RIVEREYES OBSERVATIONS FOR 2011

Prepared for

U.S. BUREAU OF RECLAMATION, ALBUQUERQUE AREA OFFICE
555 Broadway NE, Suite 100
Albuquerque, New Mexico 87102
Telephone: (505) 462-3540

Prepared by

SWCA ENVIRONMENTAL CONSULTANTS
5647 Jefferson Street NE
Albuquerque, New Mexico 87109
Telephone: (505) 254-1115, Fax: (505) 254-1116
www.swca.com

Michael Hatch

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EXECUTIVE SUMMARY

Reconnaissance of portions of the Middle Rio Grande is mandated by Reasonable and Prudent Alternative Element C of the 2003 Biological Opinion (U.S. Fish and Wildlife Service 2003), known as "RiverEyes." RiverEyes monitoring must be performed when flows are less than 300 cubic feet per second (cfs) at San Acacia Diversion Dam. RiverEyes provides current information on river flows that allow action agencies to react quickly to rapidly changing conditions on the river, facilitate coordination among the agencies to prevent unexpected drying, and prepare for Rio Grande silvery minnow (*Hybognathus amarus*) rescues.

Hydrologic conditions in the Middle Rio Grande were monitored generally from April 5 to October 31, 2011, to document spatial and temporal effects of low discharge flow regimes during periods when discharge was less than 300 cfs over San Acacia Diversion Dam. Channel drying was restricted to the Isleta and San Acacia reaches over the period of monitoring. The location and extent of channel drying varied within each reach over the period of monitoring in response to localized and regional storm events, as well as out-of-channel uses of water. The first and last occurrence of channel drying in the Isleta Reach was recorded on July 9 and October 29, 2011, respectively. The first and last occurrence of channel drying in the San Acacia Reach was recorded on April 22 and October 31, 2011, respectively.

For each day in which hydrologic conditions in the Rio Grande were monitored, a brief summary report was prepared documenting spatial and temporal observations of flow (measured and visual estimates) and longitudinal limits of running water conditions. These reports were distributed via e-mail to recipients of water operations conference call notes. Similarly, verbal reports of field observations were made during water operations conference calls. Records of observed and measured hydrologic conditions were kept for the duration of the observation period. Channel drying in the Isleta Reach was restricted to a 13.2-mile segment that extended downstream from a point 3.5 miles upstream of Los Lunas Bridge (River Mile [RM] 164.9) to a point 0.8 mile downstream of the Peralta Wasteway (RM 151.7). Channel drying in the San Acacia Reach was restricted to a 27.61-mile segment that extended downstream from a point 0.58 mile upstream of the Escondida Drain Outfall (RM 101.51) to a point 750 feet upstream of the south boundary of the Bosque del Apache National Wildlife Refuge (RM 73.9).

Weekly discharge measurements were performed near the U.S. Geological Survey (USGS) Bosque Farms gage location when it was judged safe to wade in the stream and within allotted time and budgetary constraints. Irrigation wasteways were surveyed weekly within allotted time constraints to determine if they were actively discharging water to the Isleta Reach, and weekly measures of discharge were performed when it was judged safe to wade in the wasteway channel. Occasional discharge measurements were performed at other locations as requested by water operations personnel.

Appended tables present an overview of discharge at all USGS gages, as reported by the U.S. Army Corps of Engineers during morning conference calls (Appendix A). Appendix B presents an abbreviate account of spatial and temporal observations of hydrologic conditions, including measured and visual estimates of flow and longitudinal limits of running water conditions. Appendix C presents an approximation of distance of river expansion or contraction over successive days derived from opportunistic observations (i.e., irregular time intervals, producing "instantaneous" estimates) as well as estimates standardized to 24-hour cycles. This report can serve as an aid in efforts to understand how cycles of river expansion and contraction is affected by upstream water operations. Appended tables also present an overview of weekly estimates of flow at irrigation outfall locations matched with internet postings of flow for the same time and place (Appendix D), a record of pumping operations in the San Acacia Reach (Appendix E), and measured flow at the USGS Bosque Farms gage (USGS 8331160; http://waterdata.usgs.gov/nm/nwis/rt; Appendix F). Appendix G presents RiverEyes observations in a spreadsheet format. Finally, Appendix H provides project safety documentation.

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INTRODUCTION

The variability of flow characteristics of the contemporary Middle Rio Grande1, resulting either from natural or regulated causes, imparts a patchiness of environmental types at the scale of river segments, including the extremes represented by hydrologic abundance and periodic discontinuity of flow, with a continuum of intermediate types between these extremes.

Low flow conditions that often result in fish mortality have been linked to conditions of aridity, exacerbated by water diversion in the basin and episodic conditions of drought. Surface water discharge in the Middle Rio Grande is measured at locations where flow gages are maintained by the U.S. Geological Survey (USGS; web accessible at http://waterdata.usgs.gov/nm/nwis/rt). Rough correlations about hydrologic conditions between gages are possible at coarse scales of time and space. However, only coarse-scale patterns of autocorrelation exist in the temporal record of flow across the linear series of gage stations because intervening flows are subject to infiltration, evaporation, diversion, and the potential addition of irrigation and wastewater returns. Fine-scale dynamics in hydrologic conditions cannot be accurately deduced or interpolated from measured flow in the consecutive series of USGS gages, and continuous river conditions cannot be assured even when a consecutive series of flow gages registers that flow exists. The absence of continuous flow may result in fish mortality, including the federal and state endangered Rio Grande silvery minnow (*Hybognathus amarus*; silvery minnow). On-site river monitoring is used to guide adjustments to daily water management operations to reduce mortality to the silvery minnow and other aquatic life that occupy running water habitats along the Middle Rio Grande.

The silvery minnow is currently listed as endangered by the State of New Mexico, having first been listed May 25, 1979, as an endangered endemic population of the Mississippi silvery minnow (*Hybognathus nuchalis*) (New Mexico Department of Game and Fish 1988). On July 20, 1994, the U.S. Fish and Wildlife Service (USFWS) published a final rule to list the silvery minnow as a federal endangered species with proposed critical habitat (Federal Register 1994). The species is also listed as endangered by Texas (Sections 65.171–65.184 of Title 31 Texas Administrative Code) and the Republic of Mexico (Secretaria de Desarrollo Social 1994).

The contemporary range of the silvery minnow in the Middle Rio Grande of New Mexico (Figure 1) extends downstream from the vicinity of Bernalillo to the headwaters of Elephant Butte Reservoir, a distance that fluctuates as the size of the pool of water in storage in Elephant Butte Reservoir changes, but approximates 150 river miles (241 km). Prevailing aridity and highly variable hydrologic conditions in the Middle Rio Grande represent significant factors that challenge efforts to develop and manage the region's water resources for consumptive uses while simultaneously maintaining local fishery resources, notably including the silvery minnow.

This project, commonly known as "RiverEyes," is mandated by Reasonable and Prudent Alternative Element C of the 2003 Biological Opinion (USFWS 2003). RiverEyes monitoring must be performed when flows are less than 300 cubic feet per second (cfs) at San Acacia

[1] For reference in this document, the "Middle Rio Grande" is defined as the Rio Grande downstream from Cochiti Dam to the headwaters of Elephant Butte Reservoir. The Middle Rio Grande below Cochiti Dam is further designated by four reaches defined by locations of mainstream irrigation diversion dams. The Cochiti Reach extends from Cochiti Dam to Angostura Diversion Dam. The reach from Angostura Diversion Dam to Isleta Diversion Dam is called the Albuquerque Reach. The Isleta Reach is bounded upstream by Isleta Diversion Dam and downstream by San Acacia Diversion Dam. Finally, the reach below San Acacia Diversion Dam to the headwaters of Elephant Butte Reservoir is the San Acacia Reach.

Diversion Dam. RiverEyes provides current information on river flows that allow action agencies to react quickly to rapidly changing conditions on the river, facilitate coordination among the agencies to prevent unexpected drying, and prepare for silvery minnow rescues.

Appended tables present an overview of discharge at all USGS gages, as reported by the U.S. Army Corps of Engineers during morning conference calls (Appendix A). Appendix B presents an abbreviate account of spatial and temporal observations of hydrologic conditions, including measured and visual estimates of flow and longitudinal limits of running water conditions. Appendix C presents an approximation of distance of river expansion or contraction over successive days derived from opportunistic observations (i.e., irregular time intervals, producing "instantaneous" estimates) as well as estimates standardized to 24-hour cycles. This report can serve as an aid in efforts to understand how cycles of river expansion and contraction is affected by upstream water operations. Appended tables also present an overview of weekly estimates of flow at irrigation outfall locations matched with internet postings of flow for the same time and place (Appendix D), a record of pumping operations in the San Acacia Reach (Appendix E), and measured flow at the USGS Bosque Farms gage (USGS 8331160; http://waterdata.usgs.gov/nm/nwis/rt; Appendix F). Appendix G presents RiverEyes observations in a spreadsheet format. Finally, Appendix H provides project safety documentation.

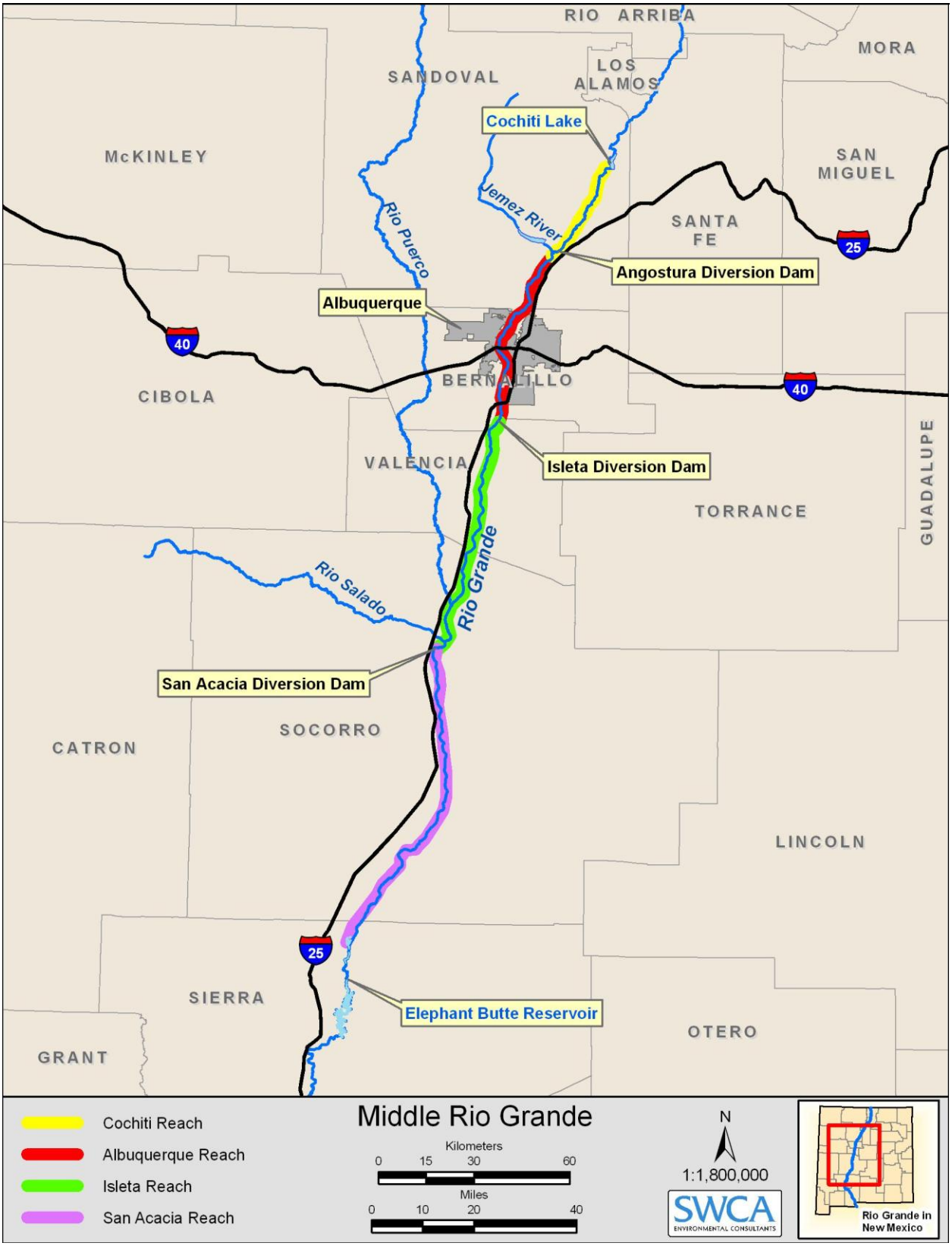

Figure 1. Overview of the Middle Rio Grande.

METHODS

DAILY RECONNAISSANCE

Hydrologic conditions were systematically monitored from June 15 to October 31, 2010, to document spatial and temporal effects of low discharge (i.e., periods when discharge was less than 300 cfs over San Acacia Diversion Dam). This river reconnaissance was performed early enough in the day so that observations could be verbally relayed to water operations staff and fish rescue crews by 8:00 a.m. each morning. SWCA Environmental Consultants (SWCA) staff participated in early morning water operations conference calls to relay information concerning observed hydrologic conditions to concerned and affected stakeholders. Telephone reports were provided to the U.S. Bureau of Reclamation (Reclamation) RiverEyes Coordinator (Raymond Abeyta) and the USFWS Fish Rescue Coordinator (Jason Remshardt, or as appointed). A handheld global positioning system (GPS) unit was used to record spatial characteristics of receding and advancing edges of running water habitat. Point-specific location data were recorded using the Universal Transverse Mercator (UTM) system, North American Datum 1983, Zone 13. Point-specific location data were also recorded by fractions of river miles and were based on 5,280-foot segments superimposed on 2002 aerial photographs of the river by Pacific Western Technologies, Albuquerque, New Mexico.

DISCHARGE MEASUREMENTS

Weekly discharge measurements were performed near the USGS Bosque Farms gage (USGS 8331160) location when it was judged safe to wade in the river. Irrigation wasteways were surveyed weekly within allotted time constraints to determine if they were actively discharging water to the Isleta Reach, and weekly measures of discharge were performed when it was judged safe to wade in the wasteway channels. Occasional discharge measurements were performed at other locations as requested by water operations or fish rescue personnel. Water depth (feet) and flow velocity (feet per second) were measured using a USGS top-setting wading rod fitted with a Marsh-McBirney Flo-Mate portable flow meter. Estimation of discharge (cfs) followed protocol specified by Marsh-McBirney Inc. (1990, 1994). Late afternoon follow-up reconnaissance was performed when requested by water operations or fish rescue personnel to determine hydrologic conditions, primarily within the Isleta and San Acacia reaches. Telephone reports were provided to the Reclamation River Eyes Coordinator and the USFWS Fish Rescue Coordinator on an as needed basis.

DAILY REPORTS

A daily summary report of observations was prepared and distributed via e-mail, and field observations were reported during water operations conference calls. The daily reports included information such as:

- observed river conditions for each location visited;
- visual estimates of flow rate;
- results of quantitative flow measurements (if taken);
- observations on the rate of drying/shrinkage if the river is actively receding;
- observations on the rate of rewetting if the river is advancing after a period of drying;
- observations of disconnected lateral pools; and
- opinions regarding potential river conditions over the next 24 hours.

DATA MANAGEMENT

A daily spatial record of river drying and re-wetting flow pattern was maintained along with a record of flow from the USGS Bosque Farms gage (USGS 2011). A relational database (Microsoft Access) and a spreadsheet database (Microsoft Excel) were developed for the storage, analysis, and retrieval of data.

The logical construct of the relational database is helpful for envisioning the data collection and data analysis process across hierarchical scales of time and space, and in particular contributes to a unified frame of reference for investigations at the scale of river reach, user-defined river segments, and point-location data. The logical construct of the relational database also is helpful for envisioning how measured hydrologic data and RiverEyes data can be interactively employed to produce a more comprehensive understanding of river dynamics.

Daily RiverEyes data recorded at the scale of river reach include observations of river drying (yes/no, total river miles dried, extent of expansive drying, and rewetting events). Also narrative accounts of daily observations exist as database entries. Point-location observations are recorded by river mile (tenths and sometimes hundredths of a river mile) and meter (UTM coordinates, usually at a resolution less than 15 meters). Point-location data include observations of the upstream and downstream extent of river drying and observations of flow (measured and unmeasured estimates).

The relational database data entry screens incorporate logical data entry rules, along with queries designed to ease tasks of data entry validation. The relational database queries provide much greater flexibility in selecting and sorting data than is offered by the limited sort and selection criteria of spreadsheet applications. The RiverEyes relational database provides numerous options for printing formatted reports, many of which have been anticipated as on-demand data outputs ranging from day-specific reports, range-of-date reports, reach-specific reports, reports ordered chronologically by various search criteria, and reports ordered by extent of drying. The relational database also includes an automated report that searches for the maximum and minimum river miles and UTM coordinates of river drying—information crucial for recognizing expansive events of river recession (i.e., "new drying").

SAFETY

A Job Hazard Analysis (JHA) was preformed for this project (see Appendix G). Personnel were required to certify that they reviewed and complied with the JHA requirements each day in which work was performed on the project. Vehicle inspections were conducted at the start of each day (see Appendix G for a copy of the vehicle inspection form). All personnel that operated all-terrain vehicles received safety instruction in their operation. All safety requirements were followed.

RESULTS

DAILY RECONNAISSANCE

Records of observed and measured hydrologic conditions were kept for the duration of the observation period, the details of which accompany this report in various database formats (i.e., spreadsheet and relational databases (see Appendices A–F). Channel drying was restricted to the Isleta and San Acacia reaches over the period of monitoring. The location and extent of channel drying varied within each reach over the period of monitoring in response to localized and regional storm events, as well as out-of-channel uses of water. The first and last occurrence of channel drying in the Isleta Reach was recorded on July 9 and October 29, 2011, respectively. The first and last occurrence of channel drying in the San Acacia Reach was recorded on April 22 and October 31, 2011, respectively.

A brief daily summary report of observations was prepared and distributed via e-mail to recipients of water operations conference call notes, and verbal reports of field observations were made during water operations conference calls. Records of observed and measured hydrologic conditions were kept for the duration of the observation period. Channel drying in the Isleta Reach was restricted to a 13.2-mile segment that extended downstream from a point 3.5 miles upstream of Los Lunas Bridge (River Mile [RM] 164.9) to a point 0.8 mile downstream of the Peralta Wasteway (RM 151.7). Channel drying in the San Acacia Reach was restricted to a 27.61-mile segment that extended downstream from a point 0.58 mile upstream of the Escondida Drain Outfall (RM 101.51) to a point 750 feet upstream of the south boundary of the Bosque del Apache National Wildlife Refuge (RM 73.9). Descriptive statistics concerning the number of days the river dried in the Isleta and San Acacia reaches during the 2011 irrigation season, and the extent of that drying is presented in Table 1 and Table 2.

Table 1. Statistics Concerning the Occurrence and Extent of River Drying in the Isleta Reach during the 2011 Irrigation Season

	Monthly Statistics for Isleta Reach					
Month (2011)	**Days of Channel Drying**	**Mean Num. of River Miles Dry/Day**	**Std. Dev.**	**Std. Error**	**C.I. of Mean**	**Max. Num. of River Miles Dry**
April	0	0.000	0.000	0.000	0.000	0.000
May	0	0.000	0.000	0.000	0.000	0.000
June	0	0.000	0.000	0.000	0.000	0.000
July	18	2.080	2.272	0.408	0.833	6.800
August	17	4.459	4.789	0.860	1.757	12.800
September	30	10.691	1.276	0.233	0.476	12.400
October	20	5.262	4.924	0.884	1.806	11.650

C.I. = confidence interval.

Table 2. Statistics Concerning the Occurrence and Extent of River Drying in the San Acacia Reach during the 2011 Irrigation Season

	Monthly Statistics for San Acacia Reach					
Month (2011)	**Days of Channel Drying**	**Mean Num. of River Miles Dry/Day**	**Std. Dev.**	**Std. Error**	**C.I. of Mean**	**Max. Num. of River Miles Dry**
April	4	0.547	1.829	0.334	0.683	8.100
May	0	0.000	0.000	0.000	0.000	0.000
June	6	2.141	4.624	0.884	1.727	16.100
July	27	21.279	8.489	1.525	3.114	27.100
August	9	6.883	11.331	2.035	4.156	27.610
September	4	1.747	5.320	0.971	1.986	20.000
October	15	6.873	8.109	1.457	2.975	21.100

C.I. = confidence interval.

The probabilities of channel drying at a given point in the Isleta Reach (at the scale of 0.5 mile) are illustrated in Figure 2 (for April, May, and June 2011), Figure 3 (for July, August, and September 2011), and Figure 4 for October 2011.

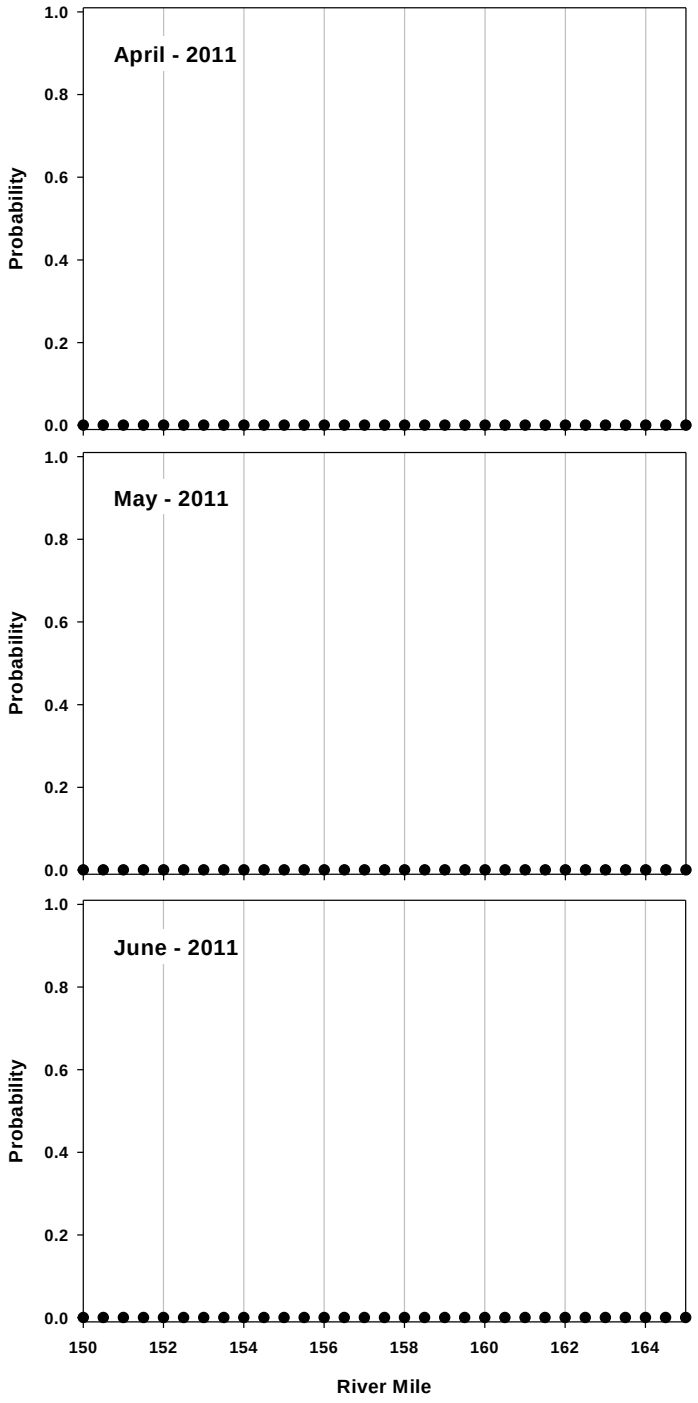

Figure 2. Probabilities of river channel drying at a given point in the Isleta Reach (at the scale of 0.5 mile) for April, May, and June 2011.
For reference, the Los Lunas Bridge over the Rio Grande (NM 49) is at RM 161.4, the Los Chavez Wasteway is at RM 156.0, the Peralta Wasteway is at RM 152.5, and the Belen Bridge over the Rio Grande (NM 6) is at RM 149.5.

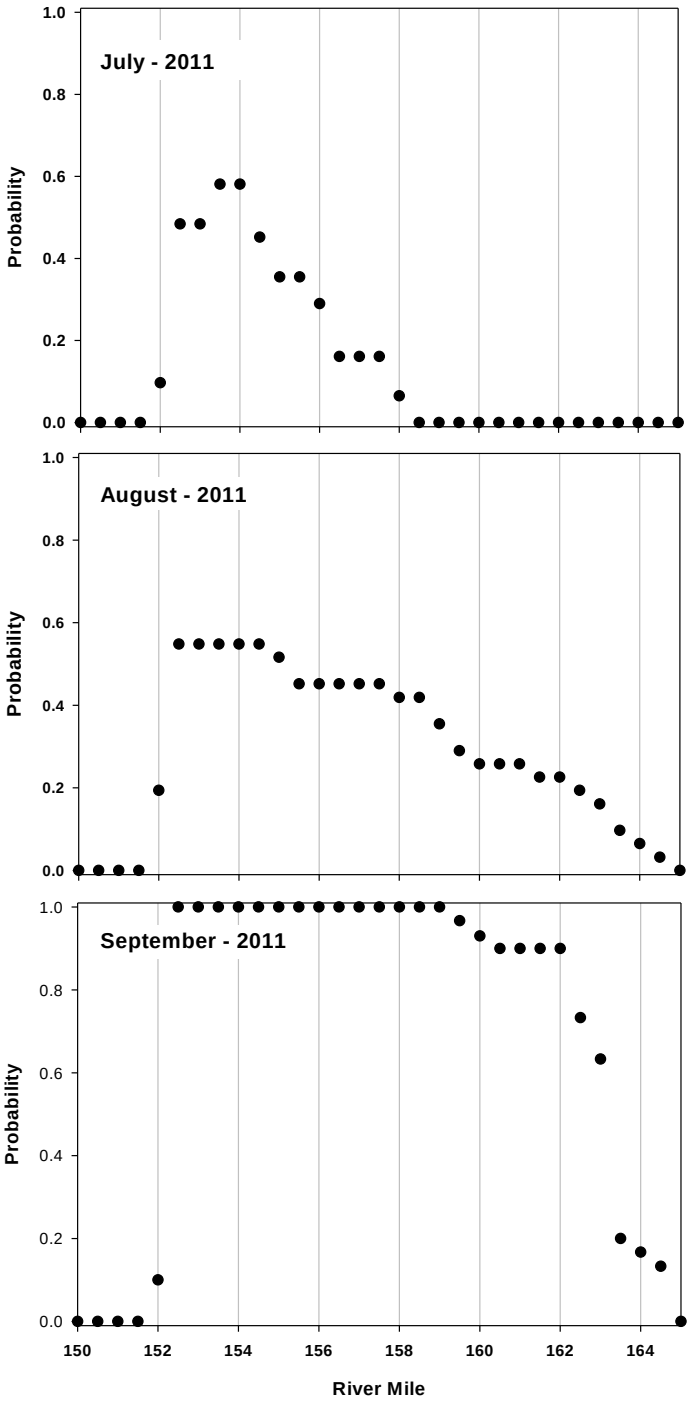

Figure 3. Probabilities of river channel drying at a given point in the Isleta Reach (at the scale of 0.5 mile) for July, August, and September 2011.
For reference, the Los Lunas Bridge over the Rio Grande (NM 49) is at RM 161.4, the Los Chavez Wasteway is at RM 156.0, the Peralta Wasteway is at RM 152.5, and the Belen Bridge over the Rio Grande (NM 6) is at RM 149.5.

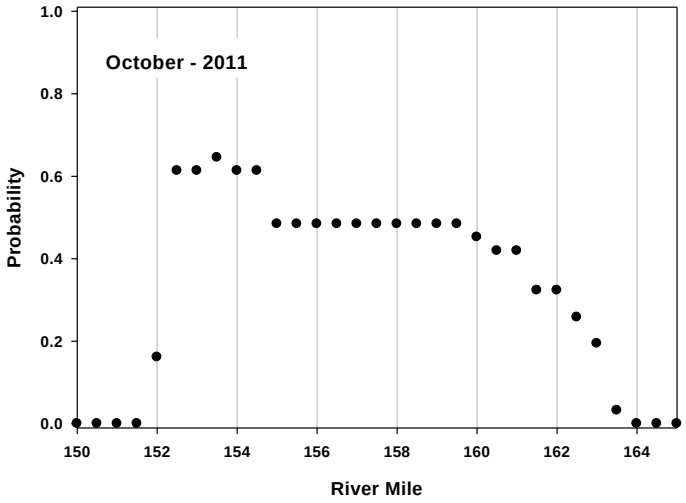

Figure 4. Probabilities of river channel drying at a given point in the Isleta Reach (at the scale of 0.5 mile) for October 2011.
For reference, the Los Lunas Bridge over the Rio Grande (NM 49) is at RM 161.4, the Los Chavez Wasteway is at RM 156.0, the Peralta Wasteway is at RM 152.5, and the Belen Bridge over the Rio Grande (NM 6) is at RM 149.5.

The probabilities of channel drying at a given point in the San Acacia Reach (at the scale of 0.5 mile) are illustrated in Figure 5 (for April, May, and June 2011), Figure 6 (for July, August, and September 2011), and Figure 6 for October 2011.

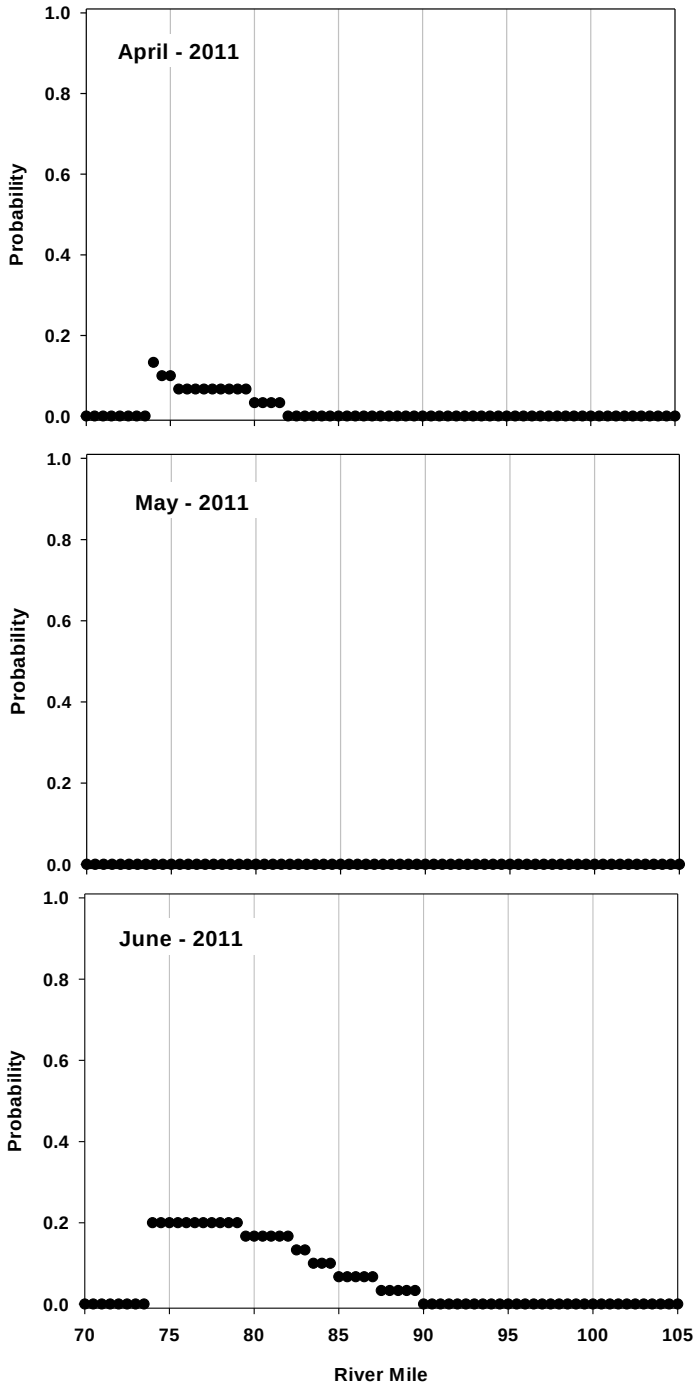

Figure 5. Probabilities of river channel drying at a given point in the San Acacia Reach (at the scale of 0.5 mile) for April, May, and June 2011. For reference, the South Boundary Bosque del Apache Refuge pump channel is at RM 74.0, U.S. Highway 380 is at RM 87.1, and Fort Craig is at RM 64.8.

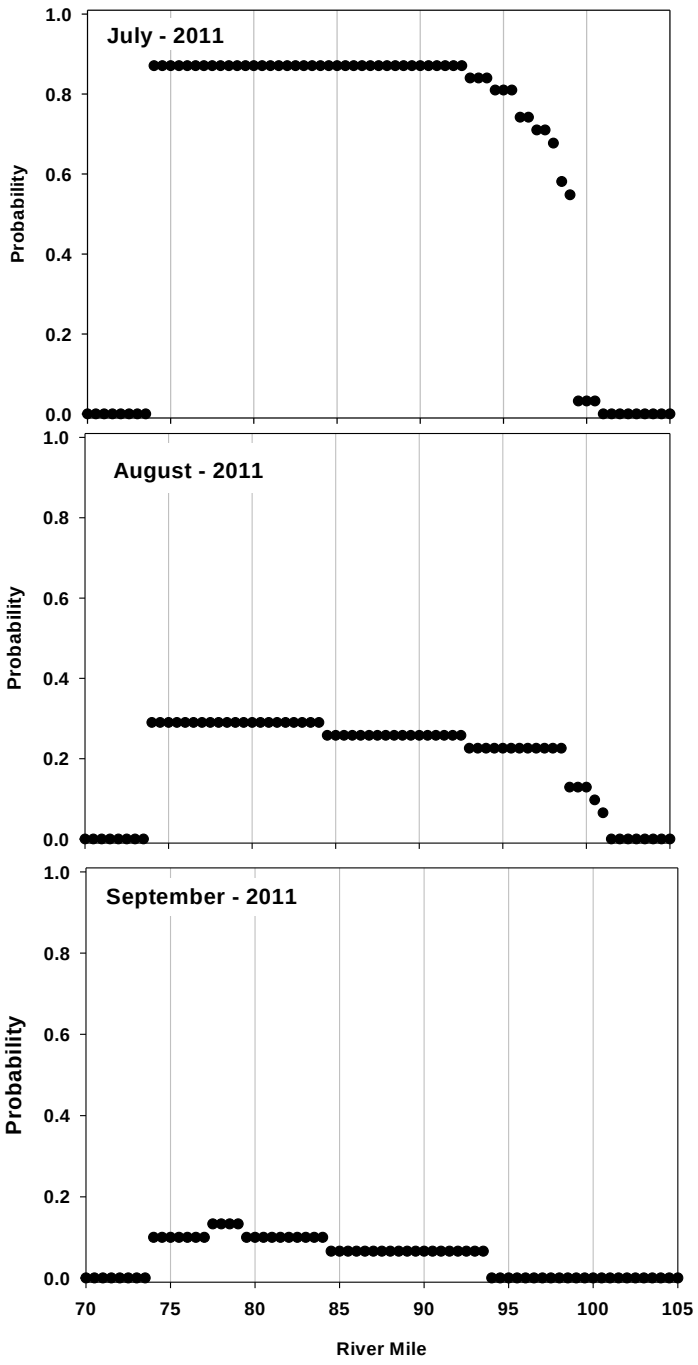

Figure 6. Probabilities of river channel drying at a given point in the San Acacia Reach (at the scale of 0.5 mile) for July, August, and September 2011. For reference, the South Boundary Bosque del Apache Refuge pump channel is at RM 74.0, U.S. Highway 380 is at RM 87.1, and Fort Craig is at RM 64.8.

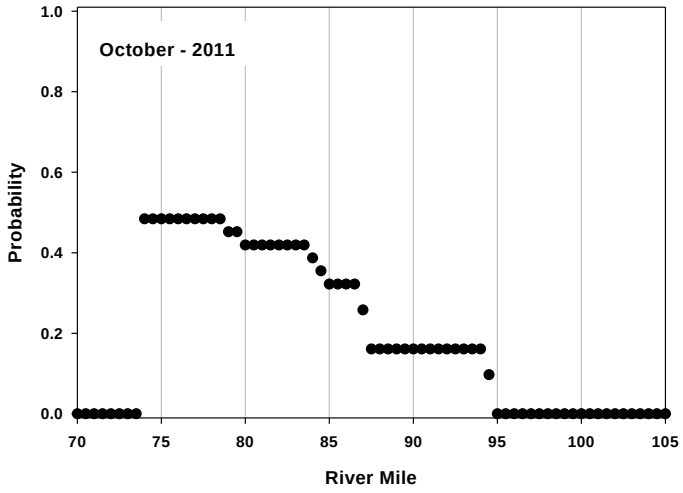

Figure 7. Probabilities of river channel drying at a given point in the San Acacia Reach (at the scale of 0.5 mile) for October 2011.
For reference, the South Boundary Bosque del Apache Refuge pump channel is at RM 74.0, U.S. Highway 380 is at RM 87.1, and Fort Craig is at RM 64.8.

Appended tables present an overview of discharge at all USGS gages, as reported by the U.S. Army Corps of Engineers during morning conference calls (Appendix A). Appendix B presents an abbreviate account of spatial and temporal observations of hydrologic conditions, including measured and visual estimates of flow and longitudinal limits of running water conditions. Appendix C presents an approximation of distance of river expansion or contraction over successive days derived from opportunistic observations (i.e., irregular time intervals, producing "instantaneous" estimates) as well as estimates standardized to 24-hour cycles. This report can serve as an aid in efforts to understand how cycles of river expansion and contraction is affected by upstream water operations. Appended tables also present an overview of weekly estimates of flow at irrigation outfall locations matched with internet postings of flow for the same time and place (Appendix D), a record of pumping operations in the San Acacia Reach (Appendix E), and measured flow at the USGS Bosque Farms gage (USGS 8331160; http://waterdata.usgs.gov/nm/nwis/rt; Appendix F). Appendix G presents RiverEyes observations in a spreadsheet format. Finally, Appendix H provides project safety documentation.

ACKNOWLEDGMENT

Pauletta Dodge was responsible for observations of river dynamics in the Isleta Reach of the Middle Rio Grande. Gregory Pargas was responsible for observations of river dynamics in the San Acacia Reach of the Middle Rio Grande. Michael Hatch developed and maintained database systems that generated much of the content of this report.

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APPENDIX A
OVERVIEW OF MIDDLE RIO GRANDE GAGED RIVER FLOWS (CFS) - 2011

Middle Rio Grande Water Operations - 2011

Date	Del Norte	Lobato	Embudo	Rio Grande at Embudo	La Puente	El Vado (DS of Dam)	Abiquiu (US of Res)	Abiquiu (DS of Res)	Chamita	Otowi	Cochiti (DS of Res)	Galisteo	Jemez Springs	Jemez (DS of Res)	Albuq.	Bosque Farms	Hwy. 346	Rio Puerco	San Acacia	Escondida	Hwy. 380	San Marcial	E. Butte (DS of Res)	Caballo (DS of Res)
23-Mar-2011	219	440	31	699	157	158	155	189	184	910	893	0	36	22	679	405	248	0	263	301	160	103	1800	716
28-Mar-2011	264	339	27	598	153	162	151	178	172	787	903	0	31	6	607	384	305	0	359	404	264	125	1930	1070
01-Apr-2011	419	157	24	420	241	162	151	302	252	675	738	0	34	13	447	129	133	0	168	271	152	107	1900	918
04-Apr-2011	612	92	35	365	362	343	350	497	397	841	813	0	68	20	563	164	107	0	126	238	125	76	1900	878
08-Apr-2011	620	68	40	387	351	388	421	656	513	1070	813	0	61	31	521	115	53	0	133	201	59	40	1600	392
11-Apr-2011	494	62	37	312	265	394	414	570	513	847	890	0	55	18	539	287	61	0	115	186	48	39	1620	58
15-Apr-2011	474	60	26	294	291	388	414	503	383	764	862	0	53	5	527	107	51	0	149	174	71	57	1670	716
18-Apr-2011	673	58	20	273	745	455	484	683	711	891	922	0	79	12	515	129	47	0	147	164	62	52	1620	1311
22-Apr-2011	1020	177	36	315	1320	400	445	445	666	936	964	0	98	51	595	144	71	0	168	143	36	32	1690	1019
25-Apr-2011	911	167	47	450	948	598	662	690	982	1270	1232	0	74	41	812	40	256	0	187	167	53	29	1760	1060
26-Apr-2011	866	151	45	457	834	507	580	577	693	1120	1117	0	65	32	755	352	329	0	303	264	68	32	1290	1079
29-Apr-2011	745	120	39	376	622	507	556	564	488	936	1108	0	57	29	734	400	211	0	241	232	241	159	1310	686
02-May-2011	635	148	48	394	490	514	560	739	657	1210	1076	0	52	30	734	416	183	0	260	221	152	97	1350	38
04-May-2011	569	198	51	424	463	507	548	776	657	1330	1065	0	71	22	727	347	252	0	271	230	194	121	723	354
09-May-2011	1510	306	63	454	2250	514	580	596	693	1270	1052	0	66	35	626	218	88	0	231	223	112	107	614	1291
11-May-2011	1366	290	54	598	1740	295	372	456	449	1140	1119	0	65	20	679	312	101	0	192	---	102	103	644	1574
13-May-2011	1100	246	52	498	1230	354	411	596	521	1330	1151	0	65	36	762	342	256	0	218	211	77	74	659	749
16-May-2011	2224	262	50	450	2460	400	470	656	657	1290	1204	0	59	18	776	384	297	0	223	223	125	95	671	726
17-May-2011	3306	460	12	667	547	598	600	683	588	1200	1341	0	8	0	776	214	354	0	362	366	350	208	1850	1735
18-May-2011	2240	278	47	470	1760	555	624	649	785	1340	1205	0	59	23	734	327	317	0	297	241	189	121	652	1241
20-May-2011	1534	254	68	604	1100	618	662	725	842	1520	1166	0	68	32	741	332	263	0	283	254	194	166	625	949
23-May-2011	1330	205	50	457	1190	621	654	725	776	1290	1272	0	104	39	820	421	346	0	343	257	152	95	683	464
27-May-2011	2064	223	47	474	1790	616	658	890	901	1360	1275	0	45	18	776	427	360	0	379	364	274	506	671	321
31-May-2011	3680	460	56	518	1470	995	1030	1050	1020	1550	1416	0	42	10	980	483	313	0	274	259	178	---	699	1362
08-Jun-2011	4177	915	41	869	1100	1130	1160	1250	1130	2070	1979	0	16	0	1310	693	693	0	722	562	666	555	1740	1620
10-Jun-2011	3740	784	33	1280	843	789	814	1260	1100	2420	2006	0	17	0	1340	713	708	0	664	579	661	1150	1810	1684
13-Jun-2011	3325	455	27	793	654	605	608	776	729	1490	1906	0	13	0	1230	748	724	0	748	607	960	---	1830	1725
15-Jun-2011	3192	425	18	765	576	598	608	690	605	1280	1523	0	9	0	910	478	565	0	629	570	889	329	1830	1836
20-Jun-2011	2716	743	8	892	411	412	425	622	529	1360	1350	0	10	0	734	209	112	0	218	241	143	76	1860	1604
22-Jun-2011	2626	831	7	964	339	371	368	583	449	1440	1309	0	6	0	713	192	126	0	197	201	68	54	1840	1846
23-Jun-2011	2554	751	7	982	323	371	368	503	397	1380	1330	0	6	0	666	201	94	0	183	196	62	38	1830	1993
24-Jun-2011	2644	643	6	982	296	371	365	485	350	1250	1340	0	7	0	686	113	90	0	176	186	51	31	1850	1896
27-Jun-2011	2288	629	5	749	232	418	411	602	497	1130	1361	0	5	0	686	180	76	0	129	112	20	23	1840	1916

Date	Del Norte	Lobato	Embudo	Rio Grande at Embudo	La Puente	El Vado (DS of Dam)	Abiquiu (US of Res)	Abiquiu (DS of Res)	Chamita	Otowi	Cochiti (DS of Res)	Galisteo	Jemez Springs	Jemez (DS of Res)	Albuq.	Bosque Farms	Hwy. 346	Rio Puerco	San Acacia	Escondida	Hwy. 380	San Marcial	E. Butte (DS of Res)	Caballo (DS of Res)
28-Jun-2011	2208	594	4	799	218	634	608	828	748	1450	1401	0	5	0	706	144	69	0	113	89	13	24	1860	1900
29-Jun-2011	2208	496	2	782	188	714	671	910	776	1520	1369	0	8	0	666	254	59	0	94	75	0	22	1830	1967
30-Jun-2011	2176	478	1	760	188	706	671	897	794	1510	1328	0	8	0	639	144	80	0	76	55	0	22	1810	2128
05-Jul-2011	1570	450	1	743	125	714	692	400	350	1080	1369	0	5	0	686	107	---	0	43	---	0	19	1930	1906
06-Jul-2011	1510	380	1	683	115	300	299	434	337	955	1268	0	10	0	653	107	0	0	39	23	0	18	1950	1815
07-Jul-2011	1510	385	1	619	97	562	533	552	441	1000	1279	0	10	0	614	102	30	0	39	25	0	18	1570	1543
08-Jul-2011	1220	435	1	563	94	759	701	882	748	1220	1103	0	10	0	533	94	30	0	39	22	0	14	1590	0
11-Jul-2011	1001	496	1	619	86	861	820	798	766	1270	1440	0	6	0	653	86	13	0	26	18	0	15	1600	858
12-Jul-2011	1264	425	1	640	83	621	600	754	693	1240	1565	0	5	0	706	99	13	0	26	18	0	14	1600	858
13-Jul-2011	1100	425	0	694	91	443	459	629	588	1190	1512	0	11	0	720	140	27	0	26	22	0	14	1590	1
14-Jul-2011	1040	574	1	598	73	562	556	662	622	1130	1314	0	11	0	570	89	21	0	25	18	0	20	1600	1
15-Jul-2011	866	621	1	677	53	555	552	669	631	1190	1332	0	13	0	551	70	24	0	26	19	0	19	1030	0
18-Jul-2011	673	306	1	645	41	443	442	474	390	1010	1063	0	5	0	576	71	15	0	30	18	0	18	1070	877
19-Jul-2011	658	278	0	553	40	648	637	676	596	1060	1052	0	3	0	557	59	11	0	26	18	0	21	1070	951
20-Jul-2011	721	250	0	498	48	766	729	783	729	1200	1064	0	10	0	595	56	11	0	25	18	0	20	929	1130
21-Jul-2011	729	246	0	457	43	736	729	828	757	1170	1062	0	15	0	879	57	---	0	26	18	0	16	810	1056
22-Jul-2011	713	238	0	461	43	743	729	882	804	1210	1106	0	16	0	626	57	---	0	25	18	0	16	840	996
25-Jul-2011	488	195	1	446	37	728	734	828	785	1220	1152	0	6	0	1100	---	45	0	28	19	0	16	875	972
27-Jul-2011	520	191	1	402	37	481	499	635	596	1010	955	0	17	0	686	321	248	0	439	92	0	18	902	970
29-Jul-2011	612	205	1	387	29	541	541	676	622	962	956	1	14	0	498	66	86	0	231	197	148	69	127	1025
01-Aug-2011	605	246	1	424	32	443	456	558	537	996	1015	46	15	0	646	231	35	0	714	585	86	336	121	---
03-Aug-2011	590	274	1	439	35	388	411	509	433	929	1088	129	16	0	563	115	76	268	159	107	14	389	120	914
05-Aug-2011	642	302	2	442	48	394	401	509	426	929	880	3	28	0	653	249	116	29	103	99	211	176	120	800
08-Aug-2011	468	258	2	498	31	598	588	602	505	1030	962	0	14	0	453	59	50	4	241	73	145	125	120	870
10-Aug-2011	407	170	2	413	29	1000	957	725	648	1050	980	0	8	0	431	52	---	3	8	29	84	64	312	843
12-Aug-2011	373	142	1	336	24	1000	969	992	833	1200	1073	0	11	0	447	36	22	0	8	9	0	28	507	---
15-Aug-2011	395	110	1	305	24	1080	1050	969	852	1170	1294	0	14	0	646	40	23	0	8	6	0	67	490	900
17-Aug-2011	368	107	1	267	22	837	814	761	684	923	1303	0	12	0	607	52	10	0	8	3	0	56	772	900
19-Aug-2011	320	92	1	256	21	987	988	754	693	897	857	0	14	0	521	92	41	3	75	69	0	80	827	900
22-Aug-2011	373	85	1	253	65	1020	995	335	383	955	1050	1	39	0	679	410	98	4	163	145	72	239	827	970
24-Aug-2011	356	66	3	250	53	978	982	270	337	457	1973	0	50	0	879	394	214	74	300	304	264	231	831	920
26-Aug-2011	356	54	3	229	35	987	995	462	711	643	592	0	17	0	545	321	430	6	382	390	309	408	875	1000
29-Aug-2011	425	71	4	243	32	987	969	440	596	989	586	0	34	116	420	21	32	25	52	286	327	361	862	---
31-Aug-2011	395	64	6	240	31	995	963	462	383	529	683	0	24	0	475	21	13	5	128	83	44	28	971	772
02-Sep-2011	340	80	4	243	32	995	969	583	529	735	576	0	18	0	385	21	10	0	128	51	62	36	844	682
06-Sep-2011	272	58	3	236	35	978	963	350	350	607	791	0	32	0	607	21	8	5	35	50	127	74	1270	943

Date	Del Norte	Lobato	Embudo	Rio Grande at Embudo	La Puente	El Vado (DS of Dam)	Abiquiu (US of Res)	Abiquiu (DS of Res)	Chamita	Otowi	Cochiti (DS of Res)	Galisteo	Jemez Springs	Jemez (DS of Res)	Albuq.	Bosque Farms	Hwy. 346	Rio Puerco	San Acacia	Escondida	Hwy. 380	San Marcial	E. Butte (DS of Res)	Caballo (DS of Res)
09-Sep-2011	300	80	3	284	32	591	572	445	426	664	679	0	14	0	453	16	13	29	176	207	354	327	474	954
12-Sep-2011	300	73	20	284	48	584	568	401	411	752	675	0	29	0	347	20	11	7	75	89	155	173	15	0
14-Sep-2011	286	66	12	263	40	598	564	302	331	602	713	0	22	0	375	19	23	8	87	112	52	38	78	98
16-Sep-2011	384	68	17	291	68	591	584	257	295	577	539	0	36	0	338	36	62	8	386	271	530	278	4	98
19-Sep-2011	413	64	20	263	83	598	568	208	252	497	477	0	20	0	347	52	25	345	---	430	570	324	52	96
26-Sep-2011	277	122	10	291	35	591	568	261	263	461	423	0	10	0	220	21	9	0	51	---	62	5	3	93
30-Sep-2011	320	102	10	301	32	198	207	257	263	483	390	0	9	0	153	23	6	0	30	29	1	---	2	90
03-Oct-2011	286	117	8	284	32	202	204	257	268	479	396	0	13	0	131	30	5	0	30	27	1	7	2	89
05-Oct-2011	462	117	16	312	61	202	285	283	313	675	407	0	55	0	464	36	0	0	257	33	4	24	2	88
07-Oct-2011	737	80	24	319	112	202	263	178	219	529	396	0	24	1	284	76	11	142	36	40	420	125	2	87
12-Oct-2011	474	154	28	402	91	198	204	132	150	572	448	0	20	0	302	81	0	4	190	164	165	130	1	84
17-Oct-2011	590	157	20	369	100	202	204	128	147	497	420	0	16	0	235	57	92	0	143	121	79	43	1	84
21-Oct-2011	507	167	26	358	68	202	204	132	140	488	426	0	14	0	239	45	22	0	20	60	29	163	0	0
24-Oct-2011	474	250	24	405	61	98	93	128	140	501	413	0	17	0	247	59	0	0	63	60	2	20	1	1
28-Oct-2011	520	306	38	518	103	95	99	97	134	687	828	0	35	9	366	67	36	0	53	54	8	12	4	1
31-Oct-2011	455	286	27	523	83	95	91	84	124	671	623	0	27	1	447	236	238	0	194	151	38	21	4	1

Note: DS of Res = downstream of reservoir; US of Res = upstream of reservoir.

APPENDIX B
SUMMARY REPORT OF FLOW ESTIMATES AND LONGITUDINAL LIMITS OF RUNNING WATER CONDITIONS - 2011

River Eyes Report - 2011

Reach	Date	Total River Miles Dry	Miles of "New" Drying	River Miles Rewet	Comments
Isleta					
	14-Apr-2011	0.00	0	0	Flow in the river is continuous throughout the Isleta Reach.
	24-Apr-2011	0.00	0	0	Flow in the main river channel is continuous throughout the Isleta Reach
	20-Jun-2011	0.00	0	0	Flow in the main river channel is continuous throughout the Isleta Reach.
	21-Jun-2011	0.00	0	0	Flow in the main river channel is continuous throughout the Isleta Reach.
	22-Jun-2011	0.00	0	0	Flow in the main river channel is continuous throughout the Isleta Reach.
	24-Jun-2011	0.00	0	0	Flow in the main river channel is continuous throughout the Isleta Reach.
	26-Jun-2011	0.00	0	0	Flow in the main river channel is continuous throughout the Isleta Reach.
	01-Jul-2011	0.00	0	0	Flow in the main river channel is continuous throughout the Isleta Reach. No site-specific observations.
	02-Jul-2011	0.00	0	0	Flow in the main river channel is continuous throughout the Isleta Reach.
	03-Jul-2011	0.00	0	0	Flow in the main river channel is continuous throughout the Isleta Reach.
	04-Jul-2011	0.00	0	0	Flow in the main river channel is continuous throughout the Isleta Reach.
	05-Jul-2011	0.00	0	0	Flow in the main river channel is continuous throughout the Isleta Reach.
	06-Jul-2011	0.00	0	0	Flow in the main river channel is continuous throughout the Isleta Reach.
	07-Jul-2011	0.00	0	0	Flow in the main river channel is continuous throughout the Isleta Reach.
	08-Jul-2011	0.00	0	0	Flow in the main river channel is continuous throughout the Isleta Reach.
	09-Jul-2011	0.78	0.78	0	River is reduced to isolated pools over a 0.78-mile segment extending south from a point 1.75 miles upstream of Peralta Main Wasteway (RM 154.33) to a point 1.02 miles upstream of Peralta Main WW (RM 153.5). Aside from this segment, the flow in the main river channel is continuous in the Isleta Reach.
	10-Jul-2011	1.49	0.71	0	River is reduced to isolated pools over two river segments that total 1.49 miles. The upstream intermittent segment extends south 1.09 miles from a point 1.59 miles upstream of Peralta Main Wasteway (RM 154.2). The downstream intermittent segment extends south 0.4 mile from a point 0.2 mile upstream of Peralta Main WW (RM 152.7). The downstream intermittent segment represents new drying. Aside from these segments, the flow in the main river channel is continuous in the Isleta Reach.

Reach	Date	Total River Miles Dry	Miles of "New" Drying	River Miles Rewet	Comments
Isleta					
	11-Jul-2011	2.44	0.95	0	General Comments: River is reduced to isolated pools over two river segments that total 2.44 miles. The upstream intermittent segment extends south 1.94 miles from a point 2.32 miles upstream of Peralta Main Wasteway (RM 155.1); of this drying, 0.85 mile represents new drying. The downstream intermittent segment extends south 0.5 mile from a point 0.3 mile upstream of Peralta Main WW (RM 152.8); of this drying, 0.1 mile represents new drying. Aside from these segments, the flow in the main river channel is continuous in the
	12-Jul-2011	2.12	0	0.32	Significant rain fell in the Belen area overnight as evident from the standing water along roads and in parking lots. River is reduced to isolated pools over two river segments that total 2.12 miles. The upstream intermittent segment extends south 1.72 miles from a point 2.1 miles upstream of Peralta Main Wasteway (RM 154.88); 0.22 mile of this river segment rewet since yesterday. The downstream intermittent segment extends south 0.4 mile from a point 0.3 mile upstream of Peralta Main WW (RM 152.8); 0.1 mile of this river segment rewet since yesterday. Aside from the above-described segments with isolated pools, flow in the main river channel is continuous in the Isleta Reach.
	13-Jul-2011	2.30	0.2	0	River is reduced to isolated pools over a 2.3-mile segment extending south from a point 2.1 miles upstream of Peralta Main Wasteway (RM 154.87) to a point 0.2 mile downstream of Peralta Main WW (RM 152.3). No new drying. Aside from this segment, the flow in the main river channel is continuous in the Isleta Reach.
	14-Jul-2011	0.00	0	2.3	Flow in the main river channel is continuous in the Isleta Reach.
	15-Jul-2011	0.75	0	0	River is reduced to isolated pools over a 0.75-mile segment extending south from a point 1.8 miles upstream of Peralta Wasteway; no "new" drying. Aside from this segment, the flow in the main river channel is continuous in the Isleta Reach
	16-Jul-2011	3.60	1	0	River dried north and south of yesterday's 0.75 mile-segment. River is reduced to isolated pools over a 3.6-mile segment extending south from a point 0.6 mile downstream of Los Chavez Wasteway. Of this drying, 1.0 mile represents new drying. Aside from this segment, the flow in the main river channel is continuous in the Isleta Reach
	17-Jul-2011	3.90	0.3	0	River is reduced to isolated pools over a 3.9-mile segment extending south from a point 0.3 mile downstream of Los Chavez Wasteway. Of this drying, 0.3 mile represents new drying. Aside from this segment, the flow in the main river channel is continuous in the
	18-Jul-2011	4.16	0.07	0	River is reduced to isolated pools over a 4.16-mile segment extending south from a point 0.27 mile downstream of Los Chavez Wasteway. Of this drying, 0.07 mile represents new drying. Aside from this segment, the flow in the main river channel is continuous in the Isleta Reach.
	19-Jul-2011	5.40	1.24	0	River is reduced to isolated pools over a 5.4-mile segment extending south from a point 0.95 mile upstream of Los Chavez Wasteway. Of this drying, 1.24 miles represents new drying. Aside from this segment, the flow in the main river channel is continuous in the Isleta Reach.
	20-Jul-2011	5.90	0.75	0	River is reduced to isolated pools over a 5.9-mile segment extending south from a point 1.7 miles upstream of Los Chavez Wasteway. Of this drying, 0.75 mile represents new drying. Aside from this segment, the flow in the main river channel is continuous in the Isleta Reach.

Reach	Date	Total River Miles Dry	Miles of "New" Drying	River Miles Rewet	Comments
Isleta					
	21-Jul-2011	6.80	0.7	0	River is reduced to isolated pools over a 6.8-mile segment extending south from a point 1.8 miles upstream of Los Chavez Wasteway. Of this drying, 0.7 mile represents new drying. Aside from this segment, the flow in the main river channel is continuous in the
	22-Jul-2011	5.35	0	1.45	River is reduced to isolated pools over a 5.35-mile segment extending south from a point 0.9 mile upstream of Los Chavez Wasteway. At 7:00, 1.45 miles of river had rewet since yesterday; at this time, the river continues to rewet at a rate of 17.6 ft/min. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	23-Jul-2011	6.10	0	0	River is reduced to isolated pools over a 6.1-mile segment extending south from a point 1.1 miles upstream of Los Chavez Wasteway. Since yesterday morning, 0.2 mile of river redried above Los Chavez WW and 0.55 mile below Peralta Wasteway. Total river redrying since yesterday = 0.75 mile. No new drying. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	24-Jul-2011	4.50	0	1.6	River is reduced to isolated pools over a 4.5-mile segment extending south from a point 0.2 mile upstream of Los Chavez Wasteway. Since yesterday morning, 1.6 miles of river rewet upstream of Los Chavez WW. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	25-Jul-2011	1.90	0	2.8	River is reduced to isolated pools over a 1.9-mile segment extending south from a point 1.9 miles upstream of Peralta Wasteway. Since yesterday morning, 2.0 miles of river rewet at the upstream extent of river drying. Since yesterday morning, 0.8 mile of river rewet at the downstream extent of river drying. Total river rewetting = 2.8 miles. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	26-Jul-2011	0.00	0	1.9	Since yesterday morning, 1.9 miles of river rewet upstream of Peralta Wasteway. Flow in the river is continuous in the Isleta Reach. Water was observed by USFWS in the Rio Salado at I-25 this morning.
	27-Jul-2011	0.00	0	0	Flow in the main river channel is continuous throughout the Isleta Reach. No site-specific observations.
	28-Jul-2011	0.00	0	0	Flow in the main river channel is continuous throughout the Isleta Reach. No site-specific observations.
	29-Jul-2011	0.00	0	0	Flow in the main river channel is continuous throughout the Isleta Reach
	30-Jul-2011	3.40	0	0	River is reduced to isolated pools over a 3.4-mile segment extending south from a point 0.3 mile downstream of Los Chavez Wasteway. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	31-Jul-2011	3.60	0	0.3	River is reduced to isolated pools over a 3.6-mile segment extending south from a point 0.6 mile downstream of Los Chavez Wasteway. The northernmost extent of discontinuous flow rewet 0.3 mile. Since yesterday's point of bottom of river drying, there was an additional 0.5 mile of discontinuous flow. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.

Reach	Date	Total River Miles Dry	Miles of "New" Drying	River Miles Rewet	Comments
Isleta					
	01-Aug-2011	3.35	0	0.3	River is reduced to isolated pools over a 3.35-mile segment extending south from a point 1.1 miles downstream of Los Chavez Wasteway. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	02-Aug-2011	0.00	0	3.35	Flow in the main river channel is continuous throughout the Isleta Reach. Since yesterday morning, an estimated 3.35 miles of river rewet
	03-Aug-2011	0.00	0	0	Flow in the main river channel is continuous throughout the Isleta Reach. No site-specific observations.
	04-Aug-2011	0.00	0	0	Flow in the main river channel is continuous throughout the Isleta Reach.
	05-Aug-2011	0.00	0	0	Flow in the main river channel is continuous throughout the Isleta Reach.
	06-Aug-2011	0.00	0	0	Flow in the main river channel is continuous throughout the Isleta Reach.
	07-Aug-2011	0.00	0	0	Flow in the main river channel is continuous throughout the Isleta Reach. Later today, flow in the main river channel is expected to be reduced to isolated pools over a segment several miles long upstream of Peralta Wasteway.
	08-Aug-2011	5.20	0	0	River is reduced to isolated pools over a 5.2-mile segment extending south from a point 1.0 mile upstream of Los Chavez Wasteway. This segment had gone dry previously this year. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	09-Aug-2011	6.36	0.3	0	River is reduced to isolated pools over a 6.36-mile segment extending south from a point 2.1 miles upstream of Los Chavez Wasteway. Of this drying, 0.3 mile represents new drying. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	10-Aug-2011	7.40	0.85	0	River is reduced to isolated pools over a 7.4-mile segment extending south from a point 2.95 miles upstream of Los Chavez Wasteway. Of this drying, 0.85 mile represents new drying. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	11-Aug-2011	9.60	1.65	0	River is reduced to isolated pools over a 9.6-mile segment extending south from a point 0.1 mile downstream of Los Lunas Bridge. Of this drying, 1.65 miles represents new drying. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	12-Aug-2011	10.95	1.35	0	River is reduced to isolated pools over a 10.95-mile segment extending south from a point 1.25 miles upstream of Los Lunas Bridge. Of this drying, 1.35 miles represents new drying. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	13-Aug-2011	12.40	1.45	0	River is reduced to isolated pools over a 12.4-mile segment extending south from a point 2.7 miles upstream of Los Lunas Bridge. Of this drying, 1.45 miles represents "new" drying. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	14-Aug-2011	12.80	0.4	0	River is reduced to isolated pools over a 12.8-mile segment extending south from a point 3.1 miles upstream of Los Lunas Bridge. Of this drying, 0.4 mile represents "new" drying. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.

Reach	Date	Total River Miles Dry	Miles of "New" Drying	River Miles Rewet	Comments
Isleta					
	15-Aug-2011	9.96	0	2.04	River is reduced to isolated pools over a 9.96-mile segment extending south from a point 1.6 miles upstream of Los Lunas Bridge. Some 2.04 river miles rewet since yesterday. The river continues to rewet at a rate of 14.0 ft/min. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	16-Aug-2011	6.70	0	3.26	River is reduced to isolated pools over a 6.7-mile segment extending south from a point 2.2 miles downstream of Los Lunas Bridge. Some 3.26 miles of river rewet since yesterday. The river is currently rewetting at a rate of 15.0 feet/minute. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	17-Aug-2011	7.50	0	0	River is reduced to isolated pools over a 7.5-mile segment extending south from a point 1.4 miles downstream of Los Lunas Bridge. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	18-Aug-2011	6.80	0	0.7	River is reduced to isolated pools over a 6.8-mile segment extending south from a point 2.1 miles downstream of Los Lunas Bridge. Some 0.7 mile of river have rewet since yesterday. Rewetting continues at the rate of 10 feet/minute. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	19-Aug-2011	2.80	0	4	River is reduced to isolated pools over a 2.8-mile segment extending south from a point 1.4 miles downstream of Los Chavez Wasteway. Some 4.0 mile of river have rewet since yesterday. Rewetting continues. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	20-Aug-2011	2.65	0	0.15	River is reduced to isolated pools over a 2.65-mile segment extending south from a point 1.55 miles downstream of Los Chavez Wasteway. Some 0.15 mile of river rewet since yesterday. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	21-Aug-2011	0.00	0	2.65	Some 2.65 miles of river have rewet since yesterday. Flow in the main river channel is continuous in the Isleta Reach.
	22-Aug-2011	0.00	0	0	Flow in the main channel is continuous in the Isleta Reach
	23-Aug-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the Isleta Reach based on USGS internet postings of flow. No site-specific observations were made today.
	24-Aug-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the Isleta Reach based on USGS internet postings of flow. No site-specific observations were made today.
	25-Aug-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the Isleta Reach based on USGS internet postings of flow.
	26-Aug-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the Isleta Reach based on USGS internet postings of flow. No site-specific observations of Rio Grande were made today.
	27-Aug-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the Isleta Reach based on USGS internet postings of flow and field observations.
	28-Aug-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the Isleta Reach based on USGS internet postings of flow and field observations.

Reach	Date	Total River Miles Dry	Miles of "New" Drying	River Miles Rewet	Comments
Isleta					
	29-Aug-2011	11.10	0	0	River is reduced to isolated pools over a 11.1-mile segment extending south from a point 2.2 miles upstream of Los Lunas Bridge. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	30-Aug-2011	11.05	0	0.05	River is reduced to isolated pools over an 11.05-mile segment extending south from a point 2.15 miles upstream of Los Lunas Bridge. Since yesterday, 0.05 mile of river has rewet. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	31-Aug-2011	11.60	0	0	River is reduced to isolated pools over an 11.6-mile segment extending south from a point 2.7 miles upstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	01-Sep-2011	11.90	0	0	River is reduced to isolated pools over an 11.9-mile segment extending south from a point 3.0 miles upstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	02-Sep-2011	12.25	0.1	0	River is reduced to isolated pools over a 12.25-mile segment extending south from a point 3.2 miles upstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	03-Sep-2011	12.26	0.1	0	River is reduced to isolated pools over a 12.26-mile segment extending south from a point 3.3 miles upstream of Los Lunas Bridge. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	04-Sep-2011	12.40	0.2	0	River is reduced to isolated pools over a 12.40-mile segment extending south from a point 3.5 miles upstream of Los Lunas Bridge. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	05-Sep-2011	11.50	0	0.9	River is reduced to isolated pools over an 11.50-mile segment extending south from a point 2.6 miles upstream of Los Lunas Bridge (RM 164.0). Elsewhere, flow in the main river channel is continuous in the Isleta Reach. No new discontinuous flow. Some 0.9 mile of river rewet since yesterday.
	06-Sep-2011	12.25	0	0	River is reduced to isolated pools over a 12.25-mile segment Elsewhere, flow in the main river channel is continuous in the Isleta Reach. No new river drying.
	07-Sep-2011	11.05	0	1.05	River is reduced to isolated pools over a 11.05-mile segment extending south from a point 2.15 miles upstream of Los Lunas Bridge. Elsewhere, flow in the main river channel is continuous in the Isleta Reach. Some 1.05 miles of river rewet since yesterday; no new discontinuous flow.
	08-Sep-2011	11.20	0	0	River is reduced to isolated pools over an 11.2-mile segment extending south from a point 2.3 miles upstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	09-Sep-2011	11.15	0	0.05	River is reduced to isolated pools over an 11.15-mile segment extending south from a point 2.25 miles upstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.

Reach	Date	Total River Miles Dry	Miles of "New" Drying	River Miles Rewet	Comments
Isleta					
	10-Sep-2011	11.00	0	0.15	River is reduced to isolated pools over an 11.0-mile segment extending south from a point 2.1 miles upstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	11-Sep-2011	10.90	0	0.1	River is reduced to isolated pools over a 10.9-mile segment extending south from a point 2.0 miles upstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	12-Sep-2011	11.06	0	0.04	River is reduced to isolated pools over an 11.06-mile segment extending south from a point 1.96 miles upstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	13-Sep-2011	11.05	0	0.16	River is reduced to isolated pools over an 11.05-mile segment extending south from a point 1.8 miles upstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	14-Sep-2011	10.80	0	0.35	River is reduced to isolated pools over a 10.8-mile segment extending south from a point 1.9 miles upstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	15-Sep-2011	10.40	0	0.4	River is reduced to isolated pools over a 10.4-mile segment extending south from a point 1.5 miles upstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	16-Sep-2011	7.70	0	2.7	River is reduced to isolated pools over a 7.7-mile segment extending south from a point 1.2 miles downstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	17-Sep-2011	10.20	0	0	River is reduced to isolated pools over a 10.2-mile segment extending south from a point 1.3 miles upstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	18-Sep-2011	8.10	0	2.1	River is reduced to isolated pools over an 8.1-mile segment extending south from a point 0.8 mile downstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	19-Sep-2011	7.10	0	1	River is reduced to isolated pools over a 7.1-mile segment extending south from a point 1.8 miles downstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	20-Sep-2011	9.90	0	0	River is reduced to isolated pools over a 9.9-mile segment extending south from a point 1.0 mile upstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	21-Sep-2011	9.80	0	0.1	River is reduced to isolated pools over a 9.8-mile segment extending south from a point 0.9 mile upstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	22-Sep-2011	9.70	0	0.1	River is reduced to isolated pools over a 9.7-mile segment extending south from a point 0.8 mile upstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.

Reach	Date	Total River Miles Dry	Miles of "New" Drying	River Miles Rewet	Comments
Isleta					
	23-Sep-2011	9.90	0	0	River is reduced to isolated pools over a 9.9-mile segment extending south from a point 1.0 mile upstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	24-Sep-2011	10.35	0	0	River is reduced to isolated pools over a 10.35-mile segment extending south from a point 1.45 miles upstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	25-Sep-2011	10.70	0	0	River is reduced to isolated pools over a 10.7-mile segment extending south from a point 1.8 miles upstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	26-Sep-2011	10.90	0	0	River is reduced to isolated pools over a 10.9-mile segment extending south from a point 2.0 miles upstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	27-Sep-2011	11.45	0	0	River is reduced to isolated pools over an 11.45-mile segment extending south from a point 2.1 miles upstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	28-Sep-2011	11.52	0	0	River is reduced to isolated pools over an 11.52-mile segment extending south from a point 2.17 miles upstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	29-Sep-2011	10.90	0	0.17	River is reduced to isolated pools over a 10.9-mile segment extending south from a point 2.0 miles upstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	30-Sep-2011	11.35	0	0	River is reduced to isolated pools over an 11.35-mile segment extending south from a point 2.0 miles upstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	01-Oct-2011	11.65	0	0	River is reduced to isolated pools over an 11.65-mile segment extending south from a point 2.0 miles upstream of Los Lunas Bridge. The northernmost section has no change this morning; on the other hand, the southernmost section of river drying has an additional 0.30 mile of discontinuous flow since yesterday. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	02-Oct-2011	11.65	0	0	River is reduced to isolated pools over an 11.65-mile segment extending south from a point 2.0 miles upstream of Los Lunas Bridge. There are no changes at top or bottom of river drying. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	03-Oct-2011	11.48	0	0.17	River is reduced to isolated pools over an 11.48-mile segment extending south from a point 1.83 miles upstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	04-Oct-2011	11.35	0	0.13	River is reduced to isolated pools over an 11.35-mile segment extending south from a point 1.7 miles upstream of Los Lunas Bridge. This river segment has previously dried. A total of 0.13 miles of river rewet since yesterday at the top of drying. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.

Reach	Date	Total River Miles Dry	Miles of "New" Drying	River Miles Rewet	Comments
Isleta					
	05-Oct-2011	10.50	0	0.85	River is reduced to isolated pools over a 10.5-mile segment extending south from a point 1.6 miles upstream of Los Lunas Bridge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	06-Oct-2011	3.50	0	7.3	River is reduced to isolated pools over a 3.5-mile segment extending south from a point 1.0 miles downstream of Los Chavez Wasteway. This river segment has previously dried. A total of 7.3 miles of river rewet since yesterday at the top of drying. The river is currently rewetting at a rate of 26.0 feet/minute. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	07-Oct-2011	2.90	0	0.6	River is reduced to isolated pools over a 2.9-mile segment extending south from a point 1.3 miles downstream of Los Chavez Wasteway. This river segment has previously dried. A total of 0.3 mile of river rewet since yesterday at the top of drying. A total of 0.3 mile of river rewet since yesterday at the bottom of drying. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	08-Oct-2011	1.30	0	1.6	River is reduced to isolated pools over a 1.3-mile segment extending south from a point 2.9 miles downstream of Los Chavez Wasteway. This river segment has previously dried. A total of 1.6 miles of river rewet since yesterday at the top of drying. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	09-Oct-2011	0.00	0	1.3	Flow in the main river channel is continuous throughout the Isleta Reach based on USGS internet postings of flow and field observations. 1.3 miles of river rewet since yesterday morning.
	10-Oct-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the Isleta Reach based on USGS internet postings of flow and field observations.
	11-Oct-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the Isleta Reach based on USGS internet postings of flow and field observations.
	12-Oct-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the Isleta Reach based on USGS internet postings of flow and field observations.
	13-Oct-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the Isleta Reach based on USGS internet postings of flow and field observations.
	14-Oct-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the Isleta Reach based on USGS internet postings of flow and field observations.
	15-Oct-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the Isleta Reach based on USGS internet postings of flow and field observations.
	16-Oct-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the Isleta Reach based on USGS internet postings of flow and field observations.
	17-Oct-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the Isleta Reach based on USGS internet postings of flow and field observations.
	18-Oct-2011	1.40	0	0	Flow in the main river channel is discontinuous for 1.4 miles in the Isleta Reach. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.

Reach	Date	Total River Miles Dry	Miles of "New" Drying	River Miles Rewet	Comments
Isleta					
	19-Oct-2011	9.80	0	0	River is reduced to isolated pools over a 9.8-mile reach extending downstream from a point 0.9 mile upstream of Los Lunas. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	20-Oct-2011	8.90	0	0.9	River is reduced to isolated pools over an 8.9-mile reach extending downstream from the Los Lunas Bridge (RM 161.4). This river segment previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	21-Oct-2011	8.90	0	0	River is reduced to isolated pools over an 8.9-mile reach extending downstream from the Los Lunas Bridge (RM 161.4). This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	22-Oct-2011	10.30	0	0	River is reduced to isolated pools over a 10.3-mile segment extending south from a point 1.4 miles upstream of Los Lunas Bridge (RM 162.8). This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	23-Oct-2011	8.15	0	2.15	River is reduced to isolated pools over an 8.15-mile segment extending south from a point 0.75 mile downstream of Los Lunas Bridge (RM 160.65). This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	24-Oct-2011	7.70	0	0.45	River is reduced to isolated pools over a 7.7-mile segment extending south from a point 1.2 miles downstream of Los Lunas Bridge (RM 160.2). This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	25-Oct-2011	10.10	0	0	River is reduced to isolated pools over a 10.1-mile segment extending south from a point 1.2 miles upstream of Los Lunas Bridge (RM 162.6). This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	26-Oct-2011	11.00	0	0	River is reduced to isolated pools over an 11.0-mile segment extending south from a point 2.0 miles upstream of Los Lunas Bridge (RM 163.4). This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	27-Oct-2011	11.20	0	0	River is reduced to isolated pools over a 11.2-mile segment extending south from a point 2.3 miles downstream of Los Lunas Bridge (RM 163.7). This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	28-Oct-2011	8.85	0	2.55	River is reduced to isolated pools over a 8.85-mile segment extending south from a point 0.25 mile downstream of Los Lunas Bridge (RM 161.15). This river segment has previously dried. Elsewhere in the Isleta Reach, flow in the main river channel is
	29-Oct-2011	2.50	0	6.15	River is reduced to isolated pools over a 2.5-mile segment extending south from a point 2.5 miles upstream of Peralta Wasteway (RM 155.0). This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the Isleta Reach.
	30-Oct-2011	0.00	0	2.5	Flow in the main river channel is believed to be continuous throughout the Isleta Reach based on USGS internet postings of flow and field observations.
	31-Oct-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the Isleta Reach based on USGS internet postings of flow and field observations from the previous day.

Reach	Date	Total River Miles Dry	Miles of "New" Drying	River Miles Rewet	Comments
San Acacia					
	05-Apr-2011	0.00	0	0	Flow in the river is continuous throughout the San Acacia Reach.
	06-Apr-2011	0.00	0	0	Flow in the river is continuous throughout the San Acacia Reach.
	07-Apr-2011	0.00	0	0	Flow in the river is continuous throughout the San Acacia Reach.
	08-Apr-2011	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach.
	09-Apr-2011	0.00	0	0	Flow in the river is continuous throughout the San Acacia Reach.
	10-Apr-2011	0.00	0	0	Flow in the river is continuous throughout the San Acacia Reach.
	11-Apr-2011	0.00	0	0	Flow in the river is continuous throughout the San Acacia Reach.
	12-Apr-2011	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach.
	13-Apr-2011	0.00	0	0	Flow in the river is continuous throughout the San Acacia Reach.
	14-Apr-2011	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach.
	15-Apr-2011	0.00	0	0	Flow in the river is continuous throughout the San Acacia Reach.
	21-Apr-2011	0.00	0	0	It is unknown exactly when flow was interrupted in the Rio Grande within the general boundaries of Bosque del Apache Refuge. It could have occurred late in the day on 21-April-2011 or early in the morning of 22-April-2011. This entry establishes a hypothetical "Top of Drying" in the Rio Grande as being " 750 ft upstream of South Boundary Bosque del Apache Refuge" to be a "zero point" in which subsequent drying events would be
	22-Apr-2011	8.10	8.1	0	Wetted habitat in the San Acacia Reach of the Rio Grande is reduced to isolated pools over a segment extending 8.1 miles upstream from the river's confluence with the pump channel at the south boundary of Bosque del Apache Refuge (distance measured by following the thalweg of the river). Aside from this segment, flow in the main river channel is continuous throughout the San Acacia Reach.
	23-Apr-2011	6.10	0	2.75	Wetted habitat in the San Acacia Reach of the Rio Grande is reduced to isolated pools over a segment extending 6.1 miles upstream from a point approximately 750 feet upstream of the river's confluence with the pump channel at the south boundary of Bosque del Apache Refuge. Aside from this segment, flow in the main river channel is continuous throughout the San Acacia Reach.
	24-Apr-2011	1.70	0	4.4	Wetted habitat in the San Acacia Reach of the Rio Grande is reduced to isolated pools over a segment extending 1.5 miles upstream from a point approximately 750 feet upstream of the river's confluence with the pump channel at the south boundary of Bosque del Apache Refuge. Aside from this segment, flow in the main river channel is continuous throughout the San Acacia Reach.

Reach	Date	Total River Miles Dry	Miles of "New" Drying	River Miles Rewet	Comments
San Acacia					
	25-Apr-2011	0.50	0	0.5	Wetted habitat in the San Acacia Reach of the Rio Grande is reduced to isolated pools over a segment extending 0.5 mile upstream from a point approximately 750 feet upstream of the river's confluence with the pump channel at the south boundary of Bosque del Apache Refuge. Aside from this segment, flow in the main river channel is continuous throughout the San Acacia Reach. The river became through flowing (continuous) by mid-day (authority Reclamation).
	26-Apr-2011	0.00	0	0.5	Flow in the main river channel is continuous throughout the San Acacia Reach
	27-Apr-2011	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach
	29-Apr-2011	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach
	04-May-	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach
	06-May-	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach
	08-May-	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach
	11-May-	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach
	13-May-	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach
	14-May-	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach
	19-Jun-2011	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach.
	20-Jun-2011	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach.
	21-Jun-2011	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach.
	22-Jun-2011	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach.
	23-Jun-2011	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach.
	24-Jun-2011	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach.
	25-Jun-2011	5.40	0	0	River is reduced to isolated pools over a 5.4-mile segment within the Bosque del Apache Refuge. Aside from this segment, flow in the main river channel is continuous in the San Acacia Reach.
	26-Jun-2011	8.70	0.6	0	River is reduced to isolated pools over an 8.7-mile segment within the Bosque del Apache Refuge extending south from North Boundary of Bosque del Apache Refuge. Of this drying, 0.6 mile represent "new" drying (i.e., had not been subject to drying previously this year). Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.

Reach	Date	Total River Miles Dry	Miles of "New" Drying	River Miles Rewet	Comments
San Acacia					
	27-Jun-2011	9.50	0.8	0	River is reduced to isolated pools over a 9.5-mile segment within the Bosque del Apache Refuge extending south from North Boundary of Bosque del Apache Refuge. Of this drying, 0.8 mile represent "new" drying. Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.
	28-Jun-2011	11.20	1.7	0	River is reduced to isolated pools over a 11.1-mile segment within the Bosque del Apache Refuge extending south from a point 0.9 mile upstream of North Boundary of Bosque del Apache pump site. Of this drying, 1.7 miles represents "new" drying. Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.
	29-Jun-2011	13.34	2.14	0	River is reduced to isolated pools over a 13.14-mile segment within the Bosque del Apache Refuge extending south from a point 0.14 mile upstream of US 380. Of this drying, 2.14 miles represents "new" drying. Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.
	30-Jun-2011	16.10	2.76	0	River is reduced to isolated pools over a 16-mile segment extending south from Neil Cupp (RM 90.0). Of this drying, 2.76 miles represents "new" drying. Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.
	01-Jul-2011	18.70	2.6	0	River is reduced to isolated pools over an 18.6-mile segment extending south from a point 2.6 miles upstream of Neil Cupp (RM 92.6). Of this drying, 2.6 miles represents "new" drying. Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.
	02-Jul-2011	20.45	1.75	0	River is reduced to isolated pools over a 20.45-mile segment extending south from a point 0.35 mile upstream of Brown Arroyo (RM 94.35). Of this drying, 1.75 miles represents "new" drying. Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.
	03-Jul-2011	21.90	1.45	0	River is reduced to isolated pools over a 21.8-mile segment extending south from a point 3.4 mile downstream of Otero Street (RM 95.8), Socorro, NM. Of this drying, 1.45 miles represents "new" drying. Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.
	04-Jul-2011	22.00	0.1	0	River is reduced to isolated pools over a 22.0-mile segment extending south from a point 3.3 miles downstream of Otero Street (RM 95.9), Socorro, NM. Of this drying, 0.10 mile represents "new" drying. Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.
	05-Jul-2011	23.10	1.1	0	River is reduced to isolated pools over a 23.1-mile segment extending south from a point 3.0 river miles upstream of Brown Arroyo (RM 97.0). Of this drying, 1.1 miles represents "new" drying. Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.
	06-Jul-2011	24.00	0.9	0	River is reduced to isolated pools over a 23.9-mile segment extending south from a point 1.3 miles downstream of Otero Street, Socorro (RM 97.9). Of this drying, 0.9 mile represents "new" drying. Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.

Reach	Date	Total River Miles Dry	Miles of "New" Drying	River Miles Rewet	Comments
San Acacia					
	07-Jul-2011	24.30	0.3	0	River is reduced to isolated pools over a 24.3-mile segment extending south from a point 0.85 mile downstream of Otero Street, Socorro (RM 98.2). Of this drying, 0.3 mile represents "new" drying. Aside from this segment, flow in the river is continuous in the San
	08-Jul-2011	24.12	0	0.18	River is reduced to isolated pools over a 24.12-mile segment extending south from a point 0.67 mile downstream of Otero Street, Socorro (RM 98.02). Some 0.18 mile rewet since yesterday. Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.
	09-Jul-2011	24.68	0.38	0	River is reduced to isolated pools over a 24.68-mile segment extending south from a point 0.62 mile downstream of Otero Street, Socorro (RM 98.58). Of this drying, 0.38 mile represents "new" drying. Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.
	10-Jul-2011	24.84	0.16	0	River is reduced to isolated pools over a 24.84-mile segment extending south from a point 0.44 mile downstream of Otero Street, Socorro (RM 98.58). Of this drying, 0.16 mile represents "new" drying. Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.
	11-Jul-2011	25.35	0.51	0	River is reduced to isolated pools over a 24.84-mile segment extending south from Otero Street, Socorro (400 feet upstream of RM 99.0). Of this drying, 0.51 mile represents "new" drying. Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.
	12-Jul-2011	25.35	0	0	No change from yesterday. River is reduced to isolated pools over a 25.35-mile segment extending south from Otero Street, Socorro (400 feet upstream of RM 99.25). Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.
	13-Jul-2011	25.35	0	0	No change from yesterday. River is reduced to isolated pools over a 25.35-mile segment extending south from Otero Street, Socorro (400 feet upstream of RM 99.25). No new drying. Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.
	14-Jul-2011	25.22	0	0.13	River is reduced to isolated pools over a 25.22-mile segment extending south from a point 0.38 miles upstream of Otero Street, Socorro. Some 0.13 mile rewet since yesterday. Aside from this segment, the flow in the main river channel is continuous in the San Acacia
	15-Jul-2011	25.22	0	0.13	River is reduced to isolated pools over a 25.22-mile segment extending south from a point 0.38 mile upstream of Otero Street, Socorro. Some 0.13 mile of river rewet since yesterday. Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.
	16-Jul-2011	25.22	0	0	River is reduced to isolated pools over a 25.22-mile segment extending south from a point 0.38 mile upstream of Otero Street, Socorro. The "top of drying" remains at the same location. Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.
	17-Jul-2011	25.22	0	0	River is reduced to isolated pools over a 25.22-mile segment extending south from a point 0.38 mile upstream of Otero Street, Socorro. Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.

Reach	Date	Total River Miles Dry	Miles of "New" Drying	River Miles Rewet	Comments
San Acacia					
	18-Jul-2011	25.22	0	0	No change since yesterday. River is reduced to isolated pools over a 25.22-mile segment extending south from a point 0.38 mile upstream of Otero Street, Socorro. Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.
	19-Jul-2011	25.22	0	0	No change since yesterday. River is reduced to isolated pools over a 25.22-mile segment extending south from a point 0.38 mile upstream of Otero Street, Socorro. Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.
	20-Jul-2011	25.22	0	0	River is reduced to isolated pools over a 25.22-mile segment extending south from a point 0.38 mile upstream of Otero Street, Socorro. Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.
	21-Jul-2011	25.42	0.07	0	River is reduced to isolated pools over a 25.42-mile segment extending south from RM 99.32. Of this drying, 0.07 mile represents new drying. Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.
	22-Jul-2011	25.42	0	0	No change since yesterday. River is reduced to isolated pools over a 25.42-mile segment extending south from RM 99.32. Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.
	23-Jul-2011	25.42	0	0	No change since yesterday. River is reduced to isolated pools over a 25.42-mile segment extending south from RM 99.32. Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.
	24-Jul-2011	25.42	0	0	No change since yesterday. River is reduced to isolated pools over a 25.42-mile segment extending south from RM 99.32. Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.
	25-Jul-2011	25.10	0	0.32	River is reduced to isolated pools over a 25.1-mile segment extending south from RM 99.0. Since yesterday morning, 0.32 mile of river rewet at the upstream extent of river drying. Aside from this segment, the flow in the main river channel is continuous in the San
	26-Jul-2011	25.10	0	6.5	River is reduced to isolated pools over a 25.1-mile segment extending south from RM 99.0. Since yesterday morning, an estimated 6.5 miles of river rewet (to RM 92.5) and subsequently redried back to RM 99.0. Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.
	27-Jul-2011	27.10	1.68	0	River is reduced to isolated pools over a 27.1-mile segment extending south from RM 101.0. Of this drying, 1.68 miles represents new drying. Aside from this segment, the flow in the main river channel is continuous in the San Acacia Reach.
	28-Jul-2011	0.00	0	27.1	Since yesterday morning, an estimated 27.1 miles of river have rewet downstream from RM 101.0. Flow in the main river channel became continuous by 21:30 hours in the San Acacia Reach.
	29-Jul-2011	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach.
	30-Jul-2011	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach. During the course of the evening, the Rio Salado had water flowing close to 2 feet deep according to the water mark left behind (estimated approximately 100 cfs)

Reach	Date	Total River Miles Dry	Miles of "New" Drying	River Miles Rewet	Comments
San Acacia					
	31-Jul-2011	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach. Last night, a fair amount of rain fell throughout the reach. All arroyos located on the east side of the main river channel were active this morning along with Brown Arroyo on the west side of the channel.
	01-Aug-2011	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach. Heavy localized rain has caused many arroyos on the east side to run.
	02-Aug-2011	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach. Localized rain has caused high runoff downstream of Hwy 346. Runoff was especially high in Abo.
	03-Aug-2011	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach.
	04-Aug-2011	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach.
	05-Aug-2011	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach.
	06-Aug-2011	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach.
	07-Aug-2011	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach.
	08-Aug-2011	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach.
	09-Aug-2011	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach. Considering the low flow conditions at the San Acacia gauge this morning, river drying is anticipated over the next 24 hours over portions of the river downstream of Neil Cupp.
	10-Aug-2011	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach.
	11-Aug-2011	18.70	0	0	At 7:17, river is reduced to isolated pools over an 18.7-mile segment extending south from a point 2.6 miles upstream of Neil Cupp. This entire river segment had previously dried this year. Elsewhere, flow in the main river channel is continuous in the San Acacia Reach.
	12-Aug-2011	25.10	0	0	At 7:15, river is reduced to isolated pools over a 25.1-mile segment extending south from a point 0.2 mile downstream of Otero Street. This river segment had previously dried this year. Elsewhere, flow in the main river channel is continuous in the San Acacia Reach.
	13-Aug-2011	25.10	0	0	No change since yesterday. River is reduced to isolated pools over a 25.1-mile segment extending south from RM 99. Elsewhere, flow in the main river channel is continuous in the San Acacia Reach.
	14-Aug-2011	25.10	0	0	No change since yesterday. River is reduced to isolated pools over a 25.1-mile segment extending south from RM 99. Elsewhere, flow in the main river channel is continuous in the San Acacia Reach.
	15-Aug-2011	26.70	0	0	River is reduced to isolated pools over a 26.7-mile segment extending south from RM 100.6. Elsewhere, flow in the main river channel is continuous in the San Acacia Reach.
	16-Aug-2011	27.29	0.19	0	River is reduced to isolated pools over a 27.29-mile segment extending south from RM 101.19. Of this drying, 0.19 mile represents new drying. Elsewhere, flow in the main river channel is continuous in the San Acacia Reach.

Reach	Date	Total River Miles Dry	Miles of "New" Drying	River Miles Rewet	Comments
San Acacia					
	17-Aug-2011	27.61	0.32	0	River is reduced to isolated pools over a 27.61-mile segment extending south from RM 101.51. Of this drying, 0.32 mile represents new drying. Elsewhere, flow in the main river channel is continuous in the San Acacia Reach.
	18-Aug-2011	27.47	0	0.14	River is reduced to isolated pools over a 27.47-mile segment extending south from RM 101.37. Some 0.14 mile of river has rewet since yesterday. Elsewhere, flow in the main river channel is continuous in the San Acacia Reach.
	19-Aug-2011	10.30	0	17.17	At 8:41, river is reduced to isolated pools over a 10.3-mile segment extending south from RM 87.5. At 8:41, some 17.17 miles of river have rewet since yesterday. Elsewhere, flow in the main river channel is continuous in the San Acacia Reach.
	20-Aug-2011	0.00	0	10.3	Flow in the main river channel is continuous in the San Acacia Reach. Some 10.3 miles of river rewet since yesterday.
	21-Aug-2011	0.00	0	0	Flow in the main river channel is continuous in the San Acacia Reach.
	22-Aug-2011	0.00	0	0	Flow in the main channel is continuous in the San Acacia Reach
	23-Aug-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow. No site-specific observations were made
	24-Aug-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow. No site-specific observations were made
	25-Aug-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow. No site-specific observations were made
	26-Aug-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow. No site-specific observations were made
	27-Aug-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow. No site-specific observations were made
	28-Aug-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow. No site-specific observations were made
	29-Aug-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow. No site-specific observations were made
	30-Aug-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	31-Aug-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	01-Sep-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	02-Sep-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.

Reach	Date	Total River Miles Dry	Miles of "New" Drying	River Miles Rewet	Comments
San Acacia					
	03-Sep-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	04-Sep-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	05-Sep-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	06-Sep-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	07-Sep-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	08-Sep-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	09-Sep-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	10-Sep-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	11-Sep-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	12-Sep-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	13-Sep-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations. Given prevailing trends in flow, some river drying is expected in the San Acacia Reach in the near future.
	14-Sep-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	15-Sep-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	16-Sep-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	17-Sep-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	18-Sep-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	19-Sep-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.

Reach	Date	Total River Miles Dry	Miles of "New" Drying	River Miles Rewet	Comments
San Acacia					
	20-Sep-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	21-Sep-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	22-Sep-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	23-Sep-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	24-Sep-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations. Nonetheless, expect the river to reduce to isolating pools tomorrow near the northern segment of Bosque del Apache Headquarters.
	25-Sep-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations. The pumps at South Boundary of Bosque del Apache Refuge are running.
	26-Sep-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations. Four pumps running at South Boundary of Bosque del Apache Refuge.
	27-Sep-2011	2.00	0	0	Flow in the main river channel is intermittent over a two-mile segment between river miles 79 and 77. Elsewhere, flow in the main river channel is continuous in the San Acacia Reach. Four pumps running at South Boundary of Bosque del Apache Refuge.
	28-Sep-2011	10.40	0	0	River is reduced to isolated pools over a 10.4-mile segment extending south from a point 900 feet upstream of the North Boundary of Bosque del Apache Refuge (RM 84.3). Since yesterday, 8.4 miles of river has dried. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the San Acacia Reach.
	29-Sep-2011	20.00	0	0	River is reduced to isolated pools over a 20.0-mile segment extending south from Brown Arroyo (RM 93.9). Since yesterday, 9.6 miles of river have dried. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the San Acacia Reach.
	30-Sep-2011	20.00	0	0	River is reduced to isolated pools over a 20.0-mile segment extending south from Brown Arroyo (RM 93.9). This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the San Acacia Reach.
	01-Oct-2011	20.70	0	0	River is reduced to isolated pools over a 20.7-mile segment extending south from a point 0.71 mile upstream of Brown Arroyo (RM 94.6). This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the San Acacia Reach. Note: USFWS salvage crew continues to seine isolated pools on the Bosque del Apache Refuge. There are 4 pumps running at the South Boundary-BDA.

Reach	Date	Total River Miles Dry	Miles of "New" Drying	River Miles Rewet	Comments
San Acacia					
	02-Oct-2011	21.00	0	0	River is reduced to isolated pools over a 21.0-mile segment extending south from a point 1.0 mile upstream of Brown Arroyo (RM 94.9). This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the San Acacia Reach.
	03-Oct-2011	20.70	0	0.3	River is reduced to isolated pools over a 20.7-mile segment extending south from a point 0.71 mile upstream of Brown Arroyo (RM 94.6). This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the San Acacia Reach.
	04-Oct-2011	20.32	0	0.38	River is reduced to isolated pools over a 20.32-mile segment extending south from a point 0.35 mile upstream of Brown Arroyo (RM 94.22). This river segment has previously dried. A total of 0.38 mile of river rewet at top of drying since yesterday. The low flow posted on the internet for San Acacia floodway at 10:30 am (13 cfs), if it continues, will likely result in additional river drying upstream of Brown Arroyo in the near future. Elsewhere, flow in the main river channel is continuous in the San Acacia Reach.
	05-Oct-2011	21.10	0	0	River is reduced to isolated pools over a 21.1-mile segment extending south from a point 1.0 mile upstream of Brown Arroyo (RM 95.0). This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the San Acacia Reach. Late yesterday (sometime around 18:30, 04-Oct-2011), floodwater input to the Rio Grande from San Pedro Arroyo (estimated to be 500–1,000 cfs that lasted several hours) apparently rewet the Rio Grande downstream of the river's confluence with the arroyo (at U.S. 380). Nonetheless, that rewetting event was short-lived and the affected segment of the Rio Grande quickly reverted to its pre-flood condition. Likewise, an unquantified volume of floodwater entered the Rio Grande from San Lorenzo Arroyo (roughly 2.0 miles downstream of San Acacia dam) yesterday afternoon.
	06-Oct-2011	0.00	0	21.1	Flow in the main river channel is continuous throughout the San Acacia Reach. A total of 21.1 miles of river rewet since yesterday.
	07-Oct-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	08-Oct-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	09-Oct-2011	0.00	0	0	Flow in the main river channel is continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	10-Oct-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	11-Oct-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	12-Oct-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	13-Oct-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.

Reach	Date	Total River Miles Dry	Miles of "New" Drying	River Miles Rewet	Comments
San Acacia					
	14-Oct-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	15-Oct-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	16-Oct-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	17-Oct-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	18-Oct-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	19-Oct-2011	0.00	0	0	Flow in the main river channel is believed to be continuous throughout the San Acacia Reach based on USGS internet postings of flow and field observations.
	20-Oct-2011	0.00	0	0	Flow in the main river channel is continuous in the San Acacia Reach.
	21-Oct-2011	0.00	0	0	Flow in the main river channel is continuous in the San Acacia Reach. No site-specific information available.
	22-Oct-2011	13.40	0	0	River is reduced to isolated pools over a 13.4-mile segment extending south from a point 0.2 mile upstream of US 380 Bridge (RM 87.3). This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the San Acacia Reach. Note: 4 pumps are operating at South Boundary of Bosque del Apache Refuge.
	23-Oct-2011	11.20	0	2.2	River is reduced to isolated pools over an 11.2-mile segment extending south from a point 2.0 miles downstream of US 380 Bridge (RM 85.1). This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the San Acacia Reach.
	24-Oct-2011	13.50	0	0	River is reduced to discontinuous flow over a 13.5-mile segment extending south from USGS gauge near San Antonio point 0.3 mile upstream of U.S. 380 Bridge (RM 87.4). This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the San Acacia Reach.
	25-Oct-2011	13.20	0	0.3	River is reduced to discontinuous flow over a 13.2-mile segment extending south from 380 Bridge (RM 87.1) to South Boundary. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the San Acacia Reach.
	26-Oct-2011	13.20	0	0	River is reduced to discontinuous flow over a 13.2-mile segment extending south from 380 Bridge (RM 87.1) to South Boundary. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the San Acacia Reach.
	27-Oct-2011	13.20	0	0	River is reduced to discontinuous flow over a 13.2-mile segment extending south from 380 Bridge (RM 87.1) to South Boundary. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the San Acacia Reach.

Reach	Date	Total River Miles Dry	Miles of "New" Drying	River Miles Rewet	Comments
San Acacia					
	28-Oct-2011	10.30	0	2.9	River is reduced to discontinuous flow over a 10.3-mile segment extending south from North Boundary Bosque del Apache Refuge. This river segment has previously dried. Elsewhere, flow in the main river channel is continuous in the San Acacia Reach.
	29-Oct-2011	10.20	0	0.1	River is reduced to discontinuous flow over a 10.2-mile segment extending south from a point approx. 600 feet downstream of North Boundary Bosque del Apache to South Boundary. This river segment has previously dried. Some 0.1 mile of river rewet since yesterday. Elsewhere, flow in the main river channel is continuous in the San Acacia
	30-Oct-2011	5.80	0	4.4	River is reduced to discontinuous flow over a 5.8-mile segment extending south from a point opposite Bosque del Apache Refuge Headquarters (RM 79.7). This river segment has previously dried. Some 4.4 miles of river rewet since yesterday. Elsewhere, flow in the main river channel is continuous in the San Acacia Reach.
	31-Oct-2011	5.25	0	0.55	River is dry or reduced to isolated pools over a 5.25-mile segment extending south from a point opposite Bosque del Apache Refuge Headquarters (RM 78.75). This river segment has previously dried. Some 0.55 mile of river rewet since yesterday. Elsewhere, flow in the main river channel is continuous in the San Acacia Reach.

APPENDIX C
STRAIGHT-LINE APPROXIMATION OF RIVER EXPANSION/CONTRACTION OVER SUCCESSIVE DAYS SUCCESSIVE DAYS - 2011

Straight-line Approximation* of River Expansion/Contraction Over Successive Days

2011

Reach	Month	Date Interval	Elapsed Time (hrs)	Observed River Rewetting or Recession (River recession is indicated by negative numbers) (River rewetting is indicated by positive numbers) Meters	Feet	Miles	Observed River Rewetting or Contraction Standardized to 24 Hours (River recession is indicated by negative numbers) (River rewetting is indicated by positive numbers) Meters	Feet	Miles
Isleta									
	July								
		7/9/2011 - 7/10/2011	20.28	69	226.38	0.04	81.64	267.86	0.05
		7/10/2011 - 7/11/2011	23.50	-1160	-3805.82	-0.72	-1184.68	-3886.80	-0.74
		7/11/2011 - 7/12/2011	24.33	278	912.08	0.17	274.19	899.59	0.17
		7/12/2011 - 7/13/2011	24.40	31	101.71	0.02	30.49	100.04	0.02
		7/15/2011 - 7/16/2011	23.92	-2332	-7651.01	-1.45	-2340.13	-7677.67	-1.45
		7/16/2011 - 7/17/2011	23.52	-456	-1496.08	-0.28	-465.37	-1526.83	-0.29
		7/17/2011 - 7/18/2011	23.98	-37	-121.39	-0.02	-37.03	-121.48	-0.02
		7/18/2011 - 7/19/2011	28.83	-1767	-5797.31	-1.10	-1470.80	-4825.51	-0.91
		7/19/2011 - 7/20/2011	18.75	-1004	-3294.00	-0.62	-1285.12	-4216.32	-0.80
		7/20/2011 - 7/21/2011	24.08	-127	-416.67	-0.08	-126.56	-415.23	-0.08
		7/21/2011 - 7/22/2011	24.67	1217	3992.83	0.76	1184.11	3884.92	0.74
		7/22/2011 - 7/23/2011	23.87	-320	-1049.88	-0.20	-321.79	-1055.75	-0.20
		7/23/2011 - 7/24/2011	24.00	1334	4376.69	0.83	1334.00	4376.69	0.83
		7/24/2011 - 7/25/2011	22.13	3188	10459.45	1.98	3456.87	11341.57	2.15
		7/30/2011 - 7/31/2011	23.83	455	1492.80	0.28	458.18	1503.24	0.28
		7/31/2011 - 8/1/2011	24.00	775	2542.68	0.48	775.00	2542.68	0.48
		Averages for July (16 records):		9.00	29.53	0.01	22.69	74.44	0.01
		Standard Deviations:			4282.38	0.81	1342.85	4405.73	0.83

* Note: Because the Middle Rio Grande flows generally from north to south, upstream linear dynamics of flow intermittency can be approximated by subtracting northing values that mark the maximum observed upstream point of river intermittence. This yields a straight-line approximation of flow dynamics in the river at the upstream edge of wetted habitat when flow in the river is interrupted. More authentic estimates of river recession can be made by measuring along the thalweg the length of river in which flow has been interrupted.

Reach	Month	Date Interval	Elapsed Time (hrs)	Observed River Rewetting or Recession (River recession is indicated by negative numbers) (River rewetting is indicated by positive numbers) Meters	Feet	Miles	Observed River Rewetting or Contraction Standardized to 24 Hours (River recession is indicated by negative numbers) (River rewetting is indicated by positive numbers) Meters	Feet	Miles
	August								
		8/8/2011 - 8/9/2011	25.00	-1447	-4747.43	-0.90	-1389.12	-4557.54	-0.86
		8/9/2011 - 8/10/2011	23.25	-1235	-4051.89	-0.77	-1274.84	-4182.59	-0.79
		8/10/2011 - 8/11/2011	23.68	-2351	-7713.35	-1.46	-2382.43	-7816.48	-1.48
		8/11/2011 - 8/12/2011	24.60	-1995	-6545.36	-1.24	-1946.34	-6385.71	-1.21
		8/12/2011 - 8/13/2011	22.92	-2325	-7628.05	-1.44	-2434.91	-7988.64	-1.51
		8/13/2011 - 8/14/2011	24.98	-557	-1827.45	-0.35	-535.08	-1755.52	-0.33
		8/14/2011 - 8/15/2011	22.90	3196	10485.69	1.99	3349.52	10989.37	2.08
		8/15/2011 - 8/16/2011	25.67	4557	14950.97	2.83	4261.09	13980.13	2.65
		8/16/2011 - 8/17/2011	22.17	-974	-3195.58	-0.61	-1054.56	-3459.87	-0.66
		8/17/2011 - 8/18/2011	25.67	880	2887.17	0.55	822.86	2699.70	0.51
		8/18/2011 - 8/19/2011	23.75	5751	18868.34	3.57	5811.54	19066.95	3.61
		8/19/2011 - 8/20/2011	24.00	176	577.43	0.11	176.00	577.43	0.11
		8/29/2011 - 8/30/2011	23.50	99	324.81	0.06	101.11	331.72	0.06
		8/30/2011 - 8/31/2011	24.17	-908	-2979.04	-0.56	-901.74	-2958.49	-0.56
		8/31/2011 - 9/1/2011	25.08	-528	-1732.30	-0.33	-505.20	-1657.49	-0.31
		Averages for August (15 records):		155.93	511.60	0.10	139.86	458.86	0.09
		Standard Deviations:			8103.14	1.53	2463.88	8083.68	1.53

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Reach	Month	Date Interval	Elapsed Time (hrs)	Observed River Rewetting or Recession (River recession is indicated by negative numbers) (River rewetting is indicated by positive numbers) Meters	Feet	Miles	Observed River Rewetting or Contraction Standardized to 24 Hours (River recession is indicated by negative numbers) (River rewetting is indicated by positive numbers) Meters	Feet	Miles
	September								
		9/1/2011 - 9/2/2011	24.00	0	0.00	0.00	0.00	0.00	0.00
		9/2/2011 - 9/3/2011	24.00	-440	-1443.59	-0.27	-440.00	-1443.59	-0.27
		9/3/2011 - 9/4/2011	24.00	-314	-1030.20	-0.20	-314.00	-1030.20	-0.20
		9/4/2011 - 9/5/2011	27.27	0	0.00	0.00	0.00	0.00	0.00
		9/5/2011 - 9/6/2011	21.48	0	0.00	0.00	0.00	0.00	0.00
		9/6/2011 - 9/7/2011	27.50	2190	7185.13	1.36	1911.27	6270.66	1.19
		9/7/2011 - 9/8/2011	19.67	-234	-767.73	-0.15	-285.56	-936.89	-0.18
		9/8/2011 - 9/9/2011	22.67	65	213.26	0.04	68.82	225.80	0.04
		9/9/2011 - 9/10/2011	26.00	217	711.95	0.13	200.31	657.19	0.12
		9/10/2011 - 9/11/2011	25.92	231	757.88	0.14	213.92	701.83	0.13
		9/11/2011 - 9/12/2011	19.25	65	213.26	0.04	81.04	265.88	0.05
		9/12/2011 - 9/13/2011	27.73	221	725.07	0.14	191.25	627.47	0.12
		9/13/2011 - 9/14/2011	20.52	-221	-725.07	-0.14	-258.52	-848.18	-0.16
		9/14/2011 - 9/15/2011	27.00	654	2145.70	0.41	581.33	1907.28	0.36
		9/15/2011 - 9/16/2011	23.00	3913	12838.08	2.43	4083.13	13396.26	2.54
		9/16/2011 - 9/17/2011	22.50	-3651	-11978.49	-2.27	-3894.40	-12777.06	-2.42
		9/17/2011 - 9/18/2011	23.48	3049	10003.40	1.89	3116.08	10223.49	1.94
		9/18/2011 - 9/19/2011	23.73	1691	5547.97	1.05	1710.00	5610.30	1.06
		9/19/2011 - 9/20/2011	24.03	-4307	-14130.75	-2.68	-4301.03	-14111.15	-2.67
		9/20/2011 - 9/21/2011	25.50	289	948.17	0.18	272.00	892.40	0.17
		9/21/2011 - 9/22/2011	25.00	187	613.52	0.12	179.52	588.98	0.11
		9/22/2011 - 9/23/2011	23.50	-337	-1105.66	-0.21	-344.17	-1129.18	-0.21
		9/23/2011 - 9/24/2011	25.25	-747	-2450.82	-0.46	-710.02	-2329.49	-0.44
		9/24/2011 - 9/25/2011	23.08	-520	-1706.06	-0.32	-540.65	-1773.81	-0.34
		9/25/2011 - 9/26/2011	23.17	-286	-938.33	-0.18	-296.29	-972.08	-0.18
		9/26/2011 - 9/27/2011	23.83	-175	-574.15	-0.11	-176.22	-578.17	-0.11
		9/27/2011 - 9/28/2011	23.67	-107	-351.05	-0.07	-108.51	-356.00	-0.07
		9/28/2011 - 9/29/2011	28.50	282	925.21	0.18	237.47	779.12	0.15

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		9/29/2011 - 9/30/2011	20.00	-48	-157.48	-0.03	-57.60	-188.98	-0.04
		9/30/2011 - 10/1/2011	25.00	48	157.48	0.03	46.08	151.18	0.03
		Averages for September (30 records):		57.17	187.56	0.04	38.84	127.44	0.02
		Standard Deviations:			4960.58	0.94	1539.20	5049.92	0.96
	October								
		10/1/2011 - 10/2/2011	22.75	0	0.00	0.00	0.00	0.00	0.00
		10/2/2011 - 10/3/2011	24.08	35	114.83	0.02	34.88	114.43	0.02
		10/3/2011 - 10/4/2011	22.42	242	793.97	0.15	259.09	850.05	0.16
		10/4/2011 - 10/5/2011	24.25	162	531.50	0.10	160.33	526.02	0.10
		10/5/2011 - 10/6/2011	28.25	10583	34721.55	6.58	8990.87	29497.96	5.59
		10/6/2011 - 10/7/2011	21.95	476	1561.70	0.30	520.46	1707.55	0.32
		10/7/2011 - 10/8/2011	25.13	2120	6955.47	1.32	2024.40	6641.82	1.26
		10/18/2011 - 10/19/2011	23.35	-10601	-34780.61	-6.59	-10896.10	-35748.81	-6.77
		10/19/2011 - 10/20/2011	25.40	1396	4580.11	0.87	1319.06	4327.66	0.82
		10/20/2011 - 10/21/2011	24.00	0	0.00	0.00	0.00	0.00	0.00
		10/21/2011 - 10/22/2011	25.50	-2162	-7093.26	-1.34	-2034.82	-6676.01	-1.26
		10/22/2011 - 10/23/2011	24.25	3141	10305.24	1.95	3108.62	10199.00	1.93
		10/23/2011 - 10/24/2011	20.00	614	2014.46	0.38	736.80	2417.35	0.46
		10/24/2011 - 10/25/2011	23.75	-3429	-11250.14	-2.13	-3465.09	-11368.56	-2.15
		10/25/2011 - 10/26/2011	23.25	-1390	-4560.42	-0.86	-1434.84	-4707.53	-0.89
		10/26/2011 - 10/27/2011	24.50	-301	-987.54	-0.19	-294.86	-967.39	-0.18
		10/27/2011 - 10/28/2011	24.30	3831	12569.05	2.38	3783.70	12413.88	2.35
		10/28/2011 - 10/29/2011	24.95	8224	26981.96	5.11	7910.86	25954.59	4.92
		Averages for October (18 records):		718.94	2358.77	0.45	595.74	1954.56	0.37
		Standard Deviations:			14517.26	2.75	4234.13	13891.66	2.63
Averages over all months for the Isleta Reach (79 records):				216.95	711.78	0.13	181.64	595.94	0.11
		Standard Deviations:			8439.70	1.60	2505.49	8220.22	1.56

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San Acacia									
	April								
		4/21/2011 - 4/22/2011	17.77	-11858	-38904.68	-7.37	-16018.31	-52554.16	-9.95
		4/22/2011 - 4/23/2011	14.25	2735	8973.21	1.70	4606.32	15112.77	2.86
		4/23/2011 - 4/24/2011	35.50	7038	23090.83	4.37	4758.08	15610.70	2.96
		4/24/2011 - 4/25/2011	12.50	1331	4366.85	0.83	2555.52	8384.35	1.59
		Averages for April (4 records):		-188.50	-618.45	-0.12	-1024.60	-3361.58	-0.64
		Standard Deviations:			26738.35	5.06	10046.15	32960.21	6.24
	June								
		6/24/2011 - 6/25/2011	9.52	-8191	-26873.69	-5.09	-20656.81	-67772.53	-12.84
		6/25/2011 - 6/26/2011	26.48	-6142	-20151.16	-3.82	-5566.07	-18261.60	-3.46
		6/26/2011 - 6/27/2011	18.02	-1094	-3589.28	-0.68	-1457.32	-4781.28	-0.91
		6/27/2011 - 6/28/2011	24.50	-2507	-8225.17	-1.56	-2455.84	-8057.31	-1.53
		6/28/2011 - 6/29/2011	22.50	-4057	-13310.53	-2.52	-4327.47	-14197.90	-2.69
		6/29/2011 - 6/30/2011	24.00	-3888	-12756.06	-2.42	-3888.00	-12756.06	-2.42
		6/30/2011 - 7/1/2011	23.00	-3548	-11640.56	-2.20	-3702.26	-12146.67	-2.30
		Averages for June (7 records):		-4203.86	-13792.35	-2.61	-6007.68	-19710.48	-3.73
		Standard Deviations:			7665.81	1.45	6592.23	21628.30	4.10

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	July								
		7/1/2011 - 7/2/2011	27.50	-2171	-7122.79	-1.35	-1894.69	-6216.25	-1.18
		7/2/2011 - 7/3/2011	25.50	-2144	-7034.21	-1.33	-2017.88	-6620.43	-1.25
		7/3/2011 - 7/4/2011	24.00	-137	-449.48	-0.09	-137.00	-449.48	-0.09
		7/4/2011 - 7/5/2011	23.33	-1133	-3717.24	-0.70	-1165.37	-3823.44	-0.72
		7/5/2011 - 7/6/2011	19.67	-1092	-3582.72	-0.68	-1332.61	-4372.13	-0.83
		7/6/2011 - 7/7/2011	26.00	-319	-1046.60	-0.20	-294.46	-966.09	-0.18
		7/7/2011 - 7/8/2011	25.30	-245	-803.82	-0.15	-232.41	-762.51	-0.14
		7/8/2011 - 7/9/2011	24.48	-303	-994.11	-0.19	-297.02	-974.48	-0.18
		7/9/2011 - 7/10/2011	24.00	-191	-626.65	-0.12	-191.00	-626.65	-0.12
		7/10/2011 - 7/11/2011	23.22	-430	-1410.78	-0.27	-444.51	-1458.38	-0.28
		7/11/2011 - 7/12/2011	24.00	0	0.00	0.00	0.00	0.00	0.00
		7/12/2011 - 7/13/2011	24.62	0	0.00	0.00	0.00	0.00	0.00
		7/13/2011 - 7/14/2011	24.38	-52	-170.61	-0.03	-51.18	-167.92	-0.03
		7/14/2011 - 7/15/2011	26.50	0	0.00	0.00	0.00	0.00	0.00
		7/15/2011 - 7/16/2011	21.00	0	0.00	0.00	0.00	0.00	0.00
		7/16/2011 - 7/17/2011	24.00	0	0.00	0.00	0.00	0.00	0.00
		7/17/2011 - 7/18/2011	24.22	0	0.00	0.00	0.00	0.00	0.00
		7/18/2011 - 7/19/2011	24.00	0	0.00	0.00	0.00	0.00	0.00
		7/19/2011 - 7/20/2011	24.00	0	0.00	0.00	0.00	0.00	0.00
		7/20/2011 - 7/21/2011	23.78	-329	-1079.41	-0.20	-332.00	-1089.24	-0.21
		7/21/2011 - 7/22/2011	24.00	0	0.00	0.00	0.00	0.00	0.00
		7/22/2011 - 7/23/2011	24.00	0	0.00	0.00	0.00	0.00	0.00
		7/23/2011 - 7/24/2011	26.00	0	0.00	0.00	0.00	0.00	0.00
		7/24/2011 - 7/25/2011	22.00	381	1250.02	0.24	415.64	1363.65	0.26
		7/25/2011 - 7/26/2011	23.80	0	0.00	0.00	0.00	0.00	0.00
		7/26/2011 - 7/27/2011	24.70	-2774	-9101.16	-1.72	-2695.38	-8843.23	-1.67

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		Averages for July (26 records):		-420.73	-1380.37	-0.26	-410.38	-1346.41	-0.26
		Standard Deviations:			2594.07	0.49	760.25	2494.28	0.47
	August								
		8/10/2011 - 8/11/2011	7.18	-29427	-96546.46	-18.29	-98317.59	-322568.22	-61.09
		8/11/2011 - 8/12/2011	24.08	-8165	-26788.39	-5.07	-8136.75	-26695.69	-5.06
		8/12/2011 - 8/13/2011	25.75	0	0.00	0.00	0.00	0.00	0.00
		8/13/2011 - 8/14/2011	23.98	0	0.00	0.00	0.00	0.00	0.00
		8/14/2011 - 8/15/2011	22.93	-2117	-6945.62	-1.32	-2215.47	-7268.68	-1.38
		8/15/2011 - 8/16/2011	24.08	-615	-2017.74	-0.38	-612.87	-2010.76	-0.38
		8/16/2011 - 8/17/2011	24.33	-273	-895.68	-0.17	-269.26	-883.41	-0.17
		8/17/2011 - 8/18/2011	24.42	216	708.67	0.13	212.31	696.58	0.13
		8/18/2011 - 8/19/2011	23.93	23830	78183.37	14.81	23896.38	78401.15	14.85
		Averages for August (9 records):		-1839.00	-6033.54	-1.14	-9493.69	-31147.67	-5.90
		Standard Deviations:			44549.78	8.44	34456.17	113046.56	21.41
	September								
		9/27/2011 - 9/28/2011	21.45	-8924	-29278.57	-5.55	-9984.90	-32759.24	-6.20
		9/28/2011 - 9/29/2011	25.00	-14426	-47329.97	-8.96	-13848.96	-45436.78	-8.61
		9/29/2011 - 9/30/2011	23.58	0	0.00	0.00	0.00	0.00	0.00
		9/30/2011 - 10/1/2011	26.17	-1058	-3471.17	-0.66	-970.39	-3183.75	-0.60
		Averages for September (4 records):		-6102.00	-20019.93	-3.79	-6201.06	-20344.94	-3.85
		Standard Deviations:			22406.99	4.24	6797.57	22302.00	4.22

* Note: Because the Middle Rio Grande flows generally from north to south, upstream linear dynamics of flow intermittency can be approximated by subtracting northing values that mark the maximum observed upstream point of river intermittence. This yields a straight-line approximation of flow dynamics in the river at the upstream edge of wetted habitat when flow in the river is interrupted. More authentic estimates of river recession can be made by measuring along the thalweg the length of river in which flow has been interrupted.

Reach	Month	Date Interval	Elapsed Time (hrs)	Observed River Rewetting or Recession (River recession is indicated by negative numbers) (River rewetting is indicated by positive numbers) Meters	Feet	Miles	Observed River Rewetting or Contraction Standardized to 24 Hours (River recession is indicated by negative numbers) (River rewetting is indicated by positive numbers) Meters	Feet	Miles
	October								
		10/1/2011 - 10/2/2011	24.50	-293	-961.30	-0.18	-287.02	-941.68	-0.18
		10/2/2011 - 10/3/2011	20.87	293	961.30	0.18	337.00	1105.65	0.21
		10/3/2011 - 10/4/2011	21.50	503	1650.28	0.31	561.49	1842.18	0.35
		10/4/2011 - 10/5/2011	27.72	-928	-3044.66	-0.58	-803.56	-2636.38	-0.50
		10/21/2011 - 10/22/2011	12.52	-22621	-74216.79	-14.06	-43374.49	-142306.49	-26.95
		10/22/2011 - 10/23/2011	21.85	4687	15377.48	2.91	5148.19	16890.60	3.20
		10/23/2011 - 10/24/2011	18.15	-4488	-14724.59	-2.79	-5934.55	-19470.53	-3.69
		10/24/2011 - 10/25/2011	27.50	646	2119.45	0.40	563.78	1849.70	0.35
		10/25/2011 - 10/26/2011	23.00	0	0.00	0.00	0.00	0.00	0.00
		10/26/2011 - 10/27/2011	24.00	0	0.00	0.00	0.00	0.00	0.00
		10/27/2011 - 10/28/2011	25.50	5225	17142.60	3.25	4917.65	16134.21	3.06
		10/28/2011 - 10/29/2011	23.75	393	1289.39	0.24	397.14	1302.96	0.25
		10/29/2011 - 10/30/2011	34.25	7637	25056.08	4.75	5351.47	17557.55	3.33
		10/30/2011 - 10/31/2011	12.83	664	2178.50	0.41	1241.77	4074.09	0.77
		Averages for October (14 records):		-591.57	-1940.87	-0.37	-2277.22	-7471.30	-1.42
		Standard Deviations:			22963.34	4.35	12173.31	39939.18	7.56
Averages over all months for the San Acacia Reach (64 records):				-1411.89	-4632.24	-0.88	-3108.60	-10198.96	-1.93
		Standard Deviations:			21417.01	4.06	14265.75	46804.20	8.86

* Note: Because the Middle Rio Grande flows generally from north to south, upstream linear dynamics of flow intermittency can be approximated by subtracting northing values that mark the maximum observed upstream point of river intermittence. This yields a straight-line approximation of flow dynamics in the river at the upstream edge of wetted habitat when flow in the river is interrupted. More authentic estimates of river recession can be made by measuring along the thalweg the length of river in which flow has been interrupted.

APPENDIX D
RECORD OF IRRIGATION OUTFALL FLOW MEASURES - 2011

Record of Middle Rio Grande Irrigation Wasteway Outfall Measures of Flow - 2011

Reach	Month and Week	Wasteway Outfall	Date	Time Interval	Internet-Flow	Measured Flow	Comment
Isleta	**June Week: 23**						
		Los Chavez Wasteway					
			03-Jun-2011	3:00:00 PM - 3:01:00 PM	---	---	No flow.
		Lower Peralta Riverside Drain (LP1DR)					
			03-Jun-2011	1:32:00 PM - 2:48:00 PM	---	10.8	None.
		Belen Riverside Drain					
			04-Jun-2011	5:00:00 PM - 5:05:00 PM	---	---	No flow.
		New Belen Wasteway					
			04-Jun-2011	4:53:00 PM - 4:55:00 PM	---	---	No flow.
		Lower Peralta Riverside Drain (LP2DR)					
			03-Jun-2011	3:48:00 PM - 3:50:00 PM	---	---	No flow.
		Feeder 3 Wasteway					
			04-Jun-2011	4:42:00 PM - 4:43:00 PM	---	---	No flow.
		Storey Wasteway					
			03-Jun-2011	4:00:00 PM - 4:05:00 PM	---	---	No flow.
		San Francisco Riverside Drain					
			04-Jun-2011	4:20:00 PM - 4:25:00 PM	---	---	No flow.
		Lower San Juan Riverside Drain					
			04-Jun-2011	3:27:00 PM - 4:01:00 PM	---	67.55	None.

Reach	Month and Week	Wasteway Outfall	Date	Time Interval	Internet-Flow	Measured Flow	Comment
Isleta	**June Week: 24**						
		Los Chavez Wasteway					
			10-Jun-2011	9:45:00 AM - 9:50:00 AM	---	---	No flow.
		Peralta Main Canal Wasteway					
			08-Jun-2011	3:45:00 PM - 3:50:00 PM	---	---	No flow.
		Lower Peralta Riverside Drain (LP1DR)					
			08-Jun-2011	4:48:00 PM - 5:24:00 PM	---	7.21	None.
		Belen Riverside Drain					
			10-Jun-2011	2:00:00 PM - 2:01:00 PM	---	---	No flow.
		New Belen Wasteway					
			10-Jun-2011	2:11:00 PM - 2:15:00 PM	---	---	No flow.
		Lower Peralta Riverside Drain (LP2DR)					
			10-Jun-2011	4:30:00 PM - 4:34:00 PM	---	---	No flow.
		Feeder 3 Wasteway					
			10-Jun-2011	2:30:00 PM - 2:35:00 PM	---	---	No flow.
		Storey Wasteway					
			10-Jun-2011	4:00:00 PM - 4:25:00 PM	---	0.32	None.
		Sabinal Drain Outfall					
			10-Jun-2011	3:10:00 PM - 3:35:00 PM	---	0.31	
		San Francisco Riverside Drain					
			10-Jun-2011	10:34:00 AM - 11:03:00 AM	---	0.69	None.
		Lower San Juan Riverside Drain					
			10-Jun-2011	11:45:00 AM - 12:40:00 PM	---	106.4	None.

Reach	Month and Week	Wasteway Outfall	Date	Time Interval	Internet-Flow	Measured Flow	Comment
Isleta	**June Week: 25**						
		Los Chavez Wasteway					
			15-Jun-2011	3:00:00 PM - 3:05:00 PM	---	---	No flow.
		Peralta Main Canal Wasteway					
			15-Jun-2011	3:53:00 PM - 4:42:00 PM	20	6.68	None.
		Lower Peralta Riverside Drain (LP1DR)					
			15-Jun-2011	5:20:00 PM - 6:20:00 PM	6	7.34	None.
		Belen Riverside Drain					
			17-Jun-2011	6:44:00 PM - 6:45:00 PM	---	---	No flow.
		New Belen Wasteway					
			15-Jun-2011	5:00:00 PM - 5:05:00 PM	---	---	No flow.
		Lower Peralta Riverside Drain (LP2DR)					
			17-Jun-2011	6:00:00 PM - 6:05:00 PM	---	---	No flow.
		Feeder 3 Wasteway					
			17-Jun-2011	6:21:00 PM - 6:25:00 PM	0	---	No flow.
		Storey Wasteway					
			17-Jun-2011	5:30:00 PM - 5:55:00 PM	0	0.38	None.
		Sabinal Drain Outfall					
			17-Jun-2011	5:10:00 PM - 5:15:00 PM	---	---	No flow.
		San Francisco Riverside Drain					
			17-Jun-2011	2:25:00 PM - 2:42:00 PM	2	0.2	None.
		Lower San Juan Riverside Drain					
			17-Jun-2011	3:42:00 PM - 4:42:00 PM	82	65.14	None.

Reach	Month and Week	Wasteway Outfall	Date	Time Interval	Internet-Flow	Measured Flow	Comment
Isleta	**June Week: 26**						
		Los Chavez Wasteway					
			20-Jun-2011	4:17:00 PM - 4:18:00 PM	---	---	No flow.
		Peralta Main Canal Wasteway					
			20-Jun-2011	12:00:00 PM - 12:01:00 PM	---	---	No flow.
		Lower Peralta Riverside Drain (LP1DR)					
			21-Jun-2011	1:39:00 PM - 1:40:00 PM	---	---	No flow.
		Belen Riverside Drain					
			22-Jun-2011	12:00:00 PM - 12:01:00 PM	---	---	No flow.
		New Belen Wasteway					
			22-Jun-2011	10:40:00 AM - 10:45:00 AM	---	---	No flow.
		Lower Peralta Riverside Drain (LP2DR)					
			20-Jun-2011	1:15:00 PM - 1:16:00 PM	---	---	No flow.
		Feeder 3 Wasteway					
			22-Jun-2011	10:11:00 AM - 10:12:00 AM	0	---	No flow.
		Storey Wasteway					
			21-Jun-2011	1:01:00 PM - 1:05:00 PM	---	---	No flow.
		Sabinal Drain Outfall					
			21-Jun-2011	10:00:00 AM - 10:35:00 AM	0	0.3	None.
		San Francisco Riverside Drain					
			20-Jun-2011	3:00:00 PM - 3:23:00 PM	2	0.97	None.
		Lower San Juan Riverside Drain					
			21-Jun-2011	11:30:00 AM - 12:47:00 PM	102	86.1	None.

Reach	Month and Week	Wasteway Outfall	Date	Time Interval	Internet-Flow	Measured Flow	Comment
Isleta	**June Week: 27**						
		Peralta Main Canal Wasteway					
			27-Jun-2011	2:30:00 PM - 2:40:00 PM	---	---	No flow.
		Lower Peralta Riverside Drain (LP1DR)					
			27-Jun-2011	4:23:00 PM - 5:07:00 PM	0	6.35	None.
		New Belen Wasteway					
			26-Jun-2011	2:15:00 PM - 2:25:00 PM	0	---	No flow.
		Lower Peralta Riverside Drain (LP2DR)					
			26-Jun-2011	1:40:00 PM - 1:50:00 PM	0	---	None.
		Feeder 3 Wasteway					
			26-Jun-2011	2:00:00 PM - 2:10:00 PM	0	---	No flow.
		Storey Wasteway					
			26-Jun-2011	1:26:00 PM - 1:16:00 PM	0	---	No flow.
		Lower San Juan Riverside Drain					
			27-Jun-2011	6:00:00 PM - 6:44:00 PM	59	58.4	None.

Reach	Month and Week	Wasteway Outfall	Date	Time Interval	Internet-Flow	Measured Flow	Comment
Isleta	**July Week: 27**						
		Los Chavez Wasteway					
			02-Jul-2011	10:00:00 AM - 10:10:00 AM	---	0	No flow.
		Belen Riverside Drain					
			02-Jul-2011	10:42:00 AM - 10:50:00 AM	0	0	None.
		Sabinal Drain Outfall					
			02-Jul-2011	11:31:00 AM - 11:37:00 AM	0	0	None.
		San Francisco Riverside Drain					
			02-Jul-2011	12:05:00 PM - 12:15:00 PM	2	0	None.

Reach	Month and Week	Wasteway Outfall	Date	Time Interval	Internet-Flow	Measured Flow	Comment
Isleta	**July Week: 28**						
		Los Chavez Wasteway					
			07-Jul-2011	7:45:00 AM - 7:55:00 AM	---	0	No flow.
		Peralta Main Canal Wasteway					
			03-Jul-2011	8:40:00 AM - 8:50:00 AM	1	0	None.
		Lower Peralta Riverside Drain (LP1DR)					
			07-Jul-2011	11:45:00 AM - 12:16:00 PM	0	5.7	None.
		Belen Riverside Drain					
			06-Jul-2011	1:34:00 PM - 1:35:00 PM	0	0	None.
		New Belen Wasteway					
			06-Jul-2011	1:47:00 PM - 1:53:00 PM	---	0	None.
		Lower Peralta Riverside Drain (LP2DR)					
			04-Jul-2011	12:00:00 PM - 12:05:00 PM	0	0	None.
		Feeder 3 Wasteway					
			06-Jul-2011	2:00:00 PM - 2:05:00 PM	0	0	No flow.
		Storey Wasteway					
			03-Jul-2011	10:25:00 AM - 10:35:00 AM	0	0	None.
		Sabinal Drain Outfall					
			06-Jul-2011	2:41:00 PM - 3:05:00 PM	0	0	None.
		San Francisco Riverside Drain					
			05-Jul-2011	1:15:00 PM - 1:43:00 PM	3	0.5	None.
		Lower San Juan Riverside Drain					
			05-Jul-2011	11:18:00 AM - 12:40:00 PM	66	61.5	None.

Reach	Month and Week	Wasteway Outfall	Date	Time Interval	Internet-Flow	Measured Flow	Comment
Isleta	**July Week: 29**						
		Los Chavez Wasteway					
			15-Jul-2011	6:45:00 AM - 6:55:00 AM	---	0	No flow.
		Peralta Main Canal Wasteway					
			13-Jul-2011	5:35:00 AM - 5:40:00 AM	3	0	No flow.
		Lower Peralta Riverside Drain (LP1DR)					
			15-Jul-2011	11:00:00 AM - 11:10:00 AM	0	0	No flow.
		Belen Riverside Drain					
			14-Jul-2011	7:44:00 AM - 8:00:00 AM	0	0	No flow.
		New Belen Wasteway					
			14-Jul-2011	8:55:00 AM - 9:05:00 AM	---	0	No flow.
		Lower Peralta Riverside Drain (LP2DR)					
			14-Jul-2011	9:35:00 AM - 9:49:00 AM	0	0	No flow.
		Feeder 3 Wasteway					
			14-Jul-2011	9:10:00 AM - 9:25:00 AM	0	0	No flow.
		Storey Wasteway					
			13-Jul-2011	2:40:00 PM - 2:55:00 PM	0	0	No flow.
		Sabinal Drain Outfall					
			15-Jul-2011	12:40:00 PM - 12:55:00 PM	0	0	Standing water.
		San Francisco Riverside Drain					
			14-Jul-2011	10:20:00 AM - 10:40:00 AM	2	0	No flow.
		Lower San Juan Riverside Drain					
			15-Jul-2011	2:08:00 PM - 3:53:00 PM	42	48.3	None.

Reach	Month and Week	Wasteway Outfall	Date	Time Interval	Internet-Flow	Measured Flow	Comment
Isleta	**July Week: 30**						
		Los Chavez Wasteway					
			17-Jul-2011	7:29:00 AM - 7:35:00 AM	---	0	No flow.
		Peralta Main Canal Wasteway					
			18-Jul-2011	10:15:00 AM - 10:20:00 AM	4	0	No flow.
		Lower Peralta Riverside Drain (LP1DR)					
			18-Jul-2011	9:39:00 AM - 9:45:00 AM	0	0	No flow.
		Belen Riverside Drain					
			20-Jul-2011	10:00:00 AM - 10:10:00 AM	0	0	No flow.
		New Belen Wasteway					
			19-Jul-2011	10:22:00 AM - 10:27:00 AM	---	0	No flow.
		Lower Peralta Riverside Drain (LP2DR)					
			23-Jul-2011	10:00:00 AM - 10:06:00 AM	0	0	No flow.
		Feeder 3 Wasteway					
			19-Jul-2011	9:00:00 AM - 9:10:00 AM	0	0	No flow.
		Storey Wasteway					
			23-Jul-2011	10:15:00 AM - 10:21:00 AM	0	0	No flow.
		Sabinal Drain Outfall					
			23-Jul-2011	10:33:00 AM - 10:43:00 AM	0	0	Standing water due to algae build-up.
		San Francisco Riverside Drain					
			20-Jul-2011	1:30:00 PM - 1:37:00 PM	2	0	No flow.
		Lower San Juan Riverside Drain					
			20-Jul-2011	2:20:00 PM - 4:08:00 PM	54	67.59	None.

Reach	Month and Week	Wasteway Outfall	Date	Time Interval	Internet-Flow	Measured Flow	Comment
Isleta	**July Week: 31**						
		Los Chavez Wasteway					
			26-Jul-2011	6:50:00 AM - 7:00:00 AM	---	0	No flow.
		Peralta Main Canal Wasteway					
			29-Jul-2011	6:40:00 AM - 6:45:00 AM	2	0	No flow.
		Lower Peralta Riverside Drain (LP1DR)					
			30-Jul-2011	10:00:00 AM - 10:05:00 AM	0	0	Internet observation.
		Belen Riverside Drain					
			29-Jul-2011	3:00:00 PM - 3:05:00 PM	0	0	Internet observation.
		New Belen Wasteway					
			29-Jul-2011	3:00:00 PM - 3:05:00 PM	---	0	Internet observation.
		Lower Peralta Riverside Drain (LP2DR)					
			30-Jul-2011	10:00:00 AM - 10:05:00 AM	0	0	Internet observation.
		Feeder 3 Wasteway					
			30-Jul-2011	10:00:00 AM - 10:05:00 AM	0	0	Internet observation.
		Storey Wasteway					
			29-Jul-2011	3:20:00 PM - 3:25:00 PM	0	0	Internet observation.
		Sabinal Drain Outfall					
			30-Jul-2011	10:30:00 AM - 10:35:00 AM	0	0	Internet observation.
		San Francisco Riverside Drain					
			30-Jul-2011	10:30:00 AM - 10:35:00 AM	20	20	Internet observation.
		Lower San Juan Riverside Drain					
			29-Jul-2011	11:19:00 AM - 1:02:00 PM	94	114.32	None.
Isleta	**July Week: 32**						
		Lower San Juan Riverside Drain					
			31-Jul-2011	6:00:00 PM - 6:05:00 PM	124	124	Wasteway is unsafe to conduct a measurement.

Reach	Month and Week	Wasteway Outfall	Date	Time Interval	Internet-Flow	Measured Flow	Comment
Isleta	**August Week: 32**						
		Los Chavez Wasteway					
			01-Aug-2011	6:20:00 AM - 6:25:00 AM	---	0	No flow.
		Peralta Main Canal Wasteway					
			02-Aug-2011	7:58:00 AM - 8:00:00 AM	3	0	No flow.
		Lower Peralta Riverside Drain (LP1DR)					
			04-Aug-2011	12:30:00 PM - 12:35:00 PM	0	0	Internet observation.
		Belen Riverside Drain					
			04-Aug-2011	12:00:00 PM - 12:05:00 PM	0	0	Internet observation.
		New Belen Wasteway					
			04-Aug-2011	12:30:00 PM - 12:35:00 PM	---	0	Internet observation.
		Lower Peralta Riverside Drain (LP2DR)					
			05-Aug-2011	12:30:00 PM - 12:35:00 PM	0	0	Internet observation.
		Feeder 3 Wasteway					
			04-Aug-2011	12:00:00 PM - 12:05:00 PM	0	0	Internet observation.
		Storey Wasteway					
			01-Aug-2011	9:00:00 AM - 9:05:00 AM	291	291	Wasteway is unsafe to perform a measurement.
		Sabinal Drain Outfall					
			04-Aug-2011	1:00:00 PM - 1:05:00 PM	0	0	Internet observation.
		San Francisco Riverside Drain					
			05-Aug-2011	10:00:00 AM - 10:50:00 AM	2	4.54	None.

Reach	Month and Week	Wasteway Outfall	Date	Time Interval	Internet-Flow	Measured Flow	Comment
Isleta	**August Week: 33**						
		Los Chavez Wasteway					
			08-Aug-2011	6:00:00 AM - 6:10:00 AM	---	0	No flow.
		Peralta Main Canal Wasteway					
			09-Aug-2011	8:30:00 AM - 8:35:00 AM	1	0	No flow.
		Lower Peralta Riverside Drain (LP1DR)					
			10-Aug-2011	9:30:00 AM - 9:35:00 AM	0	0	No flow.
		Belen Riverside Drain					
			13-Aug-2011	9:30:00 AM - 9:35:00 AM	0	0	No flow.
		New Belen Wasteway					
			13-Aug-2011	12:30:00 PM - 12:35:00 PM	0	0	Internet observation.
		Lower Peralta Riverside Drain (LP2DR)					
			09-Aug-2011	11:08:00 AM - 11:15:00 AM	0	0	No flow.
		Feeder 3 Wasteway					
			13-Aug-2011	10:00:00 AM - 10:05:00 AM	0	0	No flow.
		Storey Wasteway					
			09-Aug-2011	11:25:00 AM - 11:30:00 AM	0	0	Some leakage.
		San Francisco Riverside Drain					
			09-Aug-2011	12:00:00 PM - 12:45:00 PM	2	4.96	None.
		Lower San Juan Riverside Drain					
			08-Aug-2011	11:15:00 AM - 1:26:00 PM	88	98.03	None.

Reach	Month and Week	Wasteway Outfall	Date	Time Interval	Internet-Flow	Measured Flow	Comment
Isleta	**August Week: 35**						
		Los Chavez Wasteway					
			25-Aug-2011	1:50:00 PM - 1:55:00 PM	0	0	No flow.
		Lower Peralta Riverside Drain (LP1DR)					
			22-Aug-2011	10:00:00 AM - 10:05:00 AM	0	0	No flow.
		Belen Riverside Drain					
			25-Aug-2011	1:30:00 PM - 1:35:00 PM	0	0	No flow.
		New Belen Wasteway					
			25-Aug-2011	1:40:00 PM - 1:45:00 PM	0	0	No flow.
		Lower Peralta Riverside Drain (LP2DR)					
			27-Aug-2011	2:06:00 PM - 2:12:00 PM	0	0	No flow.
		Feeder 3 Wasteway					
			25-Aug-2011	1:00:00 PM - 1:05:00 PM	0	0	No flow.
		Storey Wasteway					
			27-Aug-2011	1:26:00 PM - 1:55:00 PM	0	0.48	None.
		Sabinal Drain Outfall					
			27-Aug-2011	12:09:00 PM - 12:47:00 PM	0	0.42	None.
		San Francisco Riverside Drain					
			25-Aug-2011	2:30:00 PM - 3:10:00 PM	31	14.19	None.
		Lower San Juan Riverside Drain					
			27-Aug-2011	10:37:00 AM - 11:54:00 AM	136	137.65	None.

Reach	Month and Week	Wasteway Outfall	Date	Time Interval	Internet-Flow	Measured Flow	Comment
Isleta	**August Week: 36**						
		Peralta Main Canal Wasteway					
			29-Aug-2011	9:45:00 AM - 9:55:00 AM	0	0	No flow.
		Lower Peralta Riverside Drain (LP1DR)					
			29-Aug-2011	10:11:00 AM - 10:15:00 AM	0	0	No flow.
		Belen Riverside Drain					
			29-Aug-2011	10:42:00 AM - 10:55:00 AM	0	0	No flow.
		Feeder 3 Wasteway					
			29-Aug-2011	11:00:00 AM - 11:10:00 AM	0	0	No flow.

Reach	Month and Week	Wasteway Outfall	Date	Time Interval	Internet-Flow	Measured Flow	Comment
San Acacia	**June Week: 24**						
		Unit 7 Drain					
			11-Jun-2011	7:00:00 AM - 7:20:00 AM	2.06	---	Depth over waders - flow not measurable.
		Nine-mile outfall					
			11-Jun-2011	8:30:00 AM - 8:45:00 AM	---	---	River backed up in outfall. Zero velocity indicated on meter.
		Escondida Drain Outfall					
			11-Jun-2011	10:00:00 AM - 10:45:00 AM	---	---	Outfall is dry.
		Socorro Wastewater Treatment Plant Outfall (Otero Street)					
			11-Jun-2011	12:00:00 PM - 12:05:00 PM	---	---	Outfall pipe below surface; flow not measurable.
		Brown Arroyo Wasteway					
			11-Jun-2011	1:00:00 PM - 1:30:00 PM	1	---	Flow was so low that it was not measurable; the visually estimated flow is equal to the internet posting of 1 cfs.
		Socorro Drain					
			11-Jun-2011	3:00:00 PM - 5:00:00 PM	35	34	None.
		Elmendorf Drain					
			11-Jun-2011	5:30:00 PM - 5:45:00 PM	1	---	Flow not measurable.

Reach	Month and Week	Wasteway Outfall	Date	Time Interval	Internet-Flow	Measured Flow	Comment
San Acacia	**June Week: 25**						
		Unit 7 Drain					
			13-Jun-2011	2:09:00 PM - 2:15:00 AM	224	---	An 8-foot wading rod is needed to conduct measured flow estimates at this site (wading rod on order).
		Nine-mile outfall					
			13-Jun-2011	4:45:00 PM - 4:50:00 PM	---	---	Flow estimated to be less than 1 cfs.
		Escondida Drain Outfall					
			13-Jun-2011	5:45:00 PM - 5:50:00 PM	---	---	Outfall is dry.
		Socorro Wastewater Treatment Plant Outfall (Otero Street)					
			13-Jun-2011	5:38:00 PM - 5:40:00 PM	---	---	Not discharging.
		Brown Arroyo Wasteway					
			13-Jun-2011	6:02:00 PM - 6:05:00 PM	---	---	Not discharging.
		Socorro Drain					
			13-Jun-2011	5:59:00 PM - 5:59:00 PM	49	---	An 8-foot wading rod is needed to conduct measured flow estimates at this site (wading rod on order).
		Elmendorf Drain					
			13-Jun-2011	12:00:00 AM - 12:00:00 AM	2	---	Visual estimate of 5 cfs.

Reach	Month and Week	Wasteway Outfall	Date	Time Interval	Internet-Flow	Measured Flow	Comment
San Acacia	**June Week: 26**						
		Nine-mile outfall					
			23-Jun-2011	7:00:00 PM - 7:00:00 PM	---	---	Flow visually estimated to be 2 cfs; water too shallow to be measured with Marsh McBirney Meter.
		Escondida Drain Outfall					
			23-Jun-2011	7:30:00 PM - 7:30:00 PM	---	---	Outfall is dry.
		Socorro Wastewater Treatment Plant Outfall (Otero Street)					
			23-Jun-2011	8:00:00 PM - 8:00:00 PM	---	---	Not discharging.
		Brown Arroyo Wasteway					
			21-Jun-2011	12:00:00 PM - 12:00:00 PM	---	---	Not discharging.
		Socorro Drain					
			21-Jun-2011	11:00:00 AM - 11:00:00 AM	39	---	Flow visually estimated to be 40 cfs. An 8-foot wading rod is needed to conduct measured flow estimates at this site (wading rod on order).
		Elmendorf Drain					
			21-Jun-2011	6:00:00 PM - 6:00:00 PM	2	10	Vegetation causes erratic velocity; measured estimates of flow not accurate at this site given present conditions.

Reach	Month and Week	Wasteway Outfall	Date	Time Interval	Internet-Flow	Measured Flow	Comment
San Acacia	**June Week: 27**						
		Unit 7 Drain					
			28-Jun-2011	10:30:00 AM - 10:30:00 AM	211	---	An 8-foot wading rod is needed to conduct measured flow estimates at this site (wading rod on order).
		Nine-mile outfall					
			28-Jun-2011	10:30:00 AM - 10:30:00 AM	---	1.8	No way to get a good measurement (too shallow).
		Escondida Drain Outfall					
			28-Jun-2011	10:30:00 AM - 10:30:00 AM	---	---	Outfall is dry.
		Socorro Wastewater Treatment Plant Outfall (Otero Street)					
			28-Jun-2011	7:00:00 AM - 7:00:00 AM	---	---	Not discharging.
		Brown Arroyo Wasteway					
			28-Jun-2011	6:45:00 AM - 6:45:00 AM	---	---	Not discharging.
		Socorro Drain					
			28-Jun-2011	2:00:00 PM - 2:00:00 PM	15	---	An 8-foot wading rod is needed to conduct measured flow estimates at this site (wading rod on order).
		Elmendorf Drain					
			28-Jun-2011	2:00:00 PM - 2:00:00 PM	5	---	Vegetation causes erratic velocity; measured estimates of flow not accurate at this site given present conditions. Flow visually estimated to be 5–10 cfs.

Reach	Month and Week	Wasteway Outfall	Date	Time Interval	Internet-Flow	Measured Flow	Comment
San Acacia	**July Week: 28**						
		Unit 7 Drain					
			03-Jul-2011	9:00:00 AM - 9:00:00 AM	93	---	An 8-foot wading rod is needed to conduct measured flow estimates at this site (wading rod on order).
		Nine-mile outfall					
			03-Jul-2011	9:30:00 AM - 9:30:00 AM	---	---	No way to get a good measurement (too shallow). Flow visually estimated to be 2.0 cfs.
		Escondida Drain Outfall					
			03-Jul-2011	10:30:00 AM - 10:30:00 AM	---	---	Outfall is dry.
		Socorro Wastewater Treatment Plant Outfall (Otero Street)					
			03-Jul-2011	5:30:00 AM - 5:30:00 AM	---	---	Not discharging.
		Brown Arroyo Wasteway					
			03-Jul-2011	11:15:00 AM - 11:15:00 AM	---	---	Not discharging.
		Socorro Drain					
			03-Jul-2011	12:30:00 PM - 12:30:00 PM	33	---	An 8-foot wading rod is needed to conduct measured flow estimates at this site (wading rod on order).
		Elmendorf Drain					
			03-Jul-2011	12:00:00 PM - 12:00:00 PM	0	---	Flow estimated to be 4 cfs.

APPENDIX E
MIDDLE RIO GRANDE PUMPING OPERATIONS - 2011

Bureau of Reclamation
Middle Rio Grande Pumping Operations - 2011

Month / Week	Pump Site	Date - (AM/PM)	Number of Pumps Operating	Calculated Flow Estimate (cfs) *	Comment
March / Week 13					
	Neil Cupp				
		3/23/2011 (AM)	0	0	None
	North Boundary				
		3/23/2011 (AM)	0	0	None
	South Boundary				
		3/23/2011 (AM)	0	0	None
March / Week 14					
	South Boundary				
		3/31/2011 (AM)	5	35	Pumps were turned on at SBBDA March 31, 2011

**** Flow is estimated by calculation. If only one pump is running, flow is the product of the number of pumps times 11 cfs. If more than one pump is running, flow is the product of the number of pumps times 7 cfs.***

Month / Week	Pump Site	Date - (AM/PM)	Number of Pumps Operating	Calculated Flow Estimate (cfs) *	Comment
April / Week 14					
	Neil Cupp				
		4/1/2011 (AM)	0	0	None
	North Boundary				
		4/1/2011 (AM)	0	0	Pumps will be turned on today
	South Boundary				
		4/1/2011 (AM)	5	35	None
April / Week 15					
	Neil Cupp				
		4/4/2011 (AM)	0	0	None
		4/8/2011 (AM)	0	0	None
	North Boundary				
		4/4/2011 (AM)	2	14	Going to 1 pump today; only 2 pumps can be used due to limited water
		4/8/2011 (AM)	1	11	None
	South Boundary				
		4/4/2011 (AM)	5	35	Going to 4 pumps today
		4/8/2011 (AM)	4	28	About 15–20 cfs arriving at SB Pump site
April / Week 16					
	Neil Cupp				
		4/11/2011 (AM)	0	0	None
		4/15/2011 (AM)	0	0	None
	North Boundary				
		4/11/2011 (AM)	1	11	Going to 2 pumps today
		4/15/2011 (AM)	1	11	Approx 25 cfs is arriving at NBBA; a second pump will be turned on if adequate water exists in the LFCC
	South Boundary				
		4/11/2011 (AM)	4	28	Approximately 7–10 cfs arriving at SB pump site
		4/15/2011 (AM)	4	28	Approximately 25–30 cfs is arriving at SBBDA

**** Flow is estimated by calculation. If only one pump is running, flow is the product of the number of pumps times 11 cfs. If more than one pump is running, flow is the product of the number of pumps times 7 cfs.***

Month / Week	Pump Site	Date - (AM/PM)	Number of Pumps Operating	Calculated Flow Estimate (cfs) *	Comment
April / Week 17					
	Neil Cupp				
		4/18/2011 (AM)	0	0	None
		4/22/2011 (AM)	0	0	None
	North Boundary				
		4/18/2011 (AM)	1	11	A second pump will be turned on if adequate water exists in the LFCC
		4/22/2011 (AM)	1	11	A second pump will be turned on if adequate water exists in the LFCC
	South Boundary				
		4/18/2011 (AM)	4	28	None
		4/22/2011 (AM)	4	28	None
April / Week 18					
	Neil Cupp				
		4/25/2011 (AM)	0	0	None
		4/26/2011 (AM)	0	0	None
		4/29/2011 (AM)	0	0	None
	North Boundary				
		4/25/2011 (AM)	3	21	None
		4/26/2011 (AM)	3	21	None
		4/29/2011 (AM)	0	0	None
	South Boundary				
		4/25/2011 (AM)	4	28	None
		4/26/2011 (AM)	4	28	None
		4/29/2011 (AM)	4	28	None

**** Flow is estimated by calculation. If only one pump is running, flow is the product of the number of pumps times 11 cfs. If more than one pump is running, flow is the product of the number of pumps times 7 cfs.***

Month / Week	Pump Site	Date - (AM/PM)	Number of Pumps Operating	Calculated Flow Estimate (cfs) *	Comment
May / Week 19					
	Neil Cupp				
		5/2/2011 (AM)	0	0	None
		5/4/2011 (AM)	0	0	None
	North Boundary				
		5/2/2011 (AM)	0	0	None
		5/4/2011 (AM)	0	0	None
	South Boundary				
		5/2/2011 (AM)	4	28	None
		5/4/2011 (AM)	4	28	None
May / Week 20					
	Neil Cupp				
		5/9/2011 (AM)	0	0	None
		5/11/2011 (AM)	0	0	None
		5/13/2011 (AM)	0	0	None
	North Boundary				
		5/9/2011 (AM)	3	21	Low flow (approx. 15 cfs) in the river prompted managers to turn on pumps to avert drying of the river
		5/11/2011 (AM)	3	21	None
		5/13/2011 (AM)	2	14	Only 2 pumps running due to low flow in LFCC
	South Boundary				
		5/9/2011 (AM)	4	28	None
		5/11/2011 (AM)	4	28	None
		5/13/2011 (AM)	4	28	None

**** Flow is estimated by calculation. If only one pump is running, flow is the product of the number of pumps times 11 cfs. If more than one pump is running, flow is the product of the number of pumps times 7 cfs.***

Month / Week	Pump Site	Date - (AM/PM)	Number of Pumps Operating	Calculated Flow Estimate (cfs) *	Comment
May / Week 21					
	Neil Cupp				
		5/16/2011 (AM)	0	0	None
		5/17/2011 (AM)	0	0	None
		5/18/2011 (AM)	0	0	None
		5/20/2011 (AM)	0	0	None
	North Boundary				
		5/16/2011 (AM)	2	14	One pump will be turned off today
		5/17/2011 (AM)	0	0	None
		5/18/2011 (AM)	1	11	All pumps at this site will be turned off today
		5/20/2011 (AM)	0	0	None
	South Boundary				
		5/16/2011 (AM)	4	28	None
		5/17/2011 (AM)	0	0	None
		5/18/2011 (AM)	4	28	None
		5/20/2011 (AM)	4	28	None
May / Week 22					
	Neil Cupp				
		5/23/2011 (AM)	0	0	None
		5/27/2011 (AM)	0	0	None
	North Boundary				
		5/23/2011 (AM)	0	0	None
		5/27/2011 (AM)	0	0	None
	South Boundary				
		5/23/2011 (AM)	4	28	None
		5/27/2011 (AM)	4	28	None
May / Week 23					
	Neil Cupp				
		5/31/2011 (AM)	0	0	None
	North Boundary				
		5/31/2011 (AM)	0	0	None
	South Boundary				
		5/31/2011 (AM)	4	28	None

**** Flow is estimated by calculation. If only one pump is running, flow is the product of the number of pumps times 11 cfs. If more than one pump is running, flow is the product of the number of pumps times 7 cfs.***

Month / Week	Pump Site	Date - (AM/PM)	Number of Pumps Operating	Calculated Flow Estimate (cfs) *	Comment
June / Week 24					
	Neil Cupp				
		6/8/2011 (AM)	0	0	None
		6/10/2011 (AM)	0	0	None
	North Boundary				
		6/8/2011 (AM)	0	0	None
		6/10/2011 (AM)	0	0	None
	South Boundary				
		6/8/2011 (AM)	2	14	Two pumps will be turned off today
		6/10/2011 (AM)	0	0	None
June / Week 25					
	Neil Cupp				
		6/13/2011 (AM)	0	0	None
		6/15/2011 (AM)	0	0	None
	North Boundary				
		6/13/2011 (AM)	0	0	None
		6/15/2011 (AM)	0	0	None
	South Boundary				
		6/13/2011 (AM)	0	0	None
		6/15/2011 (AM)	0	0	None
June / Week 26					
	Neil Cupp				
		6/20/2011 (AM)	0	0	None
		6/22/2011 (AM)	0	0	None
		6/23/2011 (AM)	0	0	None
		6/24/2011 (AM)	0	0	None
	North Boundary				
		6/20/2011 (AM)	2	14	None
		6/22/2011 (AM)	2	14	None
		6/23/2011 (AM)	2	14	None
		6/24/2011 (AM)	2	14	One pump will be turned off today.
	South Boundary				
		6/20/2011 (AM)	4	28	None
		6/22/2011 (AM)	4	28	None
		6/23/2011 (AM)	4	28	None
		6/24/2011 (AM)	4	28	None

**** Flow is estimated by calculation. If only one pump is running, flow is the product of the number of pumps times 11 cfs. If more than one pump is running, flow is the product of the number of pumps times 7 cfs.***

Month / Week	Pump Site	Date - (AM/PM)	Number of Pumps Operating	Calculated Flow Estimate (cfs) *	Comment
June / Week 27					
	Neil Cupp				
		6/27/2011 (AM)	0	0	None
		6/28/2011 (AM)	0	0	None
		6/29/2011 (AM)	0	0	None
		6/30/2011 (AM)	0	0	None
	North Boundary				
		6/27/2011 (AM)	0	0	None
		6/28/2011 (AM)	0	0	None
		6/29/2011 (AM)	0	0	None
		6/30/2011 (AM)	0	0	None
	South Boundary				
		6/27/2011 (AM)	4	28	None
		6/28/2011 (AM)	4	28	None
		6/29/2011 (AM)	4	28	None
		6/30/2011 (AM)	4	28	None

**** Flow is estimated by calculation. If only one pump is running, flow is the product of the number of pumps times 11 cfs. If more than one pump is running, flow is the product of the number of pumps times 7 cfs.***

Month / Week	Pump Site	Date - (AM/PM)	Number of Pumps Operating	Calculated Flow Estimate (cfs) *	Comment
July / Week 28					
	Neil Cupp				
		7/5/2011 (AM)	0	0	None
		7/6/2011 (AM)	0	0	None
		7/7/2011 (AM)	0	0	None
		7/8/2011 (AM)	0	0	None
	North Boundary				
		7/5/2011 (AM)	0	0	None
		7/6/2011 (AM)	0	0	None
		7/7/2011 (AM)	0	0	None
		7/8/2011 (AM)	0	0	None
	South Boundary				
		7/5/2011 (AM)	4	28	None
		7/6/2011 (AM)	4	28	None
		7/7/2011 (AM)	4	28	None
		7/8/2011 (AM)	4	28	None
July / Week 29					
	Neil Cupp				
		7/11/2011 (AM)	0	0	None
		7/12/2011 (AM)	0	0	None
		7/13/2011 (AM)	0	0	None
		7/14/2011 (AM)	0	0	None
		7/15/2011 (AM)	0	0	None
	North Boundary				
		7/11/2011 (AM)	0	0	None
		7/12/2011 (AM)	0	0	None
		7/13/2011 (AM)	0	0	None
		7/14/2011 (AM)	0	0	None
		7/15/2011 (AM)	0	0	None
	South Boundary				
		7/11/2011 (AM)	4	28	None
		7/12/2011 (AM)	4	28	None
		7/13/2011 (AM)	4	28	None
		7/14/2011 (AM)	4	28	None
		7/15/2011 (AM)	4	28	None

**** Flow is estimated by calculation. If only one pump is running, flow is the product of the number of pumps times 11 cfs. If more than one pump is running, flow is the product of the number of pumps times 7 cfs.***

Month / Week	Pump Site	Date - (AM/PM)	Number of Pumps Operating	Calculated Flow Estimate (cfs) *	Comment
July / Week 30					
	Neil Cupp				
		7/18/2011 (AM)	0	0	None
		7/19/2011 (AM)	0	0	None
		7/20/2011 (AM)	0	0	None
		7/21/2011 (AM)	0	0	None
		7/22/2011 (AM)	0	0	None
	North Boundary				
		7/18/2011 (AM)	0	0	None
		7/19/2011 (AM)	0	0	None
		7/20/2011 (AM)	0	0	None
		7/21/2011 (AM)	0	0	None
		7/22/2011 (AM)	0	0	None
	South Boundary				
		7/18/2011 (AM)	4	28	None
		7/19/2011 (AM)	4	28	None
		7/20/2011 (AM)	4	28	None
		7/21/2011 (AM)	4	28	None
		7/22/2011 (AM)	4	28	None
July / Week 31					
	Neil Cupp				
		7/25/2011 (AM)	0	0	None
		7/27/2011 (AM)	0	0	None
		7/29/2011 (AM)	0	0	None
	North Boundary				
		7/25/2011 (AM)	0	0	None
		7/27/2011 (AM)	0	0	None
		7/29/2011 (AM)	0	0	None
	South Boundary				
		7/25/2011 (AM)	4	28	None
		7/27/2011 (AM)	4	28	None
		7/29/2011 (AM)	4	28	None

**** Flow is estimated by calculation. If only one pump is running, flow is the product of the number of pumps times 11 cfs. If more than one pump is running, flow is the product of the number of pumps times 7 cfs.***

Month / Week	Pump Site	Date - (AM/PM)	Number of Pumps Operating	Calculated Flow Estimate (cfs) *	Comment
August / Week 32					
	Neil Cupp				
		8/1/2011 (AM)	0	0	None
		8/3/2011 (AM)	0	0	None
		8/5/2011 (AM)	0	0	None
	North Boundary				
		8/1/2011 (AM)	0	0	None
		8/3/2011 (AM)	0	0	None
		8/5/2011 (AM)	0	0	None
	South Boundary				
		8/1/2011 (AM)	4	28	None
		8/3/2011 (AM)	4	28	None
		8/5/2011 (AM)	4	28	None
August / Week 33					
	Neil Cupp				
		8/8/2011 (AM)	0	0	None
		8/10/2011 (AM)	0	0	None
		8/12/2011 (AM)	0	0	None
	North Boundary				
		8/8/2011 (AM)	0	0	None
		8/10/2011 (AM)	0	0	None
		8/12/2011 (AM)	0	0	None
	South Boundary				
		8/8/2011 (AM)	4	28	None
		8/10/2011 (AM)	4	28	None
		8/12/2011 (AM)	4	28	None

**** Flow is estimated by calculation. If only one pump is running, flow is the product of the number of pumps times 11 cfs. If more than one pump is running, flow is the product of the number of pumps times 7 cfs.***

Month / Week	Pump Site	Date - (AM/PM)	Number of Pumps Operating	Calculated Flow Estimate (cfs) *	Comment
August / Week 34					
	Neil Cupp				
		8/15/2011 (AM)	0	0	None
		8/17/2011 (AM)	0	0	None
		8/19/2011 (AM)	0	0	None
	North Boundary				
		8/15/2011 (AM)	0	0	None
		8/17/2011 (AM)	0	0	None
		8/19/2011 (AM)	0	0	None
	South Boundary				
		8/15/2011 (AM)	4	28	None
		8/17/2011 (AM)	4	28	None
		8/19/2011 (AM)	4	28	None
August / Week 35					
	Neil Cupp				
		8/22/2011 (AM)	0	0	None
		8/24/2011 (AM)	0	0	None
		8/26/2011 (AM)	0	0	None
	North Boundary				
		8/22/2011 (AM)	0	0	None
		8/24/2011 (AM)	0	0	None
		8/26/2011 (AM)	0	0	None
	South Boundary				
		8/22/2011 (AM)	4	28	None
		8/24/2011 (AM)	0	0	None
		8/26/2011 (AM)	0	0	None
August / Week 36					
	Neil Cupp				
		8/29/2011 (AM)	0	0	None
		8/31/2011 (AM)	0	0	None
	North Boundary				
		8/29/2011 (AM)	0	0	None
		8/31/2011 (AM)	0	0	None
	South Boundary				
		8/29/2011 (AM)	0	0	None
		8/31/2011 (AM)	4	28	None

**** Flow is estimated by calculation. If only one pump is running, flow is the product of the number of pumps times 11 cfs. If more than one pump is running, flow is the product of the number of pumps times 7 cfs.***

Month / Week	Pump Site	Date - (AM/PM)	Number of Pumps Operating	Calculated Flow Estimate (cfs) *	Comment
September / Week 36					
	Neil Cupp				
		9/2/2011 (AM)	0	0	None
	North Boundary				
		9/2/2011 (AM)	0	0	None
	South Boundary				
		9/2/2011 (AM)	4	28	None
September / Week 37					
	Neil Cupp				
		9/6/2011 (AM)	0	0	None
		9/9/2011 (AM)	0	0	None
	North Boundary				
		9/6/2011 (AM)	0	0	None
		9/9/2011 (AM)	0	0	None
	South Boundary				
		9/6/2011 (AM)	4	28	None
		9/9/2011 (AM)	4	28	Going to 2 pumps today
September / Week 38					
	Neil Cupp				
		9/12/2011 (AM)	0	0	None
		9/14/2011 (AM)	0	0	None
		9/16/2011 (AM)	0	0	None
	North Boundary				
		9/12/2011 (AM)	0	0	None
		9/14/2011 (AM)	0	0	None
		9/16/2011 (AM)	0	0	None
	South Boundary				
		9/12/2011 (AM)	2	14	None
		9/14/2011 (AM)	4	28	None
		9/16/2011 (AM)	2	14	None

**** Flow is estimated by calculation. If only one pump is running, flow is the product of the number of pumps times 11 cfs. If more than one pump is running, flow is the product of the number of pumps times 7 cfs.***

Month / Week	Pump Site	Date - (AM/PM)	Number of Pumps Operating	Calculated Flow Estimate (cfs) *	Comment
September / Week 39					
	Neil Cupp				
		9/19/2011 (AM)	0	0	None
	North Boundary				
		9/19/2011 (AM)	0	0	None
	South Boundary				
		9/19/2011 (AM)	2	14	None
September / Week 40					
	Neil Cupp				
		9/26/2011 (AM)	0	0	None
		9/30/2011 (AM)	0	0	None
	North Boundary				
		9/26/2011 (AM)	0	0	None
		9/30/2011 (AM)	0	0	None
	South Boundary				
		9/26/2011 (AM)	4	28	None
		9/30/2011 (AM)	4	28	None

**** Flow is estimated by calculation. If only one pump is running, flow is the product of the number of pumps times 11 cfs. If more than one pump is running, flow is the product of the number of pumps times 7 cfs.***

Month / Week	Pump Site	Date - (AM/PM)	Number of Pumps Operating	Calculated Flow Estimate (cfs) *	Comment
October / Week 41					
	Neil Cupp				
		10/3/2011 (AM)	0	0	None
		10/5/2011 (AM)	0	0	None
		10/7/2011 (AM)	0	0	None
	North Boundary				
		10/3/2011 (AM)	0	0	None
		10/5/2011 (AM)	0	0	None
		10/7/2011 (AM)	0	0	None
	South Boundary				
		10/3/2011 (AM)	4	28	None
		10/5/2011 (AM)	4	28	None
		10/7/2011 (AM)	4	28	None
October / Week 43					
	Neil Cupp				
		10/17/2011 (AM)	0	0	None
		10/21/2011 (AM)	0	0	None
	North Boundary				
		10/17/2011 (AM)	0	0	None
		10/21/2011 (AM)	0	0	None
	South Boundary				
		10/17/2011 (AM)	2	14	None
		10/21/2011 (AM)	4	28	None
October / Week 44					
	Neil Cupp				
		10/24/2011 (AM)	0	0	None
		10/28/2011 (AM)	0	0	None
	North Boundary				
		10/24/2011 (AM)	0	0	None
		10/28/2011 (AM)	0	0	None
	South Boundary				
		10/24/2011 (AM)	4	28	None
		10/28/2011 (AM)	4	28	None

**** Flow is estimated by calculation. If only one pump is running, flow is the product of the number of pumps times 11 cfs. If more than one pump is running, flow is the product of the number of pumps times 7 cfs.***

Month / Week	Pump Site	Date - (AM/PM)	Number of Pumps Operating	Calculated Flow Estimate (cfs) *	Comment
October / Week 45					
	Neil Cupp				
		10/31/2011 (AM)	0	0	None
	North Boundary				
		10/31/2011 (AM)	0	0	None
	South Boundary				
		10/31/2011 (AM)	4	28	None

**** Flow is estimated by calculation. If only one pump is running, flow is the product of the number of pumps times 11 cfs. If more than one pump is running, flow is the product of the number of pumps times 7 cfs.***

APPENDIX F
RECORD OF MAIN CHANNEL FLOW MEASURES - 2011

Bureau of Reclamation

Record of Weekly Flow Measures vs. Internet Postings - 2011

Reach	Site	WR	Time Start	Time End	Cells	Measured Flow	Gauge Height	Internet Flow	Comment
Isleta	Rio Grande at Bosque Farms								
		27-Jun-2011	7:00 AM	11:00 AM	44	177.3	---	209	Over the period of measuring flow, the water level was rising between 188–209 cfs
		04-Jul-2011	7:43 AM	10:32 AM	65	97.9	---	115	None
Isleta	Rio Grande 1.8 miles upstream of Los Lunas Bridge								
		11-Aug-2011	11:34 AM	12:39 PM	22	12.25	---	---	None
Isleta	Rio Grande blw Los Lunas Bridge								
		22-Jun-2011	6:05 AM	6:45 AM	15	150.2	---	---	Bosque Farms gage is reading 188 cfs
Isleta	Los Chavez Wasteway								
		03-Jun-2011	3:00 PM	3:01 PM	---	---	---	---	No flow
		10-Jun-2011	9:45 AM	9:50 AM	---	---	---	---	No flow
		15-Jun-2011	3:00 PM	3:05 PM	---	---	---	---	No flow
		20-Jun-2011	4:17 PM	4:18 PM	---	---	---	---	No flow
		02-Jul-2011	10:00 AM	10:10 AM	---	0	---	---	No flow
		07-Jul-2011	7:45 AM	7:55 AM	---	0	---	---	No flow
		15-Jul-2011	6:45 AM	6:55 AM	---	0	---	---	No flow
		17-Jul-2011	7:29 AM	7:35 AM	---	0	---	---	No flow
		26-Jul-2011	6:50 AM	7:00 AM	---	0	---	---	No flow
		01-Aug-2011	6:20 AM	6:25 AM	---	0	---	---	No flow
		08-Aug-2011	6:00 AM	6:10 AM	---	0	---	---	No flow
		25-Aug-2011	1:50 PM	1:55 PM	---	0	---	0	No flow
Isleta	Rio Grande at Los Chavez Wasteway								
		07-Jul-2011	8:00 AM	8:30 AM	17	31.5	---	---	Bosque Farms gauge is reading 102 cfs at 0800 hrs

Reach	Site	WR	Time Start	Time End	Cells	Measured Flow	Gauge Height	Internet Flow	Comment
Isleta	Peralta Main Canal Wasteway								
		08-Jun-2011	3:45 PM	3:50 PM	---	---	---	---	No flow
		15-Jun-2011	3:53 PM	4:42 PM	14	6.68	0.56	20	None
		20-Jun-2011	12:00 PM	12:01 PM	---	---	---	---	No flow
		27-Jun-2011	2:30 PM	2:40 PM	---	---	---	---	No flow
		03-Jul-2011	8:40 AM	8:50 AM	---	0	---	1	None
		13-Jul-2011	5:35 AM	5:40 AM	---	0	---	3	No flow
		18-Jul-2011	10:15 AM	10:20 AM	---	0	---	4	No flow
		29-Jul-2011	6:40 AM	6:45 AM	---	0	---	2	No flow
		02-Aug-2011	7:58 AM	8:00 AM	---	0	---	3	No flow
		09-Aug-2011	8:30 AM	8:35 AM	---	0	---	1	No flow
		29-Aug-2011	9:45 AM	9:55 AM	---	0	---	0	No flow
Isleta	Rio Grande 1.5 mile u/s Peralta WW								
		22-Jun-2011	7:41 AM	8:21 AM	16	76.6	---	---	Bosque Farms gage is reading 192 cfs
		24-Jun-2011	6:52 AM	7:56 AM	25	54.3	---	---	Bosque Farms gage reading is 113 cfs
Isleta	Lower Peralta Riverside Drain (LP1DR)								
		03-Jun-2011	1:32 PM	2:48 PM	27	10.8	---	---	None
		08-Jun-2011	4:48 PM	5:24 PM	9	7.21	4.8	---	None
		15-Jun-2011	5:20 PM	6:20 PM	13	7.34	5	6	None
		21-Jun-2011	1:39 PM	1:40 PM	---	---	---	---	No flow
		27-Jun-2011	4:23 PM	5:07 PM	9	6.35	---	0	None
		07-Jul-2011	11:45 AM	12:16 PM	10	5.7	---	0	None
		15-Jul-2011	11:00 AM	11:10 AM	---	0	---	0	No flow
		18-Jul-2011	9:39 AM	9:45 AM	---	0	---	0	No flow
		30-Jul-2011	10:00 AM	10:05 AM	---	0	---	0	Internet observation
		04-Aug-2011	12:30 PM	12:35 PM	---	0	---	0	Internet observation
		10-Aug-2011	9:30 AM	9:35 AM	---	0	---	0	No flow
		22-Aug-2011	10:00 AM	10:05 AM	---	0	---	0	No flow
		29-Aug-2011	10:11 AM	10:15 AM	---	0	---	0	No flow

Reach	Site	WR	Time Start	Time End	Cells	Measured Flow	Gauge Height	Internet Flow	Comment
Isleta	Belen Riverside Drain								
		04-Jun-2011	5:00 PM	5:05 PM	---	---	---	---	No flow
		10-Jun-2011	2:00 PM	2:01 PM	---	---	---	---	No flow
		17-Jun-2011	6:44 PM	6:45 PM	---	---	---	---	No flow
		22-Jun-2011	12:00 PM	12:01 PM	---	---	---	---	No flow
		02-Jul-2011	10:42 AM	10:50 AM	---	0	---	0	None
		06-Jul-2011	1:34 PM	1:35 PM	---	0	---	0	None
		14-Jul-2011	7:44 AM	8:00 AM	---	0	---	0	No flow
		20-Jul-2011	10:00 AM	10:10 AM	---	0	---	0	No flow
		29-Jul-2011	3:00 PM	3:05 PM	---	0	---	0	Internet observation
		04-Aug-2011	12:00 PM	12:05 PM	---	0	---	0	Internet observation
		13-Aug-2011	9:30 AM	9:35 AM	---	0	---	0	No flow
		25-Aug-2011	1:30 PM	1:35 PM	---	0	---	0	No flow
		29-Aug-2011	10:42 AM	10:55 AM	---	0	---	0	No flow
Isleta	New Belen Wasteway								
		04-Jun-2011	4:53 PM	4:55 PM	---	---	---	---	No flow
		10-Jun-2011	2:11 PM	2:15 PM	---	---	---	---	No flow
		15-Jun-2011	5:00 PM	5:05 PM	---	---	---	---	No flow
		22-Jun-2011	10:40 AM	10:45 AM	---	---	---	---	No flow
		26-Jun-2011	2:15 PM	2:25 PM	---	---	---	0	No flow
		06-Jul-2011	1:47 PM	1:53 PM	---	0	---	---	None
		14-Jul-2011	8:55 AM	9:05 AM	---	0	---	---	No flow
		19-Jul-2011	10:22 AM	10:27 AM	---	0	---	---	No flow
		29-Jul-2011	3:00 PM	3:05 PM	---	0	---	---	Internet observation
		04-Aug-2011	12:30 PM	12:35 PM	---	0	---	---	Internet observation
		13-Aug-2011	12:30 PM	12:35 PM	---	0	---	0	Internet observation
		25-Aug-2011	1:40 PM	1:45 PM	---	0	---	0	No flow

Reach	Site	WR	Time Start	Time End	Cells	Measured Flow	Gauge Height	Internet Flow	Comment
Isleta	Lower Peralta Riverside Drain (LP2DR)								
		03-Jun-2011	3:48 PM	3:50 PM	---	---	---	---	No flow
		10-Jun-2011	4:30 PM	4:34 PM	---	---	---	---	No flow
		17-Jun-2011	6:00 PM	6:05 PM	---	---	---	---	No flow
		20-Jun-2011	1:15 PM	1:16 PM	---	---	---	---	No flow
		26-Jun-2011	1:40 PM	1:50 PM	---	---	---	0	None
		04-Jul-2011	12:00 PM	12:05 PM	---	0	---	0	None
		14-Jul-2011	9:35 AM	9:49 AM	---	0	---	0	No flow
		23-Jul-2011	10:00 AM	10:06 AM	---	0	---	0	No flow
		30-Jul-2011	10:00 AM	10:05 AM	---	0	---	0	Internet observation
		05-Aug-2011	12:30 PM	12:35 PM	---	0	---	0	Internet observation
		09-Aug-2011	11:08 AM	11:15 AM	---	0	---	0	No flow
		27-Aug-2011	2:06 PM	2:12 PM	---	0	---	0	No flow
Isleta	Feeder 3 Wasteway								
		04-Jun-2011	4:42 PM	4:43 PM	---	---	---	---	No flow
		10-Jun-2011	2:30 PM	2:35 PM	---	---	---	---	No flow
		17-Jun-2011	6:21 PM	6:25 PM	---	---	---	0	No flow
		22-Jun-2011	10:11 AM	10:12 AM	---	---	---	0	No flow
		26-Jun-2011	2:00 PM	2:10 PM	---	---	---	0	No flow
		06-Jul-2011	2:00 PM	2:05 PM	---	0	---	0	No flow
		14-Jul-2011	9:10 AM	9:25 AM	---	0	---	0	No flow
		19-Jul-2011	9:00 AM	9:10 AM	---	0	---	0	No flow
		30-Jul-2011	10:00 AM	10:05 AM	---	0	---	0	Internet observation
		04-Aug-2011	12:00 PM	12:05 PM	---	0	---	0	Internet observation
		13-Aug-2011	10:00 AM	10:05 AM	---	0	---	0	No flow
		25-Aug-2011	1:00 PM	1:05 PM	---	0	---	0	No flow
		29-Aug-2011	11:00 AM	11:10 AM	---	0	---	0	No flow
Isleta	Rio Grande abv 346 Bridge								
		26-Jun-2011	11:00 AM	12:44 PM	36	63.5	---	62	None

Reach	Site	WR	Time Start	Time End	Cells	Measured Flow	Gauge Height	Internet Flow	Comment
Isleta	Storey Wasteway								
		03-Jun-2011	4:00 PM	4:05 PM	---	---	---	---	No flow
		10-Jun-2011	4:00 PM	4:25 PM	4	0.32	---	---	None
		17-Jun-2011	5:30 PM	5:55 PM	3	0.38	---	0	None
		21-Jun-2011	1:01 PM	1:05 PM	---	---	---	---	No flow
		26-Jun-2011	1:26 PM	1:16 PM	---	---	---	0	No flow
		03-Jul-2011	10:25 AM	10:35 AM	---	0	---	0	None
		13-Jul-2011	2:40 PM	2:55 PM	---	0	---	0	No flow
		23-Jul-2011	10:15 AM	10:21 AM	---	0	---	0	No flow
		29-Jul-2011	3:20 PM	3:25 PM	---	0	---	0	Internet observation
		01-Aug-2011	9:00 AM	9:05 AM	---	291	---	291	Wasteway is unsafe to perform a measurement
		09-Aug-2011	11:25 AM	11:30 AM	---	0	---	0	Some leakage
		27-Aug-2011	1:26 PM	1:55 PM	4	0.48	---	0	None
Isleta	Sabinal Drain Outfall								
		10-Jun-2011	3:10 PM	3:35 PM	5	0.31	---	---	
		17-Jun-2011	5:10 PM	5:15 PM	---	---	---	---	No flow
		21-Jun-2011	10:00 AM	10:35 AM	9	0.3	---	0	None
		02-Jul-2011	11:31 AM	11:37 AM	---	0	---	0	None
		06-Jul-2011	2:41 PM	3:05 PM	5	0	---	0	None
		15-Jul-2011	12:40 PM	12:55 PM	---	0	---	0	Standing water
		23-Jul-2011	10:33 AM	10:43 AM	---	0	---	0	Standing water due to algae build-up
		30-Jul-2011	10:30 AM	10:35 AM	---	0	---	0	Internet observation
		04-Aug-2011	1:00 PM	1:05 PM	---	0	---	0	Internet observation
		27-Aug-2011	12:09 PM	12:47 PM	5	0.42	---	0	None

Reach	Site	WR	Time Start	Time End	Cells	Measured Flow	Gauge Height	Internet Flow	Comment
Isleta	San Francisco Riverside Drain								
		04-Jun-2011	4:20 PM	4:25 PM	---	---	---	---	No flow
		10-Jun-2011	10:34 AM	11:03 AM	4	0.69	---	---	None
		17-Jun-2011	2:25 PM	2:42 PM	3	0.2	---	2	None
		20-Jun-2011	3:00 PM	3:23 PM	4	0.97	---	2	None
		02-Jul-2011	12:05 PM	12:15 PM	---	0	---	2	None
		05-Jul-2011	1:15 PM	1:43 PM	4	0.5	---	3	None
		14-Jul-2011	10:20 AM	10:40 AM	---	0	---	2	No flow
		20-Jul-2011	1:30 PM	1:37 PM	---	0	---	2	No flow
		30-Jul-2011	10:30 AM	10:35 AM	---	20	---	20	Internet observation
		05-Aug-2011	10:00 AM	10:50 AM	11	4.54	---	2	None
		09-Aug-2011	12:00 PM	12:45 PM	9	4.96	---	2	None
		25-Aug-2011	2:30 PM	3:10 PM	5	14.19	---	31	None
Isleta	Lower San Juan Riverside Drain								
		04-Jun-2011	3:27 PM	4:01 PM	18	67.55	1.9	---	None
		10-Jun-2011	11:45 AM	12:40 PM	22	106.4	2.4	---	None
		17-Jun-2011	3:42 PM	4:42 PM	28	65.14	1.86	82	None
		21-Jun-2011	11:30 AM	12:47 PM	28	86.1	2.16	102	None
		27-Jun-2011	6:00 PM	6:44 PM	13	58.4	1.82	59	None
		05-Jul-2011	11:18 AM	12:40 PM	37	61.5	1.8	66	None
		15-Jul-2011	2:08 PM	3:53 PM	30	48.3	1.6	42	None
		20-Jul-2011	2:20 PM	4:08 PM	34	67.59	1.84	54	None
		29-Jul-2011	11:19 AM	1:02 PM	17	114.32	2.56	94	None
		31-Jul-2011	6:00 PM	6:05 PM	---	124	---	124	Wasteway is unsafe to conduct a measurement
		08-Aug-2011	11:15 AM	1:26 PM	32	98.03	2.18	88	None
		27-Aug-2011	10:37 AM	11:54 AM	32	137.65	2.74	136	None

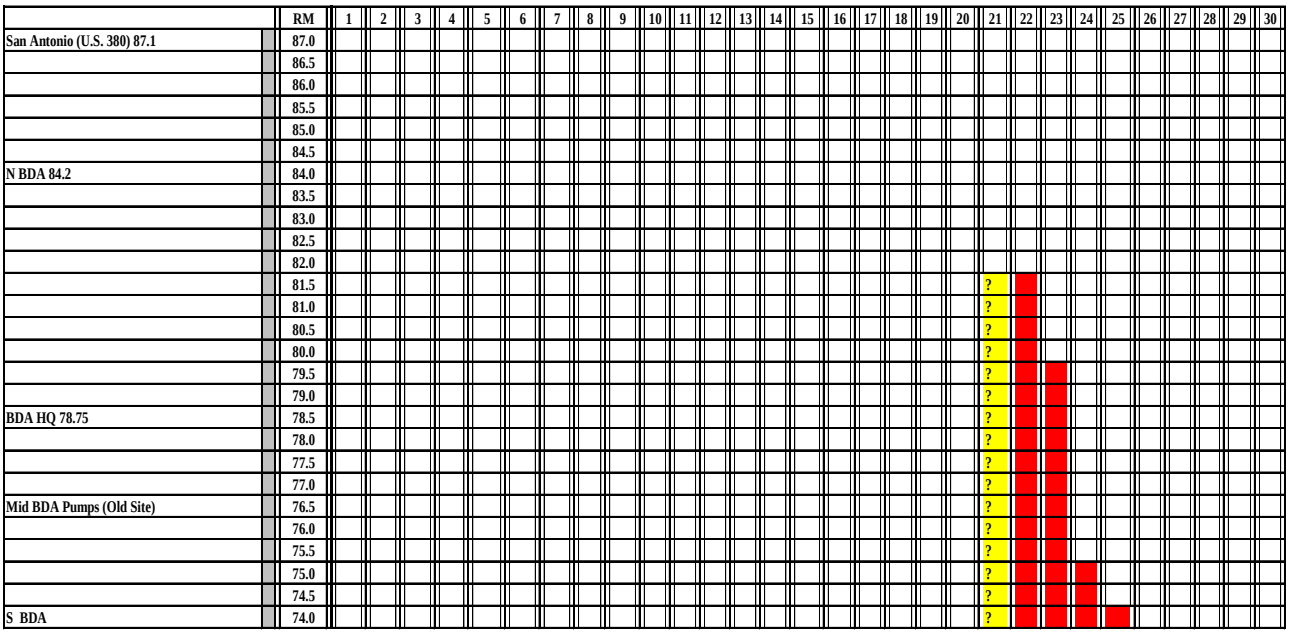
Reach	Site	WR	Time Start	Time End	Cells	Measured Flow	Gauge Height	Internet Flow	Comment
San Acacia	Unit 7 Drain								
		11-Jun-2011	7:00 AM	7:20 AM	---	---	4.07	2.06	Depth over waders - flow not measurable
		13-Jun-2011	2:09 PM	2:15 AM	---	---	4.26	224	An eight foot wading rod is needed to conduct measured flow estimates at this site (wading rod on order)
		28-Jun-2011	10:30 AM	10:30 AM	---	---	4.11	211	An eight foot wading rod is needed to conduct measured flow estimates at this site (wading rod on order)
		03-Jul-2011	9:00 AM	9:00 AM	---	---	3.91	93	An eight foot wading rod is needed to conduct measured flow estimates at this site (wading rod on order)
San Acacia	Nine-mile outfall								
		11-Jun-2011	8:30 AM	8:45 AM	---	---	---	---	River backed up in outfall. Zero velocity indicated on meter
		13-Jun-2011	4:45 PM	4:50 PM	---	---	---	---	Flow estimated to be less than 1 cfs
		23-Jun-2011	7:00 PM	7:00 PM	---	---	---	---	Flow visually estimated to be 2 cfs; water too shallow to be measured with Marsh McBirney Meter
		28-Jun-2011	10:30 AM	10:30 AM	1	1.8	---	---	No way to get a good measurement (too shallow)
		03-Jul-2011	9:30 AM	9:30 AM	---	---	---	---	No way to get a good measurement (too shallow). Flow visually estimated to be 2.0 cfs
San Acacia	Escondida Drain Outfall								
		11-Jun-2011	10:00 AM	10:45 AM	---	---	---	---	Outfall is dry
		13-Jun-2011	5:45 PM	5:50 PM	---	---	---	---	Outfall is dry
		23-Jun-2011	7:30 PM	7:30 PM	---	---	---	---	Outfall is dry
		28-Jun-2011	10:30 AM	10:30 AM	---	---	---	---	Outfall is dry
		03-Jul-2011	10:30 AM	10:30 AM	---	---	---	---	Outfall is dry

Reach	Site	WR	Time Start	Time End	Cells	Measured Flow	Gauge Height	Internet Flow	Comment
San Acacia	Socorro Wastewater Treatment Plant Outfall (Otero Street)								
		11-Jun-2011	12:00 PM	12:05 PM	---	---	---	---	Outfall pipe below surface; flow not measurable
		13-Jun-2011	5:38 PM	5:40 PM	---	---	---	---	Not discharging
		23-Jun-2011	8:00 PM	8:00 PM	---	---	---	---	Not discharging
		28-Jun-2011	7:00 AM	7:00 AM	---	---	---	---	Not discharging
		03-Jul-2011	5:30 AM	5:30 AM	---	---	---	---	Not discharging
San Acacia	Brown Arroyo Wasteway								
		11-Jun-2011	1:00 PM	1:30 PM	---	---	0.35	1	Flow was so low that it was not measurable; the visually estimated flow is equal to the internet posting of 1 cfs
		13-Jun-2011	6:02 PM	6:05 PM	---	---	---	---	Not discharging
		21-Jun-2011	12:00 PM	12:00 PM	---	---	---	---	Not discharging
		28-Jun-2011	6:45 AM	6:45 AM	---	---	---	---	Not discharging
		03-Jul-2011	11:15 AM	11:15 AM	---	---	---	---	Not discharging
San Acacia	Socorro Drain								
		11-Jun-2011	3:00 PM	5:00 PM	---	34	154	35	None
		13-Jun-2011	5:59 PM	5:59 PM	---	---	1.89	49	An 8-foot wading rod is needed to conduct measured flow estimates at this site (wading rod on order)
		21-Jun-2011	11:00 AM	11:00 AM	---	---	1.69	39	Flow visually estimated to be 40 cfs.; an 8-foot wading rod is needed to conduct measured flow estimates at this site (wading rod on order)
		28-Jun-2011	2:00 PM	2:00 PM	---	---	0.92	15	An 8-foot wading rod is needed to conduct measured flow estimates at this site (wading rod on order)
		03-Jul-2011	12:30 PM	12:30 PM	---	---	1.5	33	An 8-foot wading rod is needed to conduct measured flow estimates at this site (wading rod on order)

Reach	Site	WR	Time Start	Time End	Cells	Measured Flow	Gauge Height	Internet Flow	Comment
San Acacia	Elemndorf Drain								
		11-Jun-2011	5:30 PM	5:45 PM	---	---	1.71	1	Flow not measurable
		13-Jun-2011	12:00 AM	12:00 AM	---	---	---	2	Visual estimate of 5 cfs
		21-Jun-2011	6:00 PM	6:00 PM	3	10	1.86	2	Vegetation causes erratic velocity; measured estimates of flow not accurate at this site given present conditions
		28-Jun-2011	2:00 PM	2:00 PM	---	---	---	5	Vegetation causes erratic velocity; measured estimates of flow not accurate at this site given present conditions. Flow visually estimated to be 5-10 cfs
		03-Jul-2011	12:00 PM	12:00 PM	---	---	---	0	Flow estimated to be 4 cfs
San Acacia	Low Flow Conveyance Channel nr Fort Craig Pump Station								
		23-Jun-2011	12:00 PM	12:00 PM	---	---	8.76	96	San Marcial gauge reading used for this record
		28-Jun-2011	12:30 PM	12:30 PM	---	---	---	70	San Marcial gauge reading used for this record

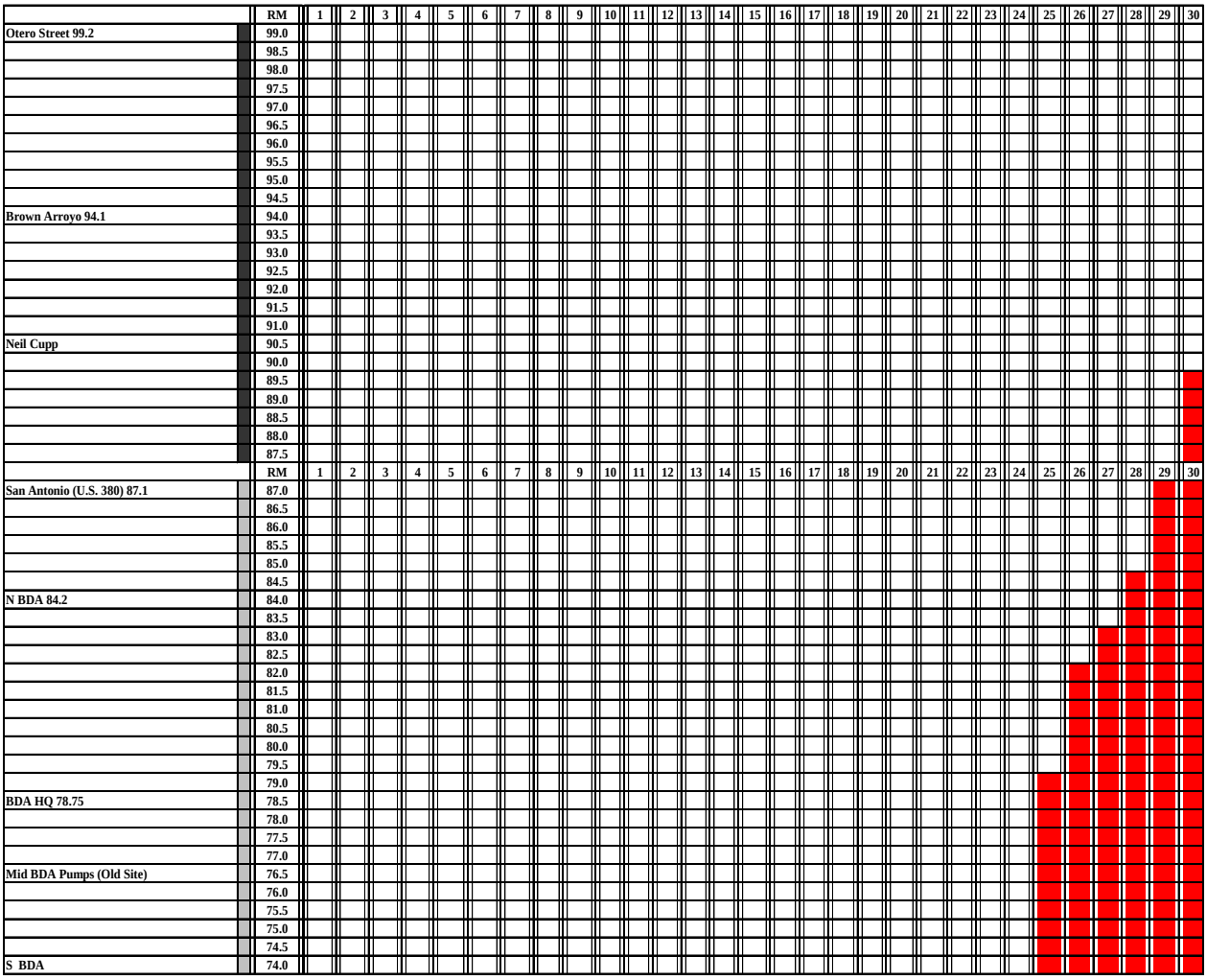
APPENDIX G
SPREADSHEET ACCOUNTS OF RIVEREYES OBSERVATIONS

April 2011 (San Acacia Reach)



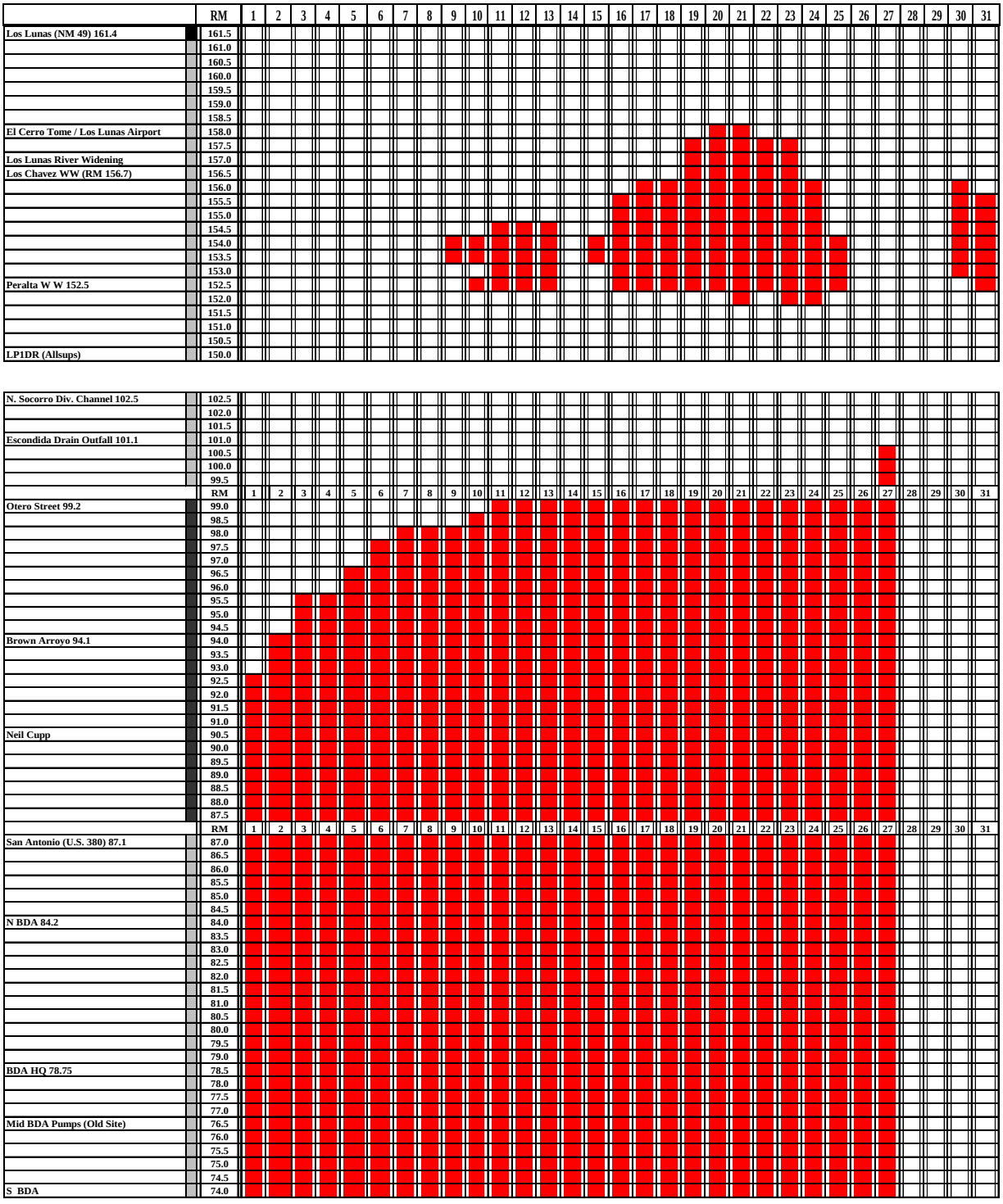
Note: Cells shaded "red" indicate river drying on a given date and at a given half-mile segment of river. Cells shaded "yellow" indicate uncertainty about river drying on a given date and at a given half-mile segment of river.

June 2011 (San Acacia Reach)



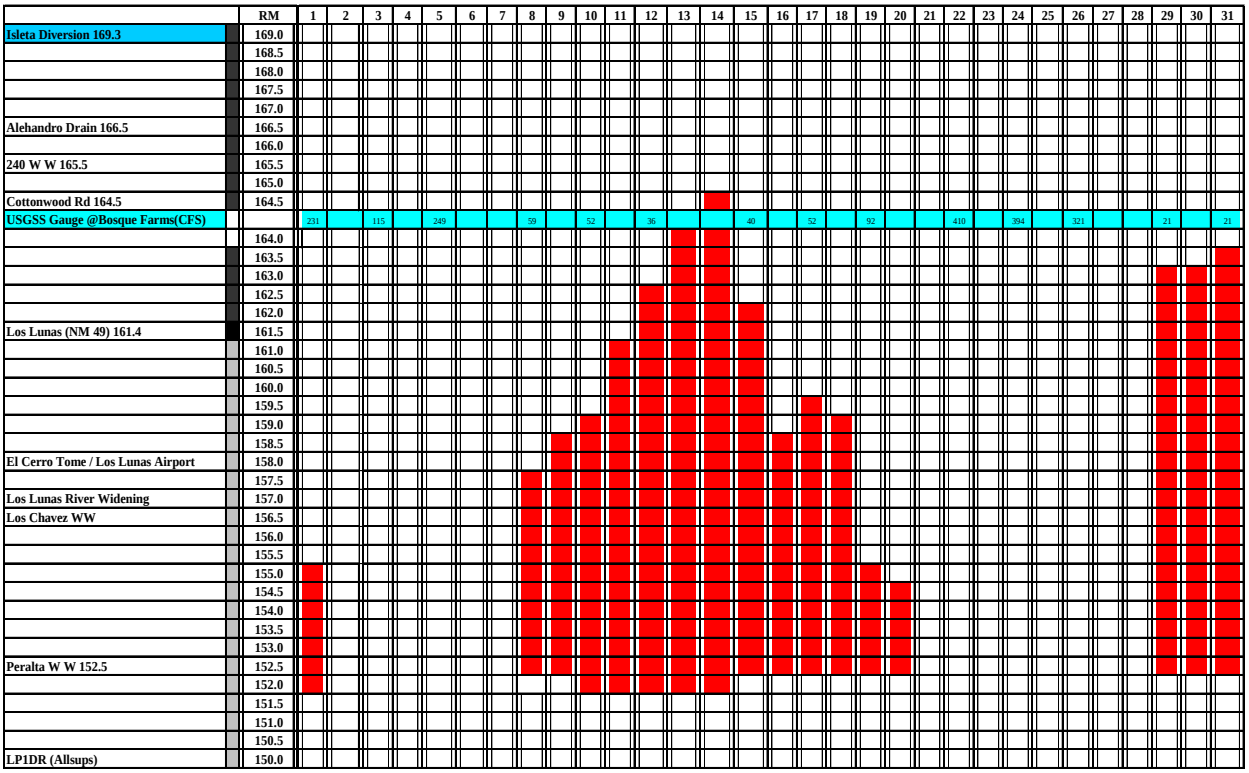
Note: Cells shaded "red" indicate river drying on a given date and at a given half-mile segment of river. Cells shaded "yellow" indicate uncertainty about river drying on a given date and at a given half-mile segment of river.

July 2011 (Isleta and San Acacia Reaches)



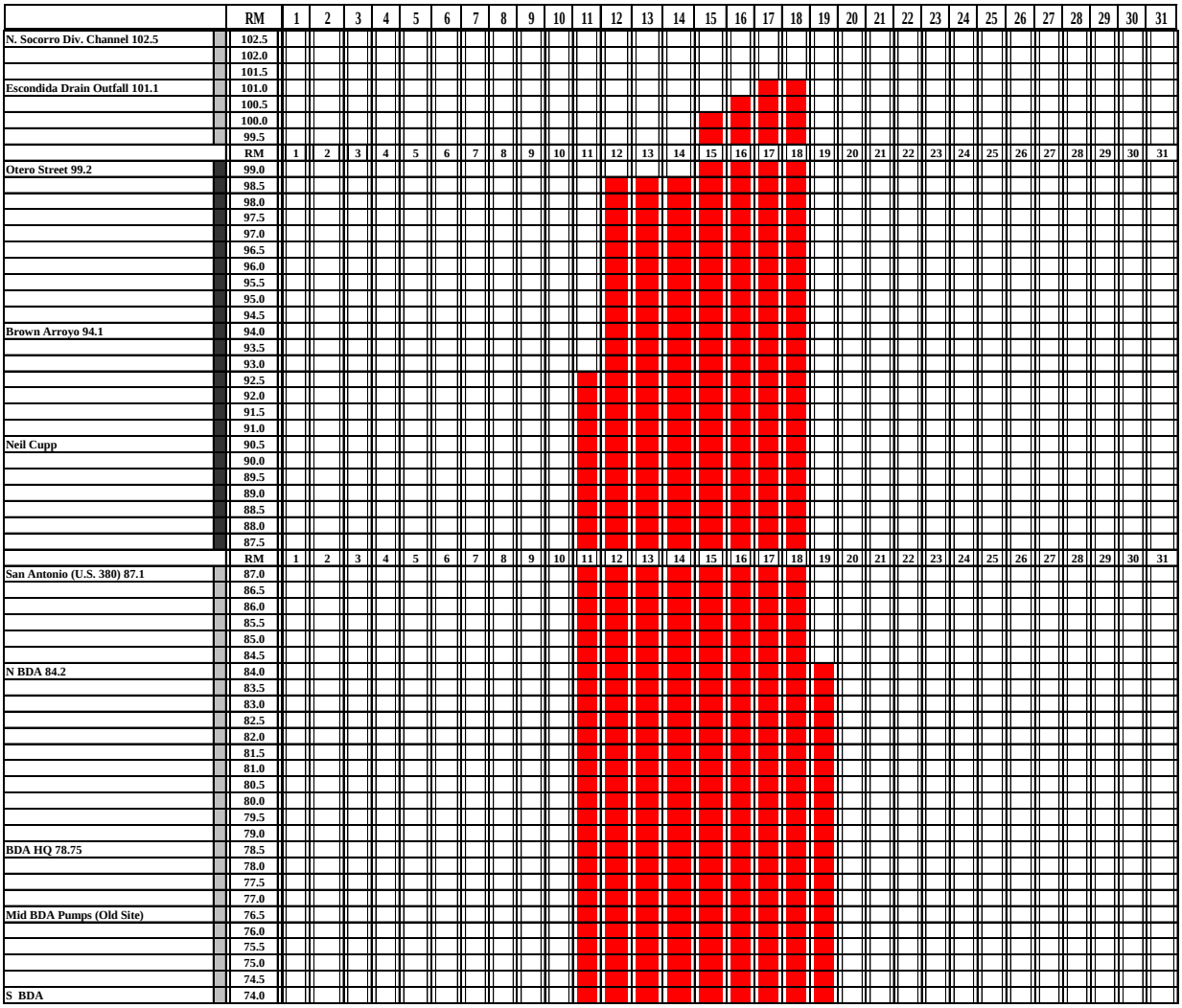
Note: Cells shaded "red" indicate river drying on a given date and at a given half-mile segment of river. Cells shaded "yellow" indicate uncertainty about river drying on a given date and at a given half-mile segment of river.

August 2011 (Isleta Reach)



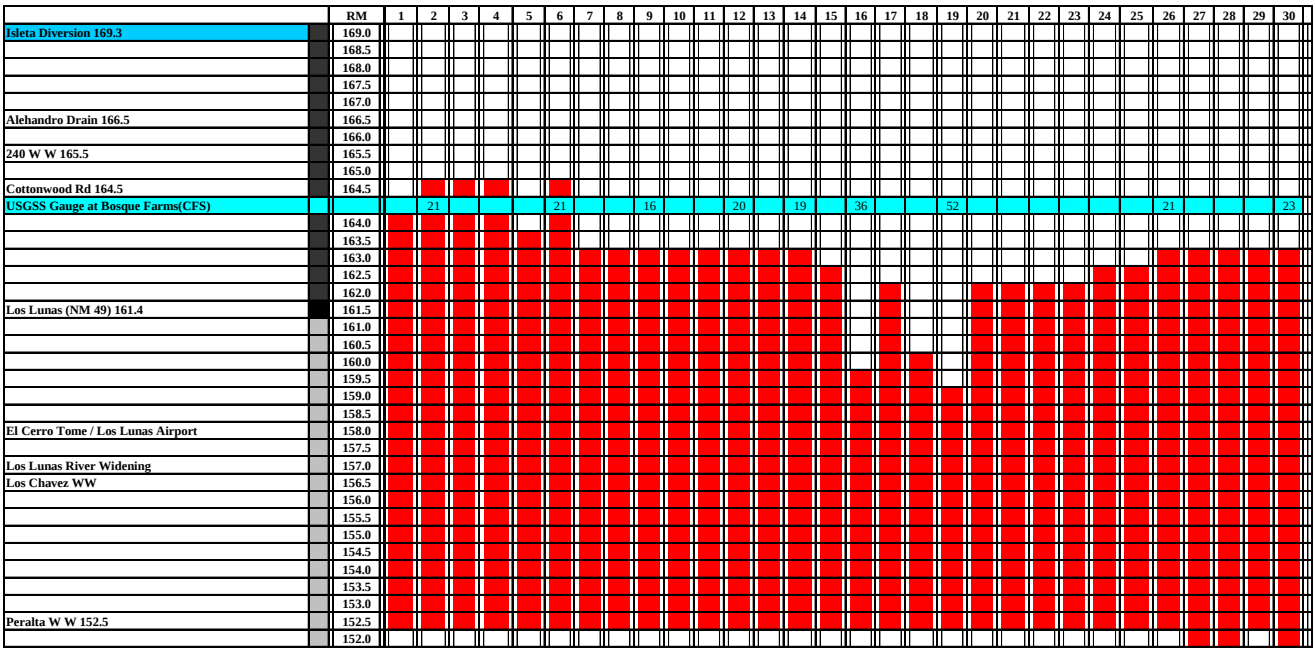
Note: Cells shaded "red" indicate river drying on a given date and at a given half-mile segment of river. Cells shaded "yellow" indicate uncertainty about river drying on a given date and at a given half-mile segment of river.

August 2011 (San Acacia Reach)



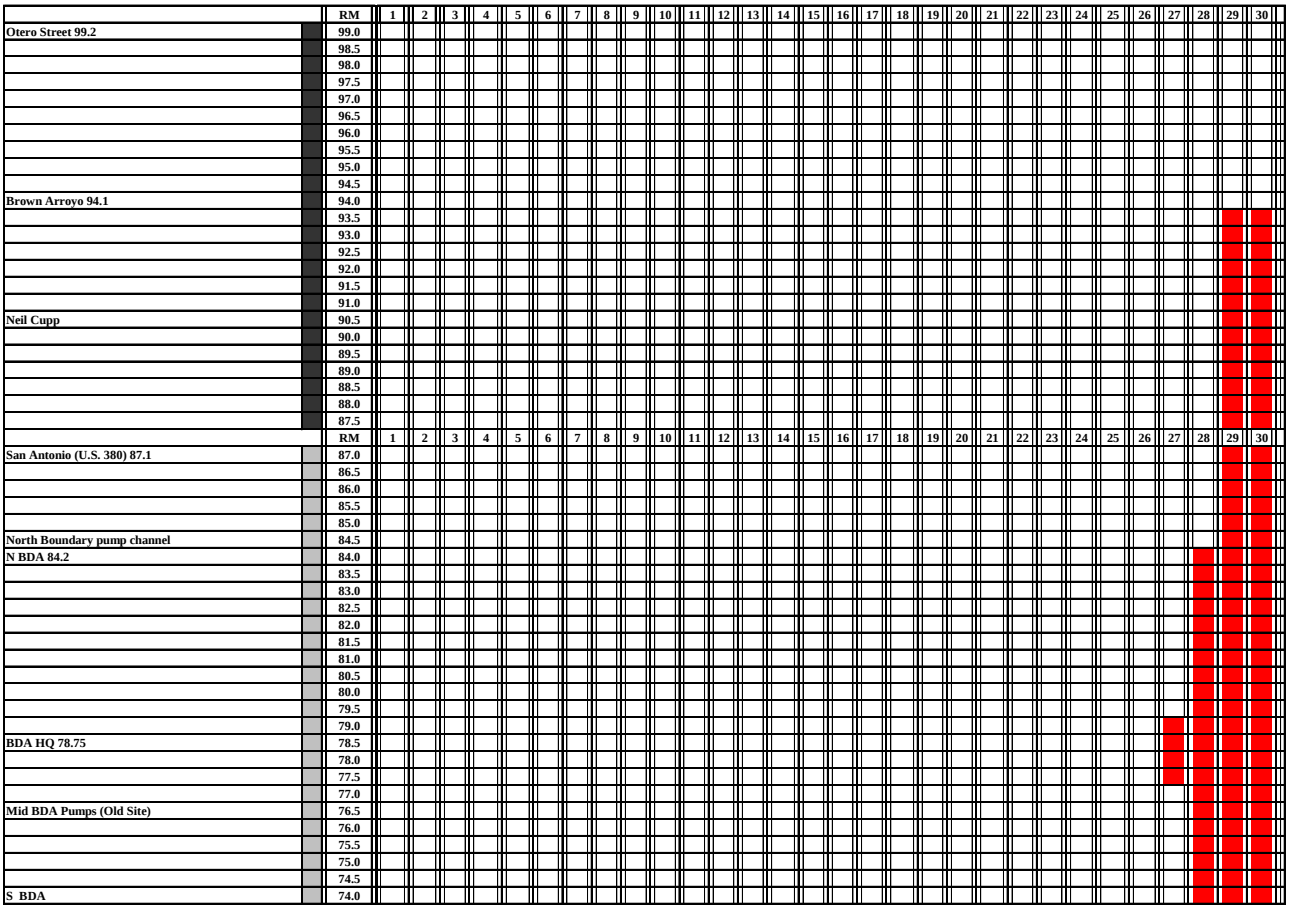
Note: Cells shaded "red" indicate river drying on a given date and at a given half-mile segment of river. Cells shaded "yellow" indicate uncertainty about river drying on a given date and at a given half-mile segment of river.

September 2011 (Isleta Reach)



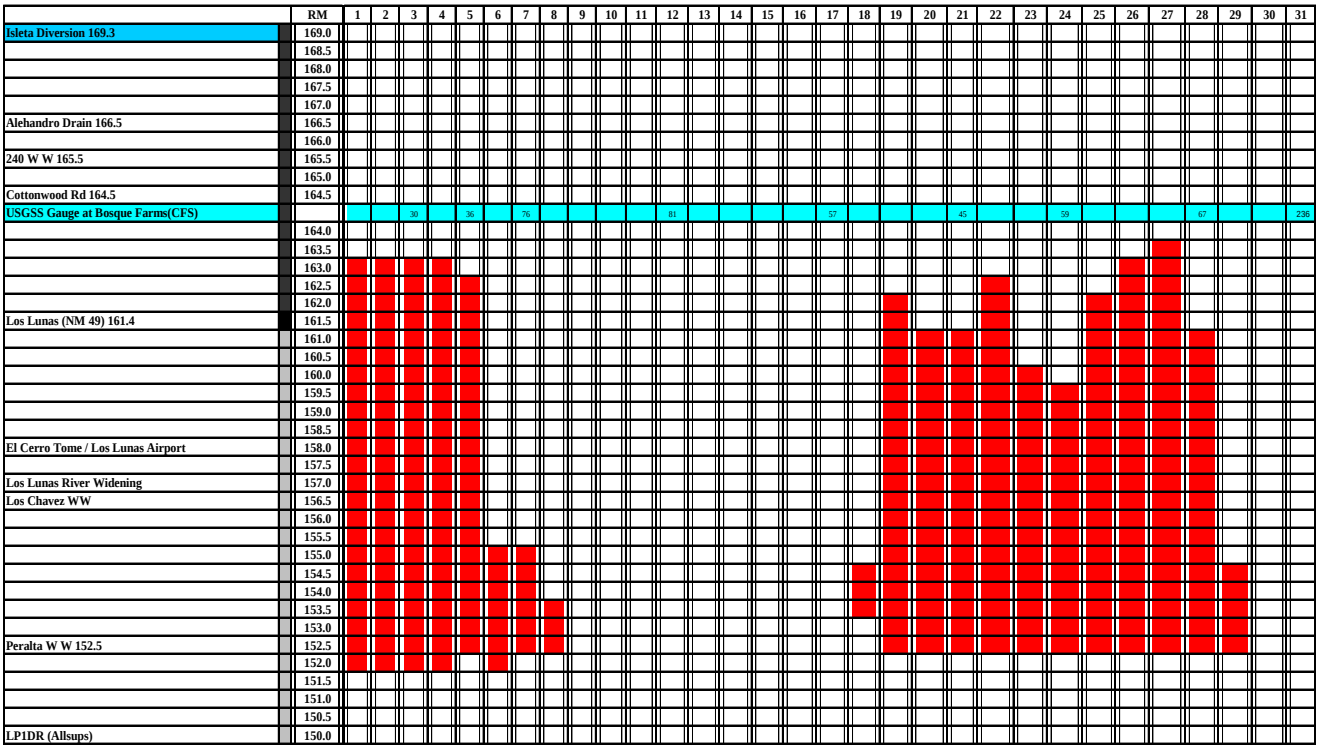
Note: Cells shaded "red" indicate river drying on a given date and at a given half-mile segment of river. Cells shaded "yellow" indicate uncertainty about river drying on a given date and at a given half-mile segment of river.

September 2011 (San Acacia Reach)



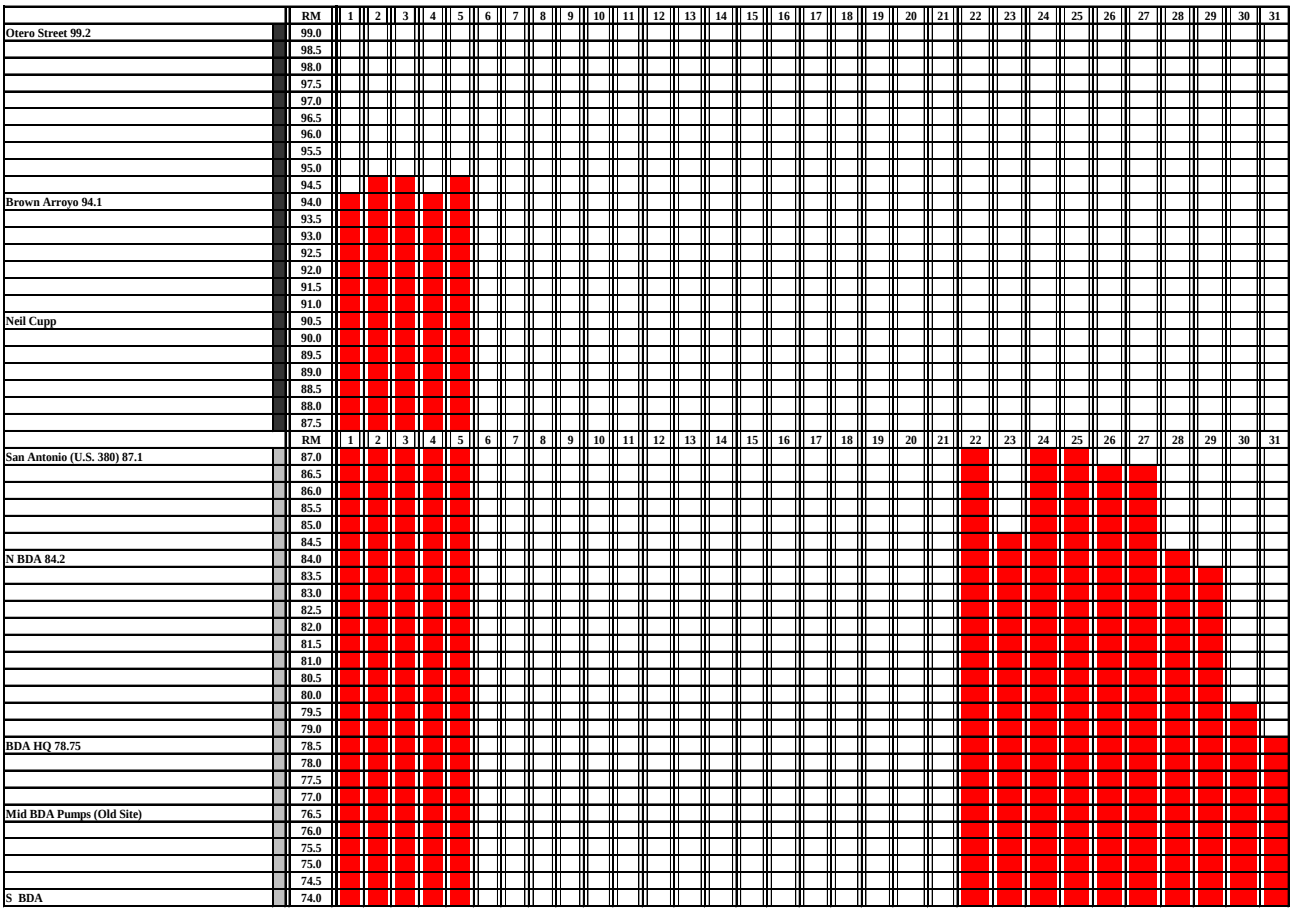
Note: Cells shaded "red" indicate river drying on a given date and at a given half-mile segment of river. Cells shaded "yellow" indicate uncertainty about river drying on a given date and at a given half-mile segment of river.

October 2011 (Isleta Reach)



Note: Cells shaded "red" indicate river drying on a given date and at a given half-mile segment of river. Cells shaded "yellow" indicate uncertainty about river drying on a given date and at a given half-mile segment of river.

October 2011 (San Acacia Reach)



Note: Cells shaded "red" indicate river drying on a given date and at a given half-mile segment of river. Cells shaded "yellow" indicate uncertainty about river drying on a given date and at a given half-mile segment of river.

APPENDIX H
SAFETY DOCUMENTS

SWCA ENVIRONMENTAL CONSULTANTS

JOB HAZARD ANALYSIS FORM (JHA)

Project Name:	Project Manager:	Project Number:	Project Start Date:	Project Location:
River Eyes	Mike Hatch	17402	May-11	Middle Rio Grande, NM

PM Author Name (list other contributors):	Project Description:
Mike Hatch, Franchesca Lucero	River Drying Surveys

SECTION 1 HAZARD CONTROLS

Hazard Description	Hazard Controls
Vehicle Hazards (danger to driver and / or passenger / grass or brush fire	• Complete SWCA Daily Vehicle Inspection Log. Address any delinquent issues identified during inspection. Wear seatbelts. Drive defensively. Use lights & flashers when appropriate. While driving in rough terrain, stop vehicle, walk ahead of the vehicle for a short distance to identify hazards and look for areas to turn around, etc. Secure all loose objects in the passenger area or store in a separate storage area. Know the symptoms of fatigue. Take frequent breaks when driving long distances. Do not drive more than three hours without a break. • Park vehicles in locations that do not impede traffic flow. Back vehicles into parking slots when possible. Use spotter when the view of the parking area is obstructed. Do not breach berms or otherwise restricted roads. Do not park in arroyos or other areas prone to flash flooding when storms are likely. Follow the guidelines of "Tread Lightly." • Vehicles traveling on unimproved roads may accumulate excessive amounts of dry vegetation on the undercarriage, resulting in potential fire danger. To prevent this, field personnel will visually inspect the undercarriage of parked vehicles and remove vegetation when necessary. Field vehicles will also be parked in areas with sufficient vegetation clearance to prevent vehicle fires.
Carrying field equipment	Employees shall not carry objects greater than 40lbs. (or any other weight that could result in injury) or greater than 6 feet without the aid of a mechanical device or the assistance of another employee. Watch for uneven surfaces or objects on the ground. Wear gloves where potential pinch points occur or where objects are able to cut you. Use any other applicable Personal Protection Equipment
Loading Equipment on/off Vehicle	Employees will secure all loads in or on vehicles using ropes, tie-downs, tarps, bungee cords, or other appropriate securing materials to keep load/equipment from shifting or falling.
Hiking and Working Remotely	Let others know the general location of your field work. Carry tools in hand, facing downslope, so they can easily be discarded. Wear boots with non-skid soles. Make sure your footing is secure. Test each step. Be careful going downhill, especially after a long day. Try to keep one hand free while traversing up or down steep slopes. Wear appropriate footwear and clothing to ensure protection. If you fall, roll with the fall. Establish secure footing before taking the next step.
Blisters	Break in boots before field work! Steps on how to care for a blister: swab blister area with rubbing alcohol and let air dry. Sterilize a needle for 10 seconds in a flame. Puncture the edge of the blister near the skin. Apply gentle pressure to squeeze out fluid. Do not remove or rub off the top of the blister. Apply antibiotic ointment, but avoid alcohol or iodine. Cover with sterile gauze or bandage. Change the gauze or bandage daily. Cover the blister with a bandage.
Dense Vegetation (scratches from brush and trees; poison ivy or oak)	Be aware of potential hazards. Wear appropriate clothing to protect the skin. When moving through dense woody vegetation, always wear long sleeved shirt, long pants, closed toe shoes, safety glasses and gloves. Carry personal fist aid kits. Recognize hazardous vegetation and avoid contact. Apply Ivy Block to exposed skin repeatedly while in infested area. Dispose of covers/gloves safely. Decontaminate entire body. Apply Tecnu cream for two minutes then wash off with copious amounts of water.
Seasonal Allergies	Be aware of pollen count in survey area. Use preventative medicine with antihistamines to reduce hazard of environmental pollen. Carry an EpiPen if you are prone to allergies.
Insect Bites / Stings	DEET can be applied to either exposed skin or clothing. It should not be applied to skin that is covered by clothes. Do not apply insect repellent over cuts, wounds, or inflamed or eczematous skin. Under most circumstances of casual use, 10% - 35% DEET will provide adequate protection. In conditions where there is a rapid loss of repellent to the skin due to wash-off from rain, perspiration, or high ambient temperatures, periodic re-application is suggested. Use a bug net that covers exposed skin. If bitten, use antihistamines to control symptoms. Anyone who is allergic to bee stings should notify the group before going out in the field and should have an EpiPen on them at all times in the field. The sting of these insects is caused by the insects utilizing self-defense or defense of the nest response, so avoid all nests when possible. If a bee stings you, remove the stinger by scraping away the stinger sideways along the sting using a needle or credit card (do not squeeze with tweezers, it will cause more venom to come out).
Tick Bites	Use fine tweezers to grasp the tick as close to the skin surface as possible. Pull backwards gently but firmly, using an even, steady pressure. Do not jerk or twist. Do not squeeze, crush, or puncture the body of the tick, since its bodily fluids may contain infection-causing organisms. After removing the tick, wash the skin and hands thoroughly with soap and water. If any mouth parts of the tick remain in the skin, these should be left alone; they will be expelled on their own. Attempts to remove these parts may result in significant skin trauma. Seek medical attention should the bite become infected.

SWCA ENVIRONMENTAL CONSULTANTS

JOB HAZARD ANALYSIS FORM (JHA)

Project Name:	Project Manager:	Project Number:	Project Start Date:	Project Location:
River Eyes	Mike Hatch	17402	May-11	Middle Rio Grande, NM

Snake Bites	When moving through tall grass or weeds, poke at the ground in front of you with a long stick to scare away snakes. Watch where you step and where you sit when outdoors. Wear loose, long pants and high, thick leather or rubber boots or gators. Shine a flashlight on your path when walking outside at night. Never handle a snake, even if you think it is dead. If bitten – Take off any jewelry or tight clothing near the bite quickly, before swelling starts. Lift the bitten arm or leg so it is level with your heart. Clean the bite wound. Be sure to wipe in the direction away from the wound. If you think the bite was from a poisonous snake, get to a hospital as soon as you can. If medical help is more than 30 minutes away, tie an elastic wrap two inches above the bite. The wrap should be loose enough to slip a finger underneath it. Do NOT bleed the wound. Do NOT try to suck the venom out of the wound. Do NOT put ice on the bite.
Bear Encounters	• Black bears: Never make eye contact. Make yourself look large, raise arms, make noise, and leave area slowly without turning your back. Never play dead, and fight back if attacked. • Grizzly bears: Never make eye contact. Make yourself look large, make noise, and leave area slowly without turning your back. If attacked, curl into fetal position and protect head and neck. Do not fight back.
Mountain Lions	Avoid working when mountain lions are most active—dawn, dusk, and at night. Do not approach a mountain lion. If you encounter a mountain lion, do not run; instead, face the animal, make noise and try to look bigger by waving your arms; throw rocks or other objects. If attacked, fight back. If you witness a mountain lion attacking someone, immediately call 911.
Crossing Water (arroyos, flash-floods, rivers and streams)	If thunderstorms and / or heavy rain occur, move immediately to higher ground and do NOT cross any arroyos or small streams. Be aware of storms in the mountains that may result in flash flooding in locations some distance from the storm center. Do not cross very fast flowing water; fast/moderately fast flowing – cross if less than just above the knee-deep and you can see/feel the bottom (use a stick); flowing slowly – cross if less than waist-deep, use a stick; deeper than waist – do not cross unless necessary. Find a shallow spot to cross, if you can't find a safe place and your life does not depend on you crossing, turn around and go back. Find a wrist-thick shoulder-height stick to test the water depth in front of you; can also be used as a support, enabling you to keep two points of contact with the river bottom at all times. Loosen your pack so you can get it off quickly if you fall. Face slightly upstream on an angle and sidestep- Don't cross your legs. If you're in a group. Hold onto each other and cross in a "conga line," angling upstream, with the weaker hikers in the middle.
Storm Conditions: lightning (electrocution)	Incorporate the 30/30 Rule 1. Employees should seek shelter if the "Flash-To-Bang" delay (length of time in seconds between a lightning flash and its subsequent thunder), is 30 seconds or less. 2. Remain under cover until 30 minutes after the final clap of thunder. If caught out in the open during a thunderstorm, crouch down and touch as little surface of the ground as possible on the lower part of a slope. Avoid standing by tall objects or under overhangs. Remove metal jewelry. If in a vehicle, avoid touching metal when exiting.
Wet Soil Conditions	Some soils are extremely hydric and, if saturated, can create conditions where off-road vehicles can become stuck – even with a small amount of precipitation. Driving in conditions like these can cause deep rutting in roads and may damage vegetation, leading to erosion or loss of habitat. Driving should be avoided in these conditions; however, walking in these conditions can also provide similar difficulties. Any work on or near cultural resource sites can leave deep footprints and may affect site features or integrity. In very wet conditions, fieldwork should be suspended for a day, or more, to avoid affecting cultural resource sites.
Rock Outcrops, cliffs, downed trees & steep drainages	Travel on the contour; do not attempt to scale or descend rock outcrops. Consider all rock outcrops unstable, and do not depend on them to support your weight. Test every step to uncover loose rocks, unstable soil, or slick surfaces. Cross with care; they may be slippery. Stepping on or straddling downed trees is best avoided. Grasp rooted brush to avoid uncontrolled slides.
Surveying cutbanks and cliffs	All field personnel must be mindful of cutbanks and friable soils. Even if a bank looks stable, it may be seriously undercut and additional pressure could cause mass cleavage and a slide/fall of the bank. Some banks may be up to 100feet in height. Vehicles should remain at least 25 feet from cutbank edge, and persons walking should remain several feet away from areas where mass wasting or other erosion factors are observable.
Endangered Species	With fieldwork, you must avoid nesting locations. Coordination must be made with appropriate governing agencies to be compliant while surveying.
Heavy Equipment	Employees will avoid all heavy drilling equipment. If heavy equipment is in the area, employees will leave the area.
Barbed Wire and Fence	Choose safe crossing points and techniques. If possible, team members should assist each other. Keep tetanus shots current. Be sure to wear appropriate leather gloves when handling barbed wire. Wear appropriate clothing to protect against punctures, cuts, and lacerations by wire or post. Use caution when crossing fence for trip hazards. Jump on bottom wire to determine if it is strong enough to support weight before climbing over it. Ensure the post is not in a position to impale or harm while crossing. Always wear gloves when handling a fence!
All Terrain Vehicles (ATV)	Prior to riding, all employees must complete SWCA's ATV training located on the Safety Portal. Complete SWCA Daily ATV Inspection Log. Wear proper PPE (a helmet is required). Do NOT carry passengers unless the ATV is designed to do so. Use extra caution if road or environmental conditions change. Be aware of your surroundings. Give special attention to terrain features such as roads, slopes, canals, ditches, blind intersections, trees, shrubs, other vehicles. Don't traverse a hill sideways, always climb straight up or straight down. However, if you are in a situation where you need to cross pitched terrain (having a distinct change in camber from one side of the vehicle to the other), always lean towards the upslope direction to avoid rollovers. If you're not sure of the trail conditions, be prepared for the worst and consider walking if feasible.

SWCA ENVIRONMENTAL CONSULTANTS

JOB HAZARD ANALYSIS FORM (JHA)

Project Name:	Project Manager:	Project Number:	Project Start Date:	Project Location:
River Eyes	Mike Hatch	17402	May-11	Middle Rio Grande, NM

Working in unfamiliar areas (getting lost)	Employees should be aware of surroundings and should inform others of their destination for the day. Always carry matches/lighter, more water than you need for the day, signaling device (mirror, air horn, and whistle) and compass in your backpack. If you have no cell phone coverage, do not panic. Trace your thoughts back to the last point where you definitely knew your location, how long ago that was and in what general direction you traveled since then. Re-trace your original position before you got lost. If no success – create a physical or a sound signal. Insulate yourself and wait for help to arrive. Waypoint vehicle with GPS.
Heat Stress	Heat exhaustion is caused by the loss of large amounts of fluid by sweating, sometimes with excessive loss of salt. A worker suffering from heat exhaustion still sweats but experiences extreme weakness or fatigue, giddiness, nausea, or headache. In more serious cases, the victim may vomit or lose consciousness. The skin is clammy and moist, the complexion is pale or flushed, and the body temperature is normal or only slightly elevated. In most cases, a treatment involves having the victim rest in a cool place and drink plenty of liquids. Victims with mild cases of heat exhaustion usually recover spontaneously with this treatment. Those with severe cases may require extended care for several days. There are no known permanent effects. Wear sunscreen, hat, and sunglasses to help avoid heat stress.
Dehydration	Workers should drink 5 to 7 ounces of fluids every 15 to 20 minutes (1 gallon per person per day) to replenish the necessary fluids in the body. Include both water and electrolytes as needed. Signs of dehydration include thirst, lack of urination and concentrated color, dry mouth, lack of tears, no sweating, muscle cramps, and nausea and vomiting. Fluid replacements may be attempted by drinking frequent, small amounts of clear fluids.
Hypothermia	Hypothermia usually occurs gradually. Often, people are not aware that they need help, much less medical attention. Common signs to look for are shivering, which is your body's attempt to generate heat through muscle activity, and the "-umbels": stumbles, mumbles, fumbles, and grumbles. These behaviors may be a result of changes in consciousness and motor coordination caused by hypothermia. Other hypothermia symptoms may include slurred speech, abnormally slow rate of breathing, cold, pale skin, fatigue, lethargy, or apathy. The severity of hypothermia can vary, depending on how low your core body temperature goes. Severe hypothermia eventually leads to cardiac and respiratory failure, then death. Wear layers, and bring extra clothes. Keep head covered. Use hand/foot warmers as necessary.
Dangerous or Violent Individuals	Be conscious of potentially dangerous or violent individuals or groups. Do not confront or approach dangerous individuals. If employees feel threatened, they should call 911 and contact their Project Manager/Office Director immediately. Carry pepper spray, and know how to use it.
Solo Fieldwork	Solo fieldwork should be avoided wherever possible. Solo fieldworkers are responsible for preparing a fieldwork risk assessment and submitting it to their field supervisor. Ensure that you have fully appraised yourself of local hazards and risks, noting which areas of high risk to avoid. Identify the location of the local emergency services, telephones and nearest residences prior to start of your fieldwork including specific location, dates, and times must be left with a field supervisor who should have instructions to contact the emergency services in the event that an employee does not return within the allocated time.
Working in burned forest areas	Be aware of the dangers of burned trees which are now in danger of falling over and hitting/pinning you. If it's windy out, the likelihood of a tree falling over is increased. Be aware of hidden holes in the ash - areas where tree trunks used to be which have burned out and left a hole in the ground. The ash and sediment covers these holes loosely, so they appear to be solid ground when it is actually a large hole. Since such hazards are hard to detect, be extra cautious when walking around high frequency burn areas and use a walking stick to probe the ground ahead.
Crossing Jetty Jacks and tie-back lines	Choose safe crossing points and access points. Jetty jacks and tie-backs could be submerged in water and ground. Locate or identify jetty jacks and associated lines before wading into river or walking through dense vegetation and brush. Be prepared to wear appropriate gloves, pants, and boots when working near jetty jacks to avoid cuts and lacerations. Use caution when crossing jetty jacks and tie-backs as they are a tripping hazard.
Stray Dogs	Stay away from dogs. Do not run if confronted, back away slowly using a calm, low voice, and remain calm. Carry pepper spray and have it readily accessible. Make sure you know how to properly use pepper spray. Look for a defense weapon.
Horses	Maintain a safe distance from horses (10 feet minimum). Avoid foals and separating them from mothers.
Livestock, electric fencing in pasture areas	Ask farmer to confine livestock outside of the project area. Stay away from livestock. Avoid calves and separating them from their mothers. Avoid isolating one animal from the group. Never trust a bull. Know what electric fencing looks like. To determine if electricity is on hold place a long blade of grass on the fence to see if it snaps.
Fire Safety	Conform to local and regional fire control restrictions.
Hiking and Driving ATV in low light conditions	Do not drive ATV at speeds unsafe for the effective illumination distance of the ATV headlight beam. Cary headlight beam or flashlight to illuminate foot travel.
*Additional Hazard	

SWCA ENVIRONMENTAL CONSULTANTS

JOB HAZARD ANALYSIS FORM (JHA)

Project Name:	Project Manager:	Project Number:	Project Start Date:	Project Location:
River Eyes	Mike Hatch	17402	May-11	Middle Rio Grande, NM

*Additional Hazard	
*Additional Hazard	
*Field Defined:	
*Field Defined:	
*Field Defined:	

*When a new hazard is encountered in the field: pause and add it to the JHA, communicate the hazard to the field crew, and if proper PPE is not at hand for new hazard, stop work, contact supervisor, and plan accordingly.

SECTION 2 PERSONAL PROTECTIVE EQUIPMENT (PPE) REQUIREMENTS

Full-length pants, Boots above ankles. Waders or wading boots and booties if conducting flow measurements. A PFD should be worn for all river crossings.

SWCA ENVIRONMENTAL CONSULTANTS

JOB HAZARD ANALYSIS FORM (JHA)

Project Name:	Project Manager:	Project Number:	Project Start Date:	Project Location:
River Eyes	Mike Hatch	17402	May-11	Middle Rio Grande, NM

SECTION 3 WORKERS COMPENSATION & EMERGENCY PROVIDER INFORMATION

Emergency Provider	Address	City	State & Zip	Telephone
Presbyterian Hospital	1100 Central Ave SE	Albuquerque	NM, 87106	505-841-1234

W/C Non-Emergency Provider	Address	City	State & Zip	Telephone
Concentra Urgent Care	3811 Commons Ave NE	Albuquerque	NM 87109	(505)345-9599

W/C Non-Emergency Provider	Address	City	State & Zip	Telephone

SECTION 4 ADDITIONAL PHONE NUMBERS

Highway Patrol	BLM/USFS Ranger	Emergency Towing Company	Police / Fire Department / Ambulance
1888-442-6677	(505) 761-8700	(505) 864-3030	505 864-6288 /505-864-4401/911

Poison Control	Hazardous Materials	Animal Control	Border Patrol
800-432-6866	911	505-861-1301	N/A

SECTION 5 SWCA EMERGENCY CONTACT INFORMATION

It is the Project Manager's responsibility to communicate any incidents to their supervisor and Principal; as well as properly document and report incidents to their OSR and SWCA safety department. When inter-department employees are used to conduct field work, it is the PM's additional responsibility to inform the employee's home-office Principal of any incidents. Employees involved in incidents should also maintain open communications with their supervisor to the degree permissible by HIPPA and OSHA.

	Name:	Phone:
Project Manager	Mike Hatch	**505-328-4419**
Field Supervisor	Greg Pargas	**505-506-1517**
Principal (Office Manager)	Joseph Fluder	**505-263-2862**
Office Safety Representative (OSR)	Alayne Syzmanski	**505-206-6654**
Safety Council	A member of a Safety Council is available 24 hours per day in the event of an emergency	**602-501-1816**
Medcor	3rd Party Call in Triage Medical Service	**1-800-775-5866**

SWCA ENVIRONMENTAL CONSULTANTS

JOB HAZARD ANALYSIS FORM (JHA)

Project Name:	Project Manager:	Project Number:	Project Start Date:	Project Location:
River Eyes	Mike Hatch	17402	May-11	Middle Rio Grande, NM

SECTION 6 DAILY JHA TRACKING

- By signing and initialing this Section I confirm that I have read and understand the attached Job Hazard Analysis document (JHA) and Workers Comp provider information and that I will follow this guidance. I also understand that anyone can call a Safety Timeout at any time in order to ensure a safe work environment in the field. When in doubt STOP, and make an informed decision involving the Field Supervisor and others.

- This document must be signed and initialed on the first day of the project and initialed each day thereafter while on the project. If needed, please use another sheet for additional signatures.

Project Number:	17042	Check One		Please initial for each day of the project							
Print Name	Signature	Crew	Supervisor	SU	MO	TU	WE	TH	FR	SA	Week Ending

SWCA
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DAILY SAFETY VEHICLE INSPECTION LOG

Contact your Project Office Safety Representative (OSR) for any vehicle collisions or citations while on the job

Vehicle Plate & VIN (last 4 #) - Enter Below
Make /Model / Year Color - Enter Below

	Starting			Ending		
	Date	Mileage		Date	Mileage	
Check Owner	SWCA		Rental		Personal	

Office Renting Vehicle	Rental Agreement # (if applicable)

	DRIVER - Print Full Name & Sign
SUN	
MON	
TUE	
WED	
THU	
FRI	
SAT	

Check appropriate item with the associated day. Any deficiencies must be listed at the bottom of the page.

All vehicles in use shall be checked and documented at the beginning of eachshift. All defects shall be corrected before the vehicle is placed into service.	SUN	MON	TUES	WED	THUR	FRI	SAT
All breaking systems (incl. parking & emergency)							
Tires							
Horn							
Steering Mechanism							
Tow Hitch							
Seat Belts							
Operating Controls & Safety Devices							
Road Side Emergency Kit							
Spare Tire - *functional*							
Body / Structural Damages - scratches, dents, etc.							
The Items Listed Below Shall Be Readily Available							
Disposable Camera / Phone Camera							
Fire Extinguisher - *when conditions require*							
First Aid Kit - *check contents*							
Insurance Card							
Vehicle Incident & Investigation Reports							

	List Deficiencies / Damages
SUN	
MON	
TUE	
WED	
THU	
FRI	
SAT	

If you are involved in an accident: provide copy of SWCA's insurance print out and direct other involved party and their representatives to contact us at: autoclaim@swca.com or by phone (602) 274-3831 ext. 1169.

Safety - Near Misses and Report Only

This section is for safety-related occurences that do not result in first aid or other attention. It enables SWCA to track hazards and ensure employee safety. Please fill this section out and send a copy to safety@swca.com for tracking.

-'(N)ear Misses' are incidents that were averted by an employee's ***reaction* or simply by luck (Example: A bear is encountered and approaches an employee, so mace is used to scare it off).**

-'(R)eport Only' is used to identify a ***potential hazard* that did not actually pose an imminent threat (Example: A bear is seen, but it was far away in the distance; or a dirt road had been washed away in a recent flood, causing a sharp embankment drop-off.)**

N/R (Circle One)	Description	Date
N/R		
N/R		
N/R		
N/R		
N/R		

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DAILY ALL TERRAIN VEHICLE (ATV) INSPECTION LOG

Contact your Project Manager & Project OSR for any collisions or citations while on the job.

ATV I.D. # - Enter Below

Make /Model / Year Color - Enter Below

	Start Date	End Date
Week 1		
Week 2		

Check Owner	SWCA		Rental		Pers.	

WK 1	DRIVER - Print Full Name & Sign	WK 2	DRIVER - Print Full Name & Sign
SUN		SUN	
MON		MON	
TUE		TUE	
WED		WED	
THU		THU	
FRI		FRI	
SAT		SAT	

Check appropriate item with the associated day. Any deficiencies must be listed at the bottom of the page.

	Week 1							Week 2						
	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Ignition Start & Engine Kill / Stop Switch														
Battery														
Light / Electrical System														
Handle Bar Controls (cables / levers / buttons)														
Chain condition														
Tires (pressure / condition)														
Liquid Levels (gas, oil, coolant, brake fluid)														
ATV Secured / Load Secured														
Fuel Stored Properly / Fire Extinguisher														
Trailer Secured														
PPE - Helmet / Safety Eye Protection														
Ankle Boots / Pants / Sleeved Shirt														
Bag of tools in place														
Audio Communication Equipment														
First Aid Kit - (Check Contents)														
Vehicle Accident Report & Investigation Report														
Disposable Camera / Phone Camera														

WK 1	DRIVER - Print Full Name & Sign	WK 2	DRIVER - Print Full Name & Sign
SUN		SUN	
MON		MON	
TUE		TUE	
WED		WED	
THU		THU	
FRI		FRI	
SAT		SAT	