	10	60	0.39	0.45	0.17
19.0							
	Δ				**Total**	**10.50**	**30.89**

Table 2e. La Plata River at USBR Gage Site
April 2, 2015

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
4.0							
4.5	0.50	0.40	30	60	1.12	0.20	0.22
5.0	0.75	1.00	83	60	3.07	0.75	2.30
6.0	1.00	1.20	82	60	3.03	1.20	3.64
7.0	1.00	1.20	70	60	2.59	1.20	3.11
8.0	1.00	1.10	79	60	2.92	1.10	3.21
9.0	1.00	1.10	97	60	3.58	1.10	3.94
10.0	1.00	1.20	92	60	3.40	1.20	4.08
11.0	1.00	1.20	82	60	3.03	1.20	3.64
12.0	1.00	0.90	84	60	3.10	0.90	2.79
13.0	1.00	0.80	78	60	2.88	0.80	2.31
14.0	1.00	0.80	90	60	3.33	0.80	2.66
15.0	1.00	0.70	74	60	2.74	0.70	1.92
16.0	1.00	0.50	64	60	2.37	0.50	1.18
17.0	1.00	0.40	29	60	1.08	0.40	0.43
18.0	1.00	0.20	33	60	1.23	0.20	0.25
19.0							
	Δ				**Total**	**12.25**	**35.68**

Table 2f. La Plata River at USBR Gage Site
April 17, 2015

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
4.0							
5.0	1.00	0.70	73	60	2.70	0.70	1.89
6.0	1.00	1.00	61	60	2.26	1.00	2.26
7.0	1.00	1.00	75	60	2.77	1.00	2.77
8.0	1.00	0.90	61	60	2.26	0.90	2.03
9.0	1.00	0.90	61	60	2.26	0.90	2.03
10.0	1.00	1.00	89	60	3.29	1.00	3.29
11.0	1.00	0.90	83	60	3.07	0.90	2.76
12.0	1.00	0.75	80	60	2.96	0.75	2.22
13.0	1.00	0.70	87	60	3.21	0.70	2.25
14.0	1.00	0.70	74	60	2.74	0.70	1.92
15.0	1.00	0.60	40	60	1.49	0.60	0.89
16.0	1.75	0.40	47	60	1.74	0.70	1.22
18.5							
	Δ				**Total**	**9.85**	**25.54**

Table 2g. La Plata River at USBR Gage Site
April 23, 2015

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
5.0							
6.0	1.00	0.80	67	60	2.48	0.80	1.98
7.0	1.00	0.90	59	60	2.19	0.90	1.97
8.0	1.00	0.80	41	60	1.52	0.80	1.22
9.0	1.00	0.60	43	60	1.60	0.60	0.96
10.0	1.00	0.70	41	60	1.52	0.70	1.07
11.0	1.00	0.80	53	60	1.97	0.80	1.57
12.0	1.00	0.80	66	60	2.44	0.80	1.95
13.0	1.00	0.60	47	60	1.74	0.60	1.05
14.0	1.00	0.60	60	60	2.22	0.60	1.33
15.0	1.00	0.50	57	60	2.11	0.50	1.06
16.0	1.00	0.40	21	60	0.79	0.40	0.32
17.0	1.00	0.20	21	60	0.79	0.20	0.16
18.0							
	Δ				**Total**	**7.70**	**14.63**

Table 2h. La Plata River at USBR Gage Site
May 08, 2015

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
4.0							
5.0	0.75	0.50	52	60	1.93	0.38	0.72
5.5	0.50	1.20	97	60	3.58	0.60	2.15
6.0	0.75	1.40	85	60	3.14	1.05	3.30
7.0	1.00	1.40	74	60	2.74	1.40	3.83
8.0	1.00	1.40	85	60	3.14	1.40	4.40
9.0	1.00	1.30	107	60	3.95	1.30	5.13
10.0	1.00	1.40	103	60	3.80	1.40	5.32
11.0	1.00	1.20	113	60	4.17	1.20	5.00
12.0	1.00	1.20	105	60	3.88	1.20	4.65
13.0	1.00	1.10	94	60	3.47	1.10	3.82
14.0	1.00	1.00	79	60	2.92	1.00	2.92
15.0	1.00	0.95	81	60	2.99	0.95	2.84
16.0	1.00	0.80	76	60	2.81	0.80	2.25
17.0	1.00	0.55	32	60	1.19	0.55	0.66
18.0	1.50	0.35	21	60	0.79	0.53	0.41
20.0							
	Δ				**Total**	**14.85**	**47.42**

Table 2i. La Plata River at USBR Gage Site
June 29, 2015

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
4.0							
5.0	1.00	1.00	62	60	2.30	1.00	2.30
6.0	1.00	1.10	74	60	2.74	1.10	3.01
7.0	1.00	1.20	68	60	2.52	1.20	3.02
8.0	1.00	1.10	70	60	2.59	1.10	2.85
9.0	1.00	1.10	75	60	2.77	1.10	3.05
10.0	1.00	1.10	79	60	2.92	1.10	3.21
11.0	1.00	1.10	85	60	3.14	1.10	3.46
12.0	1.00	0.90	67	60	2.48	0.90	2.23
13.0	1.00	0.80	79	60	2.92	0.80	2.34
14.0	1.00	0.80	59	60	2.19	0.80	1.75
15.0	1.00	0.60	35	60	1.30	0.60	0.78
16.0	1.00	0.40	35	60	1.30	0.40	0.52
17.0	1.50	0.20	15	60	0.57	0.30	0.17
19.0							
	Δ				**Total**	**11.50**	**28.69**

Table 2j. La Plata River at USBR Gage Site
July 15, 2015

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
4.0							
5.0	1.00	0.80	55	60	2.04	0.80	1.63
6.0	1.00	1.50	112	60	4.13	1.50	6.20
7.0	1.00	1.60	98	60	3.62	1.60	5.79
8.0	1.00	1.60	75	60	2.77	1.60	4.44
9.0	1.00	1.50	81	60	2.99	1.50	4.49
10.0	1.00	1.50	106	60	3.91	1.50	5.87
11.0	1.00	1.50	111	60	4.10	1.50	6.15
12.0	1.00	1.40	99	60	3.66	1.40	5.12
13.0	1.00	1.30	105	60	3.88	1.30	5.04
14.0	1.00	1.20	98	60	3.62	1.20	4.34
15.0	1.00	1.10	103	60	3.80	1.10	4.18
16.0	1.00	0.85	56	60	2.08	0.85	1.76
17.0	1.00	0.70	59	60	2.19	0.70	1.53
18.0	1.00	0.50	36	60	1.34	0.50	0.67
19.0	3.00	0.40	21	60	0.79	1.20	0.95
24.0							
	Δ				**Total**	**18.25**	**58.16**

Table 2k. La Plata River at USBR Gage Site
July 31, 2015

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
5.0							
6.0	1.00	0.60	58	60	2.15	0.60	1.29
7.0	1.00	0.90	56	60	2.08	0.90	1.87
8.0	1.00	0.90	65	60	2.41	0.90	2.17
9.0	1.00	0.80	35	60	1.30	0.80	1.04
10.0	1.00	0.80	66	60	2.44	0.80	1.95
11.0	1.00	0.80	71	60	2.63	0.80	2.10
12.0	1.00	0.80	65	60	2.41	0.80	1.93
13.0	1.00	0.60	46	60	1.71	0.60	1.02
14.0	1.00	0.60	62	60	2.30	0.60	1.38
15.0	1.75	0.40	40	60	1.49	0.70	1.04
17.5							
	Δ				**Total**	**7.50**	**15.79**

Table 2l. La Plata River at USBR Gage Site
August 18, 2015

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
5.0							
6.0	1.00	0.60	61	60	1.01	0.60	0.60
7.0	1.00	0.70	80	60	1.31	0.70	0.92
8.0	1.00	0.65	126	60	2.05	0.65	1.33
9.0	1.00	0.60	60	60	0.99	0.60	0.59
10.0	1.00	0.60	72	60	1.18	0.60	0.71
11.0	1.00	0.60	87	60	1.42	0.60	0.85
12.0	1.00	0.50	88	60	1.44	0.50	0.72
13.0	1.00	0.40	62	60	1.02	0.40	0.41
14.0	1.00	0.30	39	60	0.66	0.30	0.20
15.0	1.00	0.20	36	60	0.61	0.20	0.12
16.0							
	Δ				**Total**	**5.15**	**6.46**

Table 2m. La Plata River at USBR Gage Site
September 4, 2015

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
7.8							
8.4	0.80	0.60	59	60	0.98	0.48	0.47
9.4	1.00	0.60	99	60	1.62	0.60	0.97
10.4	1.00	0.60	141	60	2.29	0.60	1.37
11.4	1.00	0.60	56	60	0.93	0.60	0.56
12.4	1.00	0.60	74	60	1.22	0.60	0.73
13.4	1.00	0.60	78	60	1.28	0.60	0.77
14.4	1.00	0.60	80	60	1.31	0.60	0.79
15.4	1.00	0.35	58	60	0.96	0.35	0.34
16.4	1.00	0.30	75	60	1.23	0.30	0.37
17.4	1.05	0.20	36	60	0.61	0.21	0.13
18.5							
	Δ				**Total**	**4.94**	**6.48**

Table 2n. La Plata River at USBR Gage Site
October 9, 2015

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
1.5							
2.0	0.75	0.30	22	60	0.38	0.23	0.09
3.0	1.00	0.60	63	60	1.04	0.60	0.62
4.0	1.00	0.55	47	60	0.78	0.55	0.43
5.0	1.00	0.55	17	60	0.30	0.55	0.17
6.0	1.00	0.60	74	60	1.22	0.60	0.73
7.0	1.00	0.50	70	60	1.15	0.50	0.58
8.0	1.00	0.40	68	60	1.12	0.40	0.45
9.0	1.00	0.30	67	60	1.10	0.30	0.33
10.0	1.50	0.15	41	60	0.69	0.23	0.15
11.5							
	Δ				**Total**	**3.95**	**3.55**

Notes:
cfs = cubic feet per second
sec = second
USBR = U.S. Bureau of Reclamation

Table 3a. La Plata River at SUIT- Harvey Frost Property
December 12, 2014

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
5.0							
5.5	0.75	0.25	30	60	0.51	0.19	0.10
6.5	1.00	0.40	21	60	0.37	0.40	0.15
7.5	1.00	0.60	28	60	0.48	0.60	0.29
8.5	1.00	0.70	25	60	0.43	0.70	0.30
9.5	1.00	0.75	37	60	0.62	0.75	0.47
10.5	1.00	0.75	40	60	0.67	0.75	0.50
11.5	1.00	0.65	14	60	0.26	0.65	0.17
12.5	1.00	0.70	15	60	0.27	0.70	0.19
13.5	1.00	0.60	31	60	0.53	0.60	0.32
14.5	1.00	0.50	24	60	0.42	0.50	0.21
15.5	1.00	0.40	30	60	0.51	0.40	0.20
16.5	1.00	0.40	16	60	0.29	0.40	0.11
17.5	1.00	0.25	13	60	0.24	0.25	0.06
18.5							
	Δ				**Total**	**6.89**	**3.06**

Table 3b. La Plata River at SUIT- Harvey Frost Property
February 10, 2015

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
4.25							
5.25	1.00	0.25	15	60	0.27	0.25	0.07
6.25	1.00	0.40	10	60	0.19	0.40	0.08
7.25	1.00	0.60	32	60	0.54	0.60	0.33
8.25	1.00	0.70	24	60	0.42	0.70	0.29
9.25	1.00	0.70	55	60	0.91	0.70	0.64
10.25	1.00	0.55	21	60	0.37	0.55	0.20
11.25	1.00	0.60	28	60	0.48	0.60	0.29
12.25	1.00	0.65	23	60	0.40	0.65	0.26
13.25	1.25	0.60	34	60	0.58	0.75	0.43
14.75	1.00	0.40	21	60	0.37	0.40	0.15
15.25	0.75	0.50	24	60	0.42	0.38	0.16
16.25	1.38	0.35	11	60	0.21	0.48	0.10
18.00							
	Δ				**Total**	**6.46**	**2.98**

Table 3c. La Plata River at SUIT - Harvey Frost Property
March 5, 2015

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
4.0							
5.0	1.00	0.40	33	60	0.56	0.40	0.22
6.0	1.00	0.50	14	60	0.26	0.50	0.13
7.0	1.00	0.65	24	60	0.42	0.65	0.27
8.0	1.00	0.80	24	60	0.42	0.80	0.33
9.0	1.00	0.80	57	60	0.94	0.80	0.75
10.0	1.00	0.75	36	60	0.61	0.75	0.46
11.0	1.00	0.60	35	60	0.59	0.60	0.35
12.0	1.00	0.80	32	60	0.54	0.80	0.43
13.0	1.00	0.60	38	60	0.64	0.60	0.38
14.0	1.00	0.60	23	60	0.40	0.60	0.24
15.0	1.00	0.50	29	60	0.50	0.50	0.25
16.0	1.00	0.40	11	60	0.21	0.40	0.08
17.0	1.00	0.35	7	60	0.14	0.35	0.05
18.0							
	Δ				**Total**	**7.75**	**3.96**

Table 3d. La Plata River at SUIT - Harvey Frost Property
March 23, 2015

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
3.5							
4.5	0.75	0.80	14	60	0.53	0.60	0.32
5.0	0.75	0.90	12	60	0.46	0.68	0.31
6.0	1.00	1.25	24	60	0.90	1.25	1.12
7.0	1.00	1.30	50	60	1.86	1.30	2.41
8.0	1.00	1.40	59	60	2.19	1.40	3.06
9.0	1.00	1.40	59	60	2.19	1.40	3.06
10.0	1.00	1.40	41	60	1.52	1.40	2.13
11.0	1.00	1.30	59	60	2.19	1.30	2.84
12.0	1.00	1.35	60	60	2.22	1.35	3.00
13.0	1.00	1.30	42	60	1.56	1.30	2.03
14.0	1.00	1.30	43	60	1.60	1.30	2.08
15.0	1.00	1.20	34	60	1.27	1.20	1.52
16.0	1.00	1.1	38	60	1.41	1.10	1.56
17.0	1.00	1	22	60	0.83	1.00	0.83
18.0	1.17	0.75	15	60	0.57	0.87	0.50
19.3							
	Δ				**Total**	**17.45**	**26.77**

Table 3e. La Plata River at SUIT - Harvey Frost Property
April 2, 2015

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
4.0							
4.5	0.50	0.70	10	60	0.39	0.35	0.13
5.0	0.75	0.90	13	60	0.50	0.68	0.33
6.0	1.00	1.20	21	60	0.79	1.20	0.95
7.0	1.00	1.20	46	60	1.71	1.20	2.05
8.0	1.00	1.30	45	60	1.67	1.30	2.17
9.0	1.00	1.40	44	60	1.63	1.40	2.29
10.0	1.00	1.50	49	60	1.82	1.50	2.73
11.0	1.00	1.60	64	60	2.37	1.60	3.79
12.0	1.00	1.60	63	60	2.33	1.60	3.73
13.0	1.00	1.60	44	60	1.63	1.60	2.62
14.0	1.00	1.50	58	60	2.15	1.50	3.22
15.0	1.00	1.70	56	60	2.08	1.70	3.53
16.0	1.00	1.5	53	60	1.97	1.50	2.95
17.0	1.00	1.4	39	60	1.45	1.40	2.03
18.0	1.00	1.1	20	60	0.75	1.10	0.83
19.0							
	Δ				**Total**	**19.63**	**33.35**

Table 3f. La Plata River at SUIT - Harvey Frost Property
April 17, 2015

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
3.5							
4.5	1.00	0.80	19	60	0.72	0.80	0.57
5.5	1.00	1.10	21	60	0.79	1.10	0.87
6.5	1.00	1.10	38	60	1.41	1.10	1.56
7.5	1.00	1.40	40	60	1.49	1.40	2.08
8.5	1.00	1.40	44	60	1.63	1.40	2.29
9.5	1.00	1.40	49	60	1.82	1.40	2.55
10.5	1.00	1.40	41	60	1.52	1.40	2.13
11.5	1.00	1.40	51	60	1.89	1.40	2.65
12.5	1.00	1.30	52	60	1.93	1.30	2.51
13.5	1.00	1.30	44	60	1.63	1.30	2.13
14.5	1.00	1.30	42	60	1.56	1.30	2.03
15.5	1.00	1.20	37	60	1.38	1.20	1.65
16.5	1.00	1.1	28	60	1.05	1.10	1.15
17.5	1.00	0.9	15	60	0.57	0.90	0.51
18.5	0.83	0.55	11	60	0.42	0.46	0.19
19.3							
	Δ				**Total**	**17.56**	**24.87**

Table 3g. La Plata River at SUIT - Harvey Frost Property
April 23, 2015

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
4.0							
5.0	1.00	0.85	28	60	1.05	0.85	0.89
6.0	1.00	1.00	22	60	0.83	1.00	0.83
7.0	1.00	1.20	30	60	1.12	1.20	1.34
8.0	1.00	1.20	36	60	1.34	1.20	1.61
9.0	1.00	1.20	47	60	1.74	1.20	2.09
10.0	1.00	1.20	32	60	1.19	1.20	1.43
11.0	1.00	1.10	47	60	1.74	1.10	1.92
12.0	1.00	1.20	43	60	1.60	1.20	1.92
13.0	1.00	1.10	34	60	1.27	1.10	1.39
14.0	1.00	1.05	36	60	1.34	1.05	1.41
15.0	1.00	1.00	32	60	1.19	1.00	1.19
16.0	1.00	0.90	23	60	0.86	0.90	0.78
17.0	1.00	0.8	15	60	0.57	0.80	0.46
18.0	1.00	0.5	8	60	0.31	0.50	0.16
19.0							
	Δ				**Total**	**14.30**	**17.42**

Table 3h. La Plata River at SUIT - Harvey Frost Property
May 08, 2015

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
0.5							
2.0	1.00	1.00	13	60	0.50	1.00	0.50
2.5	0.75	1.10	14	60	0.53	0.83	0.44
3.5	1.00	1.50	15	60	0.57	1.50	0.85
4.5	1.00	1.60	37	60	1.38	1.60	2.20
5.5	1.00	1.55	65	60	2.41	1.55	3.73
6.5	1.00	1.20	68	60	2.52	1.20	3.02
7.5	1.00	1.70	57	60	2.11	1.70	3.59
8.5	1.00	1.75	64	60	2.37	1.75	4.15
9.5	1.00	1.70	81	60	2.99	1.70	5.09
10.5	1.00	1.70	73	60	2.70	1.70	4.59
11.5	1.00	1.65	70	60	2.59	1.65	4.27
12.5	1.00	1.60	63	60	2.33	1.60	3.73
13.5	1.00	1.45	59	60	2.19	1.45	3.17
14.5	1.00	1.3	36	60	1.34	1.30	1.74
15.5	1.50	1.15	9	60	0.35	1.73	0.60
17.5							
	Δ				**Total**	**20.53**	**41.08**

Table 3i. La Plata River at SUIT - Harvey Frost Property
June 29, 2015

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
2.5							
3.5	1.00	0.30	24	60	0.90	0.30	0.27
4.5	1.00	1.10	30	60	1.12	1.10	1.23
5.5	1.00	1.30	37	60	1.38	1.30	1.79
6.5	1.00	1.30	39	60	1.45	1.30	1.89
7.5	1.00	1.40	52	60	1.93	1.40	2.70
8.5	1.00	1.40	57	60	2.11	1.40	2.96
9.5	1.00	1.40	51	60	1.89	1.40	2.65
10.5	1.00	1.30	50	60	1.86	1.30	2.41
11.5	1.00	1.40	56	60	2.08	1.40	2.91
12.5	1.00	1.30	38	60	1.41	1.30	1.84
13.5	1.00	1.30	49	60	1.82	1.30	2.36
14.5	1.00	1.10	38	60	1.41	1.10	1.56
15.5	1.00	1.1	37	60	1.38	1.10	1.52
16.5	1.00	1	23	60	0.86	1.00	0.86
17.5	1.00	0.7	18	60	0.68	0.70	0.48
18.5							
	Δ				**Total**	**17.40**	**27.41**

Table 3j. La Plata River at SUIT - Harvey Frost Property
July 15, 2015

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
3.0							
5.0	2.00	0.50	20	60	0.75	1.00	0.75
6.0	1.00	1.40	28	60	1.05	1.40	1.47
7.0	1.00	1.65	51	60	1.89	1.65	3.12
8.0	1.00	1.70	75	60	2.77	1.70	4.72
9.0	1.00	1.90	86	60	3.18	1.90	6.04
10.0	1.00	1.80	86	60	3.18	1.80	5.72
11.0	1.00	1.80	63	60	2.33	1.80	4.20
12.0	1.00	1.80	78	60	2.88	1.80	5.19
13.0	1.00	1.80	93	60	3.44	1.80	6.18
14.0	1.00	1.70	68	60	2.52	1.70	4.28
15.0	1.00	1.70	76	60	2.81	1.70	4.78
16.0	1.00	1.60	55	60	2.04	1.60	3.26
17.0	1.00	1.5	61	60	2.26	1.50	3.39
18.0	1.00	1.4	35	60	1.30	1.40	1.83
19.0	1.00	1	18	60	0.68	1.00	0.68
20.0							
	Δ				**Total**	**23.75**	**55.60**

Table 3k. La Plata River at SUIT - Harvey Frost Property
July 31, 2015

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
3.0							
4.0	1.00	0.65	21	60	0.79	0.65	0.51
5.0	1.00	0.90	17	60	0.64	0.90	0.58
6.0	1.00	1.00	31	60	1.16	1.00	1.16
7.0	1.00	1.00	38	60	1.41	1.00	1.41
8.0	1.00	1.10	48	60	1.78	1.10	1.96
9.0	1.00	1.00	44	60	1.63	1.00	1.63
10.0	1.00	1.00	32	60	1.19	1.00	1.19
11.0	1.00	1.10	36	60	1.34	1.10	1.47
12.0	1.00	0.90	37	60	1.38	0.90	1.24
13.0	1.00	0.90	37	60	1.38	0.90	1.24
14.0	1.00	0.80	30	60	1.12	0.80	0.90
15.0	1.00	0.80	22	60	0.83	0.80	0.66
16.0	1.00	0.7	21	60	0.79	0.70	0.55
17.0	1.00	0.4	5	60	0.20	0.40	0.08
18.0							
	Δ				**Total**	**12.25**	**14.60**

Table 3l. La Plata River at SUIT - Harvey Frost Property
August 18, 2015

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
3.0							
4.0	1.00	0.40	29	60	0.50	0.40	0.20
5.0	1.00	0.60	16	60	0.29	0.60	0.17
6.0	1.00	0.80	28	60	0.48	0.80	0.38
7.0	1.00	0.80	52	60	0.86	0.80	0.69
8.0	1.00	0.80	65	60	1.07	0.80	0.86
9.0	1.00	0.80	52	60	0.86	0.80	0.69
10.0	1.00	0.75	57	60	0.94	0.75	0.71
11.0	1.00	0.80	53	60	0.88	0.80	0.70
12.0	1.00	0.70	49	60	0.82	0.70	0.57
13.0	1.00	0.70	58	60	0.96	0.70	0.67
14.0	1.00	0.65	32	60	0.54	0.65	0.35
15.0	1.00	0.60	34	60	0.58	0.60	0.35
16.0	1.00	0.5	14	60	0.26	0.50	0.13
17.0	1.00	0.3	3	60	0.08	0.30	0.02
18.0							
	Δ				**Total**	**9.20**	**6.50**

Table 3m. La Plata River at SUIT - Harvey Frost Property
September 4, 2015

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
4.0							
5.0	1.00	0.50	30	60	0.51	0.50	0.26
6.0	1.00	0.60	23	60	0.40	0.60	0.24
7.0	1.00	0.75	22	60	0.38	0.75	0.29
8.0	1.00	0.80	43	60	0.72	0.80	0.58
9.0	1.00	0.80	58	60	0.96	0.80	0.77
10.0	1.00	0.80	30	60	0.51	0.80	0.41
11.0	1.00	0.70	42	60	0.70	0.70	0.49
12.0	1.00	0.75	47	60	0.78	0.75	0.59
13.0	1.00	0.65	43	60	0.72	0.65	0.47
14.0	1.00	0.65	49	60	0.82	0.65	0.53
15.0	1.00	0.60	35	60	0.59	0.60	0.35
16.0	1.00	0.50	31	60	0.53	0.50	0.26
17.0	1.40	0.5	6	60	0.13	0.70	0.09
18.8							
	Δ				**Total**	**8.80**	**5.32**

Table 3n. La Plata River at SUIT - Harvey Frost Property
October 9, 2015

Distance	Width	Depth	Revolutions	Time (sec)	Velocity	Area	Discharge (cfs)
3.0							
3.5	0.50	0.25	27	60	0.46	0.13	0.06
4.0	1.00	0.50	11	60	0.21	0.50	0.10
5.0	1.00	0.50	15	60	0.27	0.50	0.14
6.0	1.00	0.65	30	60	0.51	0.65	0.33
7.0	1.00	0.65	21	60	0.37	0.65	0.24
8.0	1.00	0.60	25	60	0.43	0.60	0.26
9.0	1.00	0.65	30	60	0.51	0.65	0.33
10.0	1.00	0.60	34	60	0.58	0.60	0.35
11.0	1.00	0.55	34	60	0.58	0.55	0.32
12.0	1.00	0.50	19	60	0.34	0.50	0.17
13.0	1.00	0.50	31	60	0.53	0.50	0.26
14.0	1.00	0.40	16	60	0.29	0.40	0.11
15.0	1.50	0.3	13	60	0.24	0.45	0.11
17.0							
	Δ				**Total**	**6.68**	**2.78**

Notes:
cfs = cubic feet per second
sec = seconds
SUIT = Southern Ute Indian Tribe

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