Appendix H

Brazos River Authority Accounting Plan

Appendix H – Brazos River Authority Accounting Plan

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H   Brazos River Authority Accounting Plan

H.1 Introduction

The Brazos River Authority's (BRA) Accounting Plan is the method of accounting for and reporting water diversions and use. It covers a calendar year, with a new Accounting Plan to start on January 1st of each year. Entries in the Accounting Plan will be made regularly by BRA staff. The Accounting Plan includes:

- Customer water use, including delivery of water to BRA's downstream customers adjusted for travel time and losses;
- System reservoir operations, including inflows, diversions, water supply releases, passage of instream flows, and storage and use of water under the applicable BRA authorizations;
- Diversions made under the new appropriation contained in the System Operation Permit (SysOps), including use of return flows;
- Compliance with environmental flow standards; and
- Summaries that show use under the various BRA water rights.

The Accounting Plan, conformed as required by Ordering Provisions 1.g(2), 3, and 4 of the Commission's September 16, 2016 Final Order and by Special Condition 5.A.2 of the System Operation Permit issued on November 30, 2016, is incorporated into BRA's *Conformed Water Management Plan for Water Use Permit No. 5851*, approved by the Executive Director as to form (the Water Management Plan, or "WMP"). In accordance with TCEQ policies and the requirements of the System Operation Permit, the Accounting Plan will be available for public inspection at BRA headquarters in Waco during normal business hours.

Additional information underlying and supporting this Accounting Plan may be found in the Water Management Plan and in the *Conformed Technical Report in Support of the Water Management Plan* (WMP Technical Report).

H.1.1 BRA Water Rights

Table H.1.1 is a summary of BRA's existing reservoir water rights included in this Accounting Plan. The Accounting Plan also includes diversions made under the System Operation Order (System Order), the key provisions of which are incorporated into BRA's reservoir rights as shown in Table H.1.1. The System Order was originally issued in 1964 and authorizes coordinated operation of the BRA's 11 existing System reservoirs. The System Order provides flexibility in how water is managed and used from the reservoirs; however, it does not provide for appropriation of the additional water that can be made available from this type of operation. The System Order and recent amendments to BRA's reservoir water rights are described in Section IV.C. of the Water Management Plan.

Other water rights in the Accounting Plan include BRA's System Operation Permit (Water Use Permit No. 5851) and BRA's Excess Flows Permit (Certificate of Adjudication No. 12-5166, as amended). The System Operation Permit is a large and complex water right with an accompanying Water Management Plan. Some of the provisions of the System Operation Permit are described in this Accounting Plan. Other aspects of the permit are described in detail in other portions of the Water Management Plan and the WMP Technical Report.

BRA's Excess Flows Permit allows for non-priority diversion and use of run-of-river flows at multiple diversion locations along the Brazos River in Austin and Fort Bend counties, without a release being made from an upstream reservoir. Diversions are limited to times when flows in the Brazos River at the United States Geological Survey (USGS) gaging station near Richmond (Gage No. 08114000) exceed 1,100 cfs, or some lesser rate of not less than 650 cfs, during periods when all holders of appropriative rights to divert water downstream of the Richmond gage agree in writing upon any lesser rate. This permit authorizes diversions of up to 650,000 acft/yr for municipal, industrial, and irrigation

Table H.1.1 - Summary of Brazos River Authority Reservoir Water Rights

Water Right ID	Reservoir Name	Authorized Storage (acft)	Priority Date	Priority Diversion (acft/yr)	Max Diversion Rate (cfs)	*System Order Diversions Amount (acft/yr)	Type Use
COA 12-5155	Possum Kingdom	724,739	4/6/1938	230,750	Unspecified	175,000	Mun
						250,000	Ind
						250,000	Irr
						49,800	Min
						--	Hydro
COA 12-5156	Granbury	155,000	2/13/1964	64,712	Unspecified	40,000	Mun
						45,000	Ind
						14,500	Irr
						500	Min
COA 12-5157	Whitney	50,000	8/30/1982	18,336	5,000	25,000	Mun
						25,000	Ind
COA 12-5158	Aquilla	52,400	10/25/1976	13,896	2,100 releases through dam & 90 from reservoir perimeter	17,000	Mun
						18,200	Ind
						200	Min
COA 12-5159	Proctor	59,400	12/16/1963	19,658	Unspecified	18,000	Mun
						17,800	Ind
						18,000	Irr
						200	Min
COA 12-5160	Belton	457,600	12/16/1963	100,257	Unspecified	95,000	Mun
						150,000	Ind
						149,500	Irr
						500	Min
COA 12-5161	Stillhouse Hollow	235,700	12/16/1963	67,768	Unspecified	74,000	Mun
						74,000	Ind
						73,700	Irr
						300	Min
COA 12-5162	Georgetown	37,100	2/12/1968	13,610	Unspecified	16,500	Mun
						16,400	Ind
						4,100	Irr
						100	Min
COA 12-5163	Granger	65,500	2/12/1968	19,840	Unspecified	30,000	Mun
						29,800	Ind
						5,500	Irr
						200	Min
COA 12-5164	Somerville	160,110	12/16/1963	48,000	Unspecified	49,500	Mun
						50,000	Ind
						50,000	Irr
						500	Min
COA 12-5165	Limestone	225,400	5/6/1974 for 217,494 acft & 9/4/1979 for 7,906 acft	65,074	Unspecified	69,500	Mun
						77,500	Ind
						70,000	Irr
						500	Min
Total from Reservoirs		2,222,949		661,901			

*The total amount of water diverted or released from any one System reservoir for a particular purpose may exceed the authorization for that purpose under that reservoir's certificate of adjudication, but may not exceed the total authorized diversions for all purposes from that reservoir in any calendar year.

Abbreviations for type of use are as follows: COA = Certificate of Adjudication, Mun = Municipal, Ind = Industrial, Irr = Irrigation, Min = Mining

purposes. However, as with the System Order, this right does not authorize an additional appropriation. Diversions under the Excess Flows Permit must be assigned to one of the priority water rights associated with BRA's existing reservoirs.

Table H.1.2 shows the Appropriation Scenarios authorized under the final System Operation Permit and Water Management Plan. These four scenarios were designed to determine the impact of return flows, the Allens Creek Reservoir, and the proposed expansion at the Comanche Peak Nuclear Power Plant (CPNPP, Units 3 and 4) on the potential use of appropriations by the BRA under its other water rights and the System Operation Permit. Four different demand levels are used in the scenarios, referred to using the letters A through D. At any given time BRA will be operating under one of these scenarios. Use under Scenarios C and D, which include the permitted Allens Creek Reservoir, will require an amendment to this Accounting Plan.

Table H.1.3 shows the maximum annual diversions of water authorized under the System Operation Permit. The volumes shown in the Total Permitted Diversions row in Table H.1.3 include the appropriation amounts from Paragraph 1.A. USE of the System Operation Permit, and BRA's own return flows authorized in Paragraph 1.B.(2) of the Permit. The Commission's Final Order required that BRA's annual diversion and use under the System Operation Permit and WMP be immediately reduced by 14% of the amounts authorized in Paragraph 1.A. USE of the System Operation Permit, due to sedimentation in BRA's reservoirs, subject to Special Condition 5.D.5.b. Therefore, this table has also been conformed to show the amounts of maximum annual appropriation with that 14% reduction, as required under Special Condition 5.D.5.a.

Table H.1.2 – Water Management Plan Appropriation Scenarios

Scenario	CPNPP Expansion	Allens Creek Reservoir
Demand Level A	N	N
Demand Level B	Y	N
Demand Level C	N	Y
Demand Level D	Y	Y
Notes: CPNPP Expansion assumes 90,152 acft/yr for new units, with 40% return flow		

Table H.1.3 - Maximum Diversions Under the System Operation Permit
(acft/yr)

Demand Level	Level A – Current Contracts	Level B – Current Contracts with CPNPP Expansion	Level C – Current Contracts with Allens Creek	Level D – Current Contracts with Allens Creek and CPNPP Expansion
Total Permitted Diversions	381,068	344,625	516,955	482,035
BRA's Own Return Flows	47,332	47,332	47,332	47,332
Maximum Diversion without 14% Reduction[1]	333,736	297,293	469,623	434,703
Maximum Diversion with 14% Reduction[2]	287,013	255,672	403,876	373,845
1 These maximum annual diversion amounts exclusive of BRA's own return flows are the annual diversion and use authorization amounts set out in Paragraph 1.A. of the System Operation Permit, subject to Special Condition 5.D.5)a. therein.				
2 These maximum annual diversion amounts exclusive of BRA's own return flows are the reduced annual diversion and use authorization amounts set out in Special Condition 5.D.5)a. of the System Operation Permit, subject to Special Condition 5.D.5)b. therein.				
Source: Table 2.4 of the Water Management Plan.				

Table H.1.4 shows the maximum annual use under the System Operation Permit by reach for the four Appropriation Scenarios. This table has been repeated from Table 2.21 of the WMP Technical Report. This values in this maximum annual use table include the 14% reduction required by the Commission's Final Order.

Table H.1.4– Maximum Annual Use Under the System Operation Permit by Reach
(acft/yr)[1]

Reach Name	Level A - Current Contracts	Level B - Current Contracts with CPNPP Expansion	Level C - Current Contracts with Allens Creek	Level D - Current Contracts with Allens Creek and CPNPP Expansion
Possum Kingdom Lake[2]	239,981	222,539	254,237	230,999
Possum Kingdom Lake Dam to Palo Pinto gage	1,460	1,460	1,460	1,460
Palo Pinto gage to Dennis gage	1,460	1,460	1,460	1,460
Dennis gage to Lake Granbury Dam[2]	31,672	47,058	28,769	50,576
Lake Granbury Dam to Glen Rose gage	1,460	1,460	1,460	1,460
Glen Rose gage to Lake Whitney Dam[2]	112,648	101,470	75,150	79,970

Reach Name	Level A - Current Contracts	Level B - Current Contracts with CPNPP Expansion	Level C - Current Contracts with Allens Creek	Level D - Current Contracts with Allens Creek and CPNPP Expansion
Lake Whitney Dam to Aquilla Cr/Brazos Rv confluence	9,455	9,455	9,455	9,455
Lake Aquilla[2]	24,148	18,496	17,913	18,671
Lake Aquilla Dam to Aquilla Creek gage	1,460	1,460	1,460	1,460
Aquilla Cr gage to Aquilla Cr/Brazos Rv confluence	1,460	1,460	1,460	1,460
Aquilla Cr/ Brazos confluence to Highbank gage	1,844	1,841	1,978	1,841
Lake Proctor[2]	17,385	17,385	17,385	17,385
Lake Proctor Dam to Leon Rv at Gatesville gage	1,460	1,460	1,460	1,460
Leon Rv at Gatesville to Lake Belton Dam[2]	12,779	12,779	12,779	12,779
Lake Belton Dam to Leon Rv nr Belton gage	22,523	22,523	22,523	22,523
Leon Rv nr Belton gage to Little River gage	1,460	1,460	1,460	1,460
Lake Stillhouse Hollow[2]	12,808	12,808	12,313	11,818
Stillhouse Hollow Dam to Lampasas Rv nr Belton gage	1,460	1,460	1,460	1,460
Lampasas Rv nr Belton gage to Little River gage	1,460	1,460	1,460	1,460
Little River gage to Little Rv/San Gabriel Rv confluence	1,460	1,460	1,460	1,460
Lake Georgetown[2]	10,059	10,059	14,927	14,843
Lk Georgetown Dam to N San Gabriel gage	1,460	1,460	1,460	1,460
N San Gabriel gage to Lake Granger Dam[2]	9,611	9,611	8,751	8,751
Lake Granger Dam to Laneport gage	1,460	1,460	1,460	1,460
Laneport gage to Little Rv/San Gabriel confluence	1,460	1,460	1,460	1,460
Little/San Gabriel confluence to Little Rv at Cameron gage	3,941	3,941	3,941	3,941
Cameron gage to Brazos/Little Rv confluence	1,460	1,460	1,460	1,460
Highbank gage to Brazos/Little Rv confluence	1,460	1,460	1,460	1,460
Brazos Rv/Little Rv confluence to Bryan gage	1,460	1,460	1,460	1,460
Bryan gage to Brazos/Yegua Crk confluence	2,279	2,279	2,279	2,279
Lake Somerville[2]	36,504	40,491	50,898	35,897
Lake Somerville Dam to Yegua Crk gage	1,460	1,460	1,460	1,460
Yegua Cr gage to Brazos Rv/Yegua Cr confluence	1,460	1,460	1,460	1,460

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Reach Name	Level A - Current Contracts	Level B - Current Contracts with CPNPP Expansion	Level C - Current Contracts with Allens Creek	Level D - Current Contracts with Allens Creek and CPNPP Expansion
Brazos/Yegua confluence to Brazos/Navasota confluence	1,460	1,460	1,460	1,460
Lake Limestone[2]	58,210	62,444	52,977	57,835
Lake Limestone Dam to Easterly gage	1,460	1,460	1,460	1,460
Easterly gage to Brazos/Navasota confluence	6,023	6,023	6,023	6,023
Brazos Rv/Navasota confluence to Hempstead gage	1,460	1,460	1,460	1,460
Hempstead gage to Richmond gage	19,144	19,152	83,482	81,070
Richmond gage to Gulf of Mexico	280,547	224,216	408,767	342,600
Total above Gulf of Mexico	334,345[3]	303,004[3]	451,208[3]	421,177[3]

1 The values in this table represent the maximum annual use for each reach. It should be noted that these maximum annual use values by reach include authorized discharges of BRA's own return flows and the return flows of others. For more information on the authorized return flow discharges, including the location of these discharges by reach, refer to Tables 2.22 through 2.24 in the WMP Technical Report. This table is also included as Exhibit C of the Water Management Plan.

2 Reaches printed in red contain reservoirs.

3 The value for the "Total above Gulf of Mexico" is the sum of the appropriate demand scenario value corresponding to the reduced authorized amounts in Paragraphs 5.D.5.a.1. through 4. of the System Operation Permit and BRA's own return flows (47,332 acft/yr). For example, the basin-wide maximum authorized annual use total above the Gulf of Mexico under the Level C firm appropriation demand scenario is equal to the maximum annual use in 5.D.5.a.3 plus the authorized annual total for BRA's own return flows (403,876 acft/yr + 47,332 acft/yr = 451,208 acft/yr).

H.1.2   BRA System Reservoirs

The Accounting Plan includes daily reservoir accounting for the eleven BRA System reservoirs:

- Possum Kingdom Lake (Certificate of Adjudication (COA) No. 12-5155),

- Lake Granbury (COA No. 12-5156),

- Lake Whitney (COA No. 12-5157),

- Lake Aquilla (COA No. 12-5158),

- Lake Proctor (COA No. 12-5159),

- Lake Belton (COA No. 12-5160),

- Lake Stillhouse Hollow (COA No. 12-5161),

- Lake Georgetown (COA No. 12-5162),

- Lake Granger (COA No. 12-5163),

- Lake Somerville (COA No. 5164), and

- Lake Limestone (COA No. 12-5165).

Reservoir accounting is described in Section H.4 below.

H.1.3 Return Flows

The Accounting Plan tracks two different categories of return flows authorized for BRA's diversion and use under the System Operation Permit, as required by Special Condition 5.A.2) of the Permit:

- *BRA Return Flows* authorized under Texas Water Code § 11.042(b) and (c), which consists of return flows that originate from BRA water sources or from BRA owned or operated plants, and
- *Return Flows of Others* authorized under Texas Water Code §§ 11.046(c) and 11.121.

The following discussion explains how these two categories of return flows are addressed in the Accounting Plan.

BRA Return Flows are tracked by discharge source, availability, and diversion location on a daily basis. The Accounting Plan also tracks the use of BRA Return Flows to satisfy diversions and fill storage at reservoirs for all of BRA's water rights, including the System Operation Permit (Permit No. 5851) and the water rights associated with each of the BRA System reservoirs (COA Nos. 12-5155 through 5165). Reporting of BRA Return Flows occurs in the reservoir accounting file of the Accounting Plan described in Section H.4 below and the reach accounting file described in Section H.5 below. Table H.1.5 lists the sources that discharge BRA Return Flows as of the issuance date of the System Operation Permit

Some of the return flow sources listed in Table H.1.5 also discharge return flows that originate from water sources other than BRA and are not BRA-owned facilities. These return flow sources are also separately listed in Table H.1.6. For each of these return

flow sources, if the portion of the discharge that originates from BRA water sources is known, then only the portion that originates from BRA water sources will be tracked in the Accounting Plan. If the portion of the discharge that originates from BRA water sources is not known, then all of the discharges will be tracked.

Table H.1.5: Sources Discharging BRA Return Flows (Bed and Banks Return Flows)

Permit	TCEQ Central Registry Permittee Name [1]
WQ0002461000	Sportsmans World MUD
WQ0002789000	Double Diamond Utilities Co. (The Cliffs WWTP)
WQ0010178002	City of Granbury
WQ0002889000	Brazos Regional Public Utility Agency (Brazos River Authority SWATS[2])
WQ0014211001	Acton MUD (WWTP 1 Decordova Bend)
WQ0014212001	Acton MUD (WWTP 2 Pecan Plantation)
WQ0004288000	Wolf Hollow Services, LLC (Wolf Hollow I)
WQ0004167000	Calpine Bosque Energy Center, LLC (Bosque County Power Plant)
WQ0010630001	City of Hillsboro
WQ0010219002	City of McGregor (South WWTP)
WQ0010110002	City of Marlin
WQ0010078001	City of DeLeon
WQ0014544001	Upper Leon River MWD (Fritts WWTP)
WQ0010405001	City of Dublin
WQ0014445001	City of Comanche
WQ0010492002	City of Hamilton
WQ0010045005	City of Copperas Cove (Northwest WWTP)
WQ0010176004	City of Gatesville (Leon Plant)
WQ0010176002	City of Gatesville (Stillhouse Branch)
WQ0010045004	City of Copperas Cove (Northeast WWTP)
WQ0010225001	City of Moody
WQ0010351001	Bell County WCID 1
WQ0010205002	City of Lampasas (Henderson WWTF)
WQ0010045003	City of Copperas Cove (South WWTP)
WQ0010155001	City of Harker Heights WWTP
WQ0010351003	Bell County WCID 1 (WWTP 2)
WQ0010351002	Bell County WCID 1
WQ0011318001	City of Temple; City of Belton (Temple Belton WWTP)
WQ0011090001	Bell County WCID 2 (Academy WWTP)
WQ0011091001	Bell County WCID 2 (Little River WWTP)
WQ0010797001	Bell County WCID 3

Permit	TCEQ Central Registry Permittee Name [1]
WQ0010489002	City of Georgetown (San Gabriel WWTP)
WQ0010489003	City of Georgetown (Dove Springs WWTP)
WQ0010489005	City of Georgetown (Pecan Branch WWTP)
WQ0010264001	City of Cedar Park; City of Austin; City of Round Rock (Brushy Creek West Regional WWTP)
WQ0010264002	City of Cedar Park; City of Austin; City of Round Rock (Brushy Creek East Regional WWTP East)
WQ0010299001	City of Taylor (Mustang Creek WWTP)
WQ0010897001	City of Holland
WQ0010731001	City of Rosebud
WQ0010388001	City of Brenham
WQ0011324001	City of Hutto; Brazos River Authority[3] (City of Hutto WWTP)

Notes: Discharge sources are those listed in Table 2.22 of the WMP Technical Report and Exhibit B Table 1 of the Water Management Plan. These tables correspond with the recitals in the System Operation Permit wherein TCEQ has identified the specific sources of treated wastewater discharges that comprise the return flows appropriated to BRA under the System Operation Permit.

[1] Parentheseis in the Central Registry Permittee Name column include the Central Registry Facility Name from TCEQ's database, when necessary to identify unique facility locations.

[2] The Brazos River Authority no longer owns or operates the SWATS facility.

[3] The Brazos River Authority operates this facility for the owner, the City of Hutto..

Table H.1.6: Sources Discharging Both Return Flows of Others and BRA Return Flows

TPDES Permit No.	TCEQ Central Registry Permittee Name [1]
WQ0010178002	City of Granbury
WQ0014211001	Acton MUD (WWTP 1 Decordova)
WQ0014212001	Acton MUD (WWTP 2 Pecan Plantation)
WQ0010219002	City of McGregor (South WWTP)
WQ0010110002	City of Marlin
WQ0010045005	City of Copperas Cove (Northwest WWTP)
WQ0010176004	City of Gatesville (Leon Plant WWTP)
WQ0010176002	City of Gatesville (Stillhouse Branch)
WQ0010045004	City of Copperas Cove (Northeast WWTP)
WQ0010225001	City of Moody
WQ0010045003	City of Copperas Cove (South WWTP)
WQ0011090001	Bell Co. WCID 2 (Academy WWTP)
WQ0011091001	Bell Co. WCID 2 (Little River WWTP)
WQ0010489002	City of Georgetown (San Gabriel WWTP)
WQ0010489003	City of Georgetown (Dove Springs WWTP)
WQ0010489005	City of Georgetown (Pecan Branch WWTP)
WQ0010897001	City of Holland

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TPDES Permit No.	TCEQ Central Registry Permittee Name [1]
WQ0011324001	City of Hutto; Brazos River Authority[2] (City of Hutto WWTP)
Notes: Discharge sources are those listed in Table 2.24 of the WMP Technical Report and Exhibit B Table 3 of the Water Management Plan. These tables correspond with the recitals in the System Operation Permit wherein TCEQ has identified the specific sources of treated wastewater discharges that comprise the return flows appropriated to BRA under the System Operation Permit. [1] Parentheseis in the Central Registry Permittee Name column include the Central Registry Facility Name from TCEQ's database, when necessary to identify unique facility locations. [2] The Brazos River Authority operates this plant for the owner, the City of Hutto.	

The second category of return flows consists of return flows from non-BRA water sources. These return flow discharges are authorized for BRA's diversion and use under Texas Water Code §§ 11.046(c) and 11.121. In the System Operation Permit and the Accounting Plan, these return flow discharges are called the "Return Flows of Others." Table H.1.7 lists the plants included in this category as of the issuance date of the System Operation Permit. The Accounting Plan reports the Return Flows of Others discharged during the year for discharge sources that were considered as part of the BRA's water availability analysis.

Table H.1.8 contains the assumed volumes of all sources of return flows used in the water availability analyses that are the basis for the Water Management Plan. These return flows are the minimum monthly return flows as described in Section 2.4.2 and Appendix G.2.2.1 of the WMP Technical Report. The Accounting Plan compares the total annual volume of return flows (both BRA Return Flows and Return Flows of Others) to the amounts in Table H.1.8. If the actual return flows are less than the amount used in modeling by 5% or greater, BRA will revise the models and submit results to TCEQ.

Table H.1.7: Sources Exclusively Discharging Return Flows of Others

Permit	TCEQ Central Registry Permittee Name [1]
WQ0010040001	City of Breckenridge
WQ0010487001	City of Graham
WQ0011557003	City of Ranger
WQ0010585004	City of Mineral Wells (Willow Creek WWTP)

Permit	TCEQ Central Registry Permittee Name [1]
WQ0010585001	City of Mineral Wells (Pollard Creek WWTP)
WQ0010177001	City of Glen Rose
WQ0011408002	City of Whitney (Polk Street Plant)
WQ0010423001	City of Itasca
WQ0010290001	City of Stephenville
WQ0010188001	City of Hico
WQ0010113002	City of Meridian
WQ0010043001	City of Clifton
WQ0010307001	City of Valley Mills
WQ0010544001	City of West
WQ0003466000	City of Robinson
WQ0010637001	City of Eastland
WQ0010944001	City of Florence
WQ0013358001	Universal Services Fort Hood Inc
WQ0014477001	Liberty Hill
WQ0010004001	City of Cameron
WQ0012308001	City of Cedar Park
WQ0012644001	City of Leander
WQ0010880001	City of Bartlett
WQ0010046002	City of Hearne (WWTP 2)
WQ0010095001	City of Calvert
WQ0010470002	City of Temple (Doshier Farm WWTP)
WQ0011263001	City of Troy
WQ0010016001	City of Lexington
WQ0010658001	City of Rockdale
WQ0010456001	City of Giddings (North WWTP)
WQ0010813001	City of Caldwell
WQ0010717001	TX Dept. MH & MR (Mexia State School)
WQ0010300001	City of Teague (West WWTP)
WQ0010222001	City of Mexia
WQ0010182001	City of Groesbeck
WQ0010231001	City of Navasota (Old WWTP)
WQ0010968003	Texas A&M University (TAMU Main Campus WWTP)
WQ0010371001	City of Somerville
WQ0002585000	Texas A&M University (Brayton Fire Training Field)
WQ0013743001	Texas Dept. of Criminal Justice (TDCJ Pack Unit WWTP)
WQ0012458002	Texas Dept. of Criminal Justice (TDCJ Luther Unit WWTP)
WQ0003821000	Sanderson Farms Inc Processing Division (Brazos)
WQ0004784000	Sanderson Farms, Inc Processing Division (Sanderson Farms WWTP)
WQ0010385002	City of Bellville

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Permit	TCEQ Central Registry Permittee Name [1]
WQ0010276001	City of Sealy (Allens Creek WWTP)
WQ0010607003	City of Rosenberg (WWTP 1A)
WQ0011275002	Prairie View A&M University
WQ0010001001	Brookshire MWD
WQ0002443000	Frito-Lay Inc. (Rosenberg Facility)
WQ0013051002	Fort Bend Co. MUD 81
WQ0010948001	City of Hempstead
WQ0010765001	City of Wallis
WQ0013314001	City of Fulshear
WQ0010607002	City of Rosenberg (WWTP 2)
WQ0010258003	City of Richmond (Richmond Regional WWTP)
WQ0010258004	City of Richmond (City of Richmond SW WWTP)
WQ0011317001	City of Sugar Land (North WWTP)
WQ0011655001	Pecan Grove MUD
WQ0012833002	City of Sugarland (South WWTP)
WQ0010986001	Texas Department of Criminal Justice (TDCJ Central WWTP)[2]
WQ0011475003	Texas Department of Criminal Justice (TDCJ Jester 3 Unit)
WQ0011971001	Plantation MUD
WQ0013355001	Fort Bend County MUD 106
WQ0013628001	Fort Bend County Municipal Utility District 112 (New Territory North Regional WWTP)
WQ0011475001	Texas Department of Criminal Justice (TDCJ Jester I Unit)
WQ0013873001	City of Missouri City (Steep Bank Flat Bank WWTP)
WQ0011046001	Quail Valley Utility District
WQ0014118001	Sienna Plantation MUD 1 (WWTP 2)
WQ0010047001	City of Lake Jackson
WQ0010312001	City of West Columbia
WQ0010882001	City of Freeport (Central WWTP)

Notes: Discharge sources are those listed in Table 2.23 of the WMP Technical Report and Exhibit B Table 2 of the Water Management Plan. These tables correspond with the recitals in the System Operation Permit wherein TCEQ has identified the specific sources of treated wastewater discharges that comprise the return flows appropriated to BRA under the System Operation Permit.

[1] Parentheseis in the Central Registry Permittee Name column include the Central Registry Facility Name from TCEQ's database, when necessary to identify unique facility locations.

[2] TPDES Permit number WQ0010986001 (TDCJ Central) was considered during the modeling of the initial Water Management Plan, but was cancelled on 6/15/2012.

Table H.1.8: Return Flows Used for Water Availability Analyses in Water Management Plan

Permit	TCEQ Central Registry Permittee Name [1]	Return Flows Used for Water Availability (acft)
WQ0002461000	Sportsmans World MUD	18
WQ0002789000	Double Diamond Utilities Co. (The Cliffs WWTP)	35
WQ0010178002	City of Granbury	303
WQ0002889000	Brazos Regional Public Utility Agency (Brazos River Authority SWATS[2])	285
WQ0014211001	Acton MUD (WWTP 1 Decordova Bend)	40
WQ0014212001	Acton MUD (WWTP 2 Pecan Plantation)	30
WQ0004288000	Wolf Hollow Services, LLC (Wolf Hollow I)	309
WQ0004167000	Calpine Bosque Energy Center, LLC (Bosque County Power Plant)	100
WQ0010630001	City of Hillsboro	1,062
WQ0010219002	City of McGregor (South WWTP)	270
WQ0010110002	City of Marlin	84
WQ0010078001	City of DeLeon	85
WQ0014544001	Upper Leon River MWD (Fritts WWTP)	24
WQ0010405001	City of Dublin	77
WQ0014445001	City of Comanche	204
WQ0010492002	City of Hamilton	195
WQ0010045005	City of Copperas Cove (Northwest WWTP)	876
WQ0010176004	City of Gatesville (Leon Plant)	458
WQ0010176002	City of Gatesville (Stillhouse Branch)	1,102
WQ0010045004	City of Copperas Cove (Northeast WWTP)	686
WQ0010225001	City of Moody	43
WQ0010351001	Bell County WCID 1	414
WQ0010205002	City of Lampasas (Henderson WWTF)	444
WQ0010045003	City of Copperas Cove (South WWTP)	421
WQ0010155001	City of Harker Heights	1,798
WQ0010351003	Bell County WCID 1 (WWTP 2)	2,187
WQ0010351002	Bell County WCID 1	8,886
WQ0011318001	City of Temple; City of Belton (Temple Belton WWTP	6,033
WQ0011090001	Bell County WCID 2 (Academy WWTP)	21
WQ0011091001	Bell County WCID 2 (Little River WWTP)	30
WQ0010797001	Bell County WCID 3	242
WQ0010489002	City of Georgetown (San Gabriel WWTP)	606
WQ0010489003	City of Georgetown (Dove Springs WWTP)	591
WQ0010489005	City of Georgetown (Pecan Branch WWTP)	352

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Permit	TCEQ Central Registry Permittee Name [1]	Return Flows Used for Water Availability (acft)
WQ0010264001	City of Cedar Park; City of Austin; City of Round Rock (Brushy Creek West Regional WWTP)	848
WQ0010264002	City of Round Rock; City of Cedar Park; City of Austin (Brushy Creek East Regional WWTP)	14,582
WQ0010299001	City of Taylor (Mustang Creek WWTP)	1,346
WQ0010897001	City of Holland	16
WQ0010731001	City of Rosebud	100
WQ0010388001	City of Brenham	2,021
WQ0011324001	City of Hutto; Brazos River Authority[3] (City of Hutto WWTP)	108
WQ0010040001	City of Breckenridge	475
WQ0010487001	City of Graham	852
WQ0011557003	City of Ranger	131
WQ0010585004	City of Mineral Wells (Willow Creek WWTP)	369
WQ0010585001	City of Mineral Wells (Pollard Creek WWTP)	1,325
WQ0010177001	City of Glen Rose	351
WQ0011408002	City of Whitney (Polk Street Plant)	108
WQ0010423001	City of Itasca	74
WQ0010290001	City of Stephenville	1,529
WQ0010188001	City of Hico	95
WQ0010113002	City of Meridian	139
WQ0010043001	City of Clifton	297
WQ0010307001	City of Valley Mills	103
WQ0010544001	City of West	191
WQ0003466000	City of Robinson	104
WQ0010637001	City of Eastland	215
WQ0010944001	City of Florence	56
WQ0013358001	Universal Services Fort Hood Inc	44
WQ0014477001	Liberty Hill	38
WQ0010004001	City of Cameron	570
WQ0012308001	City of Cedar Park	2,268
WQ0012644001	City of Leander	835
WQ0010880001	City of Bartlett	172
WQ0010046002	City of Hearne (WWTP 2)	539
WQ0010095001	City of Calvert	82
WQ0010470002	City of Temple (Doshier Farm WWTP)	2,032
WQ0011263001	City of Troy	88
WQ0010016001	City of Lexington	33
WQ0010658001	City of Rockdale	376
WQ0010456001	City of Giddings (North WWTP)	304
WQ0010813001	City of Caldwell	430

Permit	TCEQ Central Registry Permittee Name [1]	Return Flows Used for Water Availability (acft)
WQ0010717001	TX Dept MH & MR (Mexia State School)	67
WQ0010300001	City of Teague (West WWTP)	36
WQ0010222001	City of Mexia	610
WQ0010182001	City of Groesbeck	349
WQ0010231001	City of Navasota (Old WWTP)	531
WQ0010968003	Texas A&M University (TAMU Main Campus WWTP)	1,637
WQ0010371001	City of Somerville	147
WQ0002585000	Texas A&M University (Brayton Fire Training Field)	146
WQ0013743001	Texas Dept. of Criminal Justice (TDCJ Pack Unit WWTP)	207
WQ0012458002	Texas Dept. of Criminal Justice (TDCJ Luther Unit WWTP)	101
WQ0003821000	Sanderson Farms Inc Processing Division (Brazos)	1,233
WQ0004784000	Sanderson Farms Inc Processing Division (Sanderson Farms WWTP)	888
WQ0010385002	City of Bellville	463
WQ0010276001	City of Sealy (Allens Creek WWTP)	556
WQ0010607003	City of Rosenberg (1A WWTP 1A)	1,053
WQ0011275002	Prairie View A&M University	440
WQ0010001001	Brookshire MWD	321
WQ0002443000	Frito-Lay Inc. (Rosenberg Facility)	2
WQ0013051002	Fort Bend Co. MUD 81	119
WQ0010948001	City of Hempstead	299
WQ0010765001	City of Wallis	96
WQ0013314001	City of Fulshear	24
WQ0010607002	City of Rosenberg (WWTP 2)	1,482
WQ0010258003	City of Richmond (Richmond Regional WWTP)	0
WQ0010258004	City of Richmond (City of Richmond SW WWTP)	1,495
WQ0011317001	City of Sugar Land (North WWTP)	3,981
WQ0011655001	Pecan Grove MUD	1,058
WQ0012833002	City of Sugarland (South WWTP)	4,056
WQ0010986001	Texas Department of Criminal Justice (TDCJ Central WWTP)[4]	185
WQ0011475003	Texas Department of Criminal Justice (TDCJ Jester 3 Unit)	258
WQ0011971001	Plantation MUD	155
WQ0013355001	Fort Bend County MUD 106	1,074
WQ0013628001	Fort Bend County Municipal Utility District 112 (New Territory North Regional WWTP)	1,430
WQ0011475001	Texas Department of Criminal Justice (TDCJ Jester I Unit)	144
WQ0013873001	City of Missouri City (Steep Bank Flat Bank WWTP	1,282
WQ0011046001	Quail Valley Utility District	1,453
WQ0014118001	Sienna Plantation MUD 1 (WWTP 2)	155
WQ0010047001	City of Lake Jackson	2,877

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Permit	TCEQ Central Registry Permittee Name [1]	Return Flows Used for Water Availability (acft)
WQ0010312001	City of West Columbia	416
WQ0010882001	City of Freeport (Central WWTP)	599

[1] Parentheseis in the Central Registry Permittee Name column include the Central Registry Facility Name from TCEQ's database, when necessary to identify unique facility locations.

[2] The Brazos River Authority no longer owns or operates the SWATS facility.

[3] The Brazos River Authority operates this facility for the owner, the City of Hutto.

[4] TPDES Permit number WQ0010986001 (TDCJ Central) was considered during the modeling of the initial Water Management Plan, but was cancelled on 6/15/2012.

H.1.4   Accounting Plan Diversion Reaches

Delivery accounting is organized by reach. The Accounting Plan divides the Brazos River basin from Possum Kingdom Lake to the Gulf of Mexico into the 40 diversion reaches listed in Table H.1.9. These are the same reaches on which the System Operation Permit's reach-specific diversion limitations are established. Some reaches are reservoirs, and include the area from the headwaters of the normal pool of the reservoir to the dam. Reservoir reaches are included in the Reservoir File of the Accounting Plan described in Section H.4 below. Other reaches are stream segments bounded by a reservoir, stream gage or confluence.

Table H.1.9: Reaches

No	Reach Name	Accounting Plan Table(s)
1	Possum Kingdom Lake	RES1
2	Possum Kingdom Lake Dam to Palo Pinto gage	REACH1
3	Palo Pinto gage to Dennis gage	REACH2
4	Dennis gage to Lake Granbury Dam	REACH2 and RES2
5	Lake Granbury Dam to Glen Rose gage	REACH3
6	Glen Rose gage to Lake Whitney Dam	REACH3 and RES3
7	Lake Whitney Dam to Aquilla Creek/Brazos Rv confluence	REACH5
8	Lake Aquilla	RES4
9	Lake Aquilla Dam to Aquilla Creek gage	REACH4
10	Aquilla Creek gage to Aquilla Creek/Brazos Rv confluence	REACH4
11	Aquilla Creek/ Brazos confluence to Highbank gage	REACH6

No	Reach Name	Accounting Plan Table(s)
12	Lake Proctor	RES5
13	Lake Proctor Dam to Leon Rv at Gatesville gage	REACH7 and REACH8
14	Leon Rv at Gatesville to Lake Belton Dam	REACH8 and RES6
15	Lake Belton Dam to Leon Rv nr Belton gage	REACH9
16	Leon Rv nr Belton gage to Little River gage	REACH9
17	Lake Stillhouse Hollow	RES7
18	Lake Stillhouse Hollow Dam to Lampasas Rv nr Belton gage	REACH10
19	Lampasas Rv nr Belton gage to Little River gage	REACH10
20	Little River gage to Little Rv/San Gabriel Rv confluence	REACH11
21	Lake Georgetown	RES8
22	Lake Georgetown Dam to N San Gabriel gage	REACH12
23	N San Gabriel gage to Lake Granger Dam	REACH12 and RES9
24	Lake Granger Dam to Laneport gage	REACH13
25	Laneport gage to Little Rv/San Gabriel confluence	REACH13
26	Little/San Gabriel confluence to Little Rv at Cameron gage	REACH14
27	Cameron gage to Brazos Rv/Little Rv confluence	REACH14
28	Highbank gage to Brazos Rv/Little Rv confluence	REACH6
29	Brazos Rv/Little Rv confluence to Bryan gage	REACH15
30	Bryan gage to Brazos Rv/Yegua Crk confluence	REACH15
31	Lake Somerville	RES10
32	Lake Somerville Dam to Yegua Crk gage	REACH16
33	Yegua Crk gage to Brazos Rv/Yegua Crk confluence	REACH16
34	Brazos Rv/Yegua Crk confluence to Brazos Rv/Navasota Rv confluence	REACH17
35	Lake Limestone	RES11
36	Lake Limestone Dam to Easterly gage	REACH18
37	Easterly gage to Brazos Rv/Navasota Rv confluence	REACH18
38	Brazos Rv/Navasota Rv confluence to Hempstead gage	REACH19
39	Hempstead gage to Richmond gage	REACH20
40	Richmond gage to Gulf of Mexico	REACH21

These reaches are included in the Reach File of the Accounting Plan described in Section H.5 below. The tables in the Reach File can include multiple reaches. The reach accounting file of the Accounting Plan tracks BRA water supply releases as they travel through these reaches, applying corrections for travel times and losses. The reach accounting also tracks the diversions of releases, available flows and return flows by reach. Tables H. 1.10a through H. 1.10g show the travel times and losses used in the Accounting Plan. These tables are based on the losses and travel times set out in Table 4.7 of the WMP Technical Report.

Table H.1.10a - Possum Kingdom Lake to Gulf of Mexico

Location	BRA Incremental Loss (%)	BRA Cumulative Loss (%)	BRA Travel Time (days)	Total Delivery (%)	Incremental Delivery Factor	Incremental Travel Time (days)
Lk PK	0.000	0.000	0.000	100.00		
Palo Pinto Gage (Hwy 4)	0.520	0.520	0.510	99.48	0.995	0.5
Dennis	1.980	2.500	2.470	97.50	0.980	2.0
Lk Granbury	1.200	3.700	4.000	96.30	0.988	1.5
Brazos Rv at Glen Rose	0.840	4.540	5.700	95.46	0.991	1.7
Lk Whitney	1.860	6.400	10.000	93.60	0.981	4.3
Jct Brazos Rv - Aquilla Cr	0.450	6.850	10.560	93.15	0.995	0.6
Brazos Rv at Waco	0.300	7.150	11.000	92.85	0.997	0.4
Highbank	0.940	8.090	12.390	91.91	0.990	1.4
Little-Brazos	0.610	8.700	13.290	91.30	0.993	0.9
Brazos at Bryan	0.860	9.560	14.090	90.44	0.991	0.8
JCT Yegua-Brazos	1.060	10.620	15.080	89.38	0.988	1.0
JCT Brazos-Navasota	0.460	11.080	15.510	88.92	0.995	0.4
Hempstead	0.930	12.010	16.380	87.99	0.990	0.9
Richmond	2.820	14.830	19.000	85.17	0.968	2.6
Rosharon	0.980	15.810	19.920	84.19	0.988	0.9
Gulf	1.580	17.390	21.390	82.61	0.981	1.5
Total	**17.39**	**N/A**	**N/A**	**N/A**	**N/A**	**21.4**

Table H.1.10b - Lake Aquilla to Brazos Confluence

Location	BRA Incremental Loss (%)	BRA Cumulative Loss (%)	BRA Travel Time (days)	Total Delivery (%)	Incremental Delivery Factor	Incremental Travel Time (days)
Lk Aquilla	0.000	0.000	0.000	100.00		
Aquilla Ck abv Aquilla	0.110	0.110	0.120	99.89	0.999	0.1
JCT Aquilla Ck-Brazos Rv	0.390	0.500	0.560	99.50	0.996	0.4
Total	**0.500**	**N/A**	**N/A**	**N/A**	**N/A**	**0.5**

Table H.1.10c - Lake Proctor to Little/Brazos Confluence

Location	BRA Incremental Loss (%)	BRA Cumulative Loss (%)	BRA Travel Time (days)	Total Delivery (%)	Incremental Delivery Factor	Incremental Travel Time (days)
Lk Proctor	0.000	0.000	0.000	100.00		
Leon Rv nr Hasse	2.700	2.700	1.000	97.30	0.973	1.0
Leon Rv at Gatesville	45.800	48.500	4.300	51.50	0.529	3.3
Lake Belton	2.600	51.100	7.000	48.90	0.950	2.7
Leon Rv nr Belton	0.160	51.260	7.200	48.74	0.997	0.2
Little Rv nr Little Rv	0.890	52.150	8.100	47.85	0.982	0.9
Jct San Gabriel Rv - Little Rv	2.390	54.540	9.800	45.46	0.950	1.7
Little Rv at Cameron	0.500	55.040	10.200	44.96	0.989	0.4
Jct Little Rv - Brazos Rv	1.560	56.600	11.300	43.40	0.965	1.1
Total	**56.600**	**N/A**	**N/A**	**N/A**	**N/A**	**11.3**

Table H.1.10d - Lake Stillhouse Hollow to Little River Gage

Location	BRA Incremental Loss (%)	BRA Cumulative Loss (%)	BRA Travel Time (days)	Total Delivery (%)	Incremental Delivery Factor	Incremental Travel Time (days)
Lk Stillhouse	0.000	0.000	0.000	100.00		
Lampasas R nr Belton	0.050	0.050	0.140	99.95	0.9995	0.1
Little Rv nr Little Rv	0.530	0.580	1.090	99.42	0.9947	1.0
Total	**0.580**	**N/A**	**N/A**	**N/A**	**N/A**	**1.1**

Table H.1.10e - Lake Georgetown to Little/San Gabriel Confluence

Location	BRA Incremental Loss (%)	BRA Cumulative Loss (%)	BRA Travel Time (days)	Total Delivery (%)	Incremental Delivery Factor	Incremental Travel Time (days)
Lk Georgetown	0.000	0.000	0.000	100.00		
N San Gabriel nr Georgetown	0.020	0.020	0.030	99.98	0.9998	0.0
Lk Granger	0.780	0.800	1.000	99.20	0.9922	1.0
San Gabriel nr Laneport	0.130	0.930	1.130	99.07	0.9987	0.1
Jct San Gabriel - Little	0.670	1.600	1.810	98.40	0.9932	0.7
Total	**1.600**	**N/A**	**N/A**	**N/A**	**N/A**	**1.8**

Table H.1.10f - Lake Somerville to Brazos/Yegua Confluence

Location	BRA Incremental Loss (%)	BRA Cumulative Loss (%)	BRA Travel Time (days)	Total Delivery (%)	Incremental Delivery Factor	Incremental Travel Time (days)
Lk Somerville	0.000	0.000	0.000	100.00		
Yegua nr Somerville	0.070	0.070	0.070	99.93	0.999	0.1
Jct Yegua-Brazos	1.030	1.100	1.080	98.90	0.990	1.0
Total	**1.100**	**N/A**	**N/A**	**N/A**	**N/A**	**1.1**

Table H.1.10g - Lake Limestone to Brazos/Navasota Confluence

Location	BRA Incremental Loss (%)	BRA Cumulative Loss (%)	BRA Travel Time (days)	Total Delivery (%)	Incremental Delivery Factor	Incremental Travel Time (days)
Lk Limestone	0.000	0.000	0.000	100.00		
Nava at Easterly	0.880	0.880	1.210	99.12	0.991	1.2
JCT Navasota-Brazos	3.620	4.500	6.520	95.50	0.963	5.3
Total	**4.500**	**N/A**	**N/A**	**N/A**	**N/A**	**6.5**

H.1.5   Environmental Flows

Instream flow accounting tracks BRA's compliance with the environmental flow requirements from the WMP at twelve USGS stream gage locations:

- Brazos River near South Bend (USGS 08088000),
- Brazos River near Palo Pinto (USGS 08089000),
- Brazos River near Glen Rose (USGS 08091000),
- Brazos River at Waco (USGS 08096500),
- Leon River at Gatesville (USGS 08100500),
- Little River near Little River (USGS 08104500),
- Navasota River near Easterly (USGS 08110500),
- Little River at Cameron (USGS 08106500),

- Brazos River at SH 21 near Bryan (USGS 08108700),

- Brazos River near Hempstead (USGS 08111500),

- Brazos River at Richmond (USGS 08114000), and

- Brazos River near Rosharon (USGS 08116650).

The Instream Flow File of the Accounting Plan described in Section H.6 below determines seasonal climatic conditions (Wet, Average, or Dry), and classifies the flows at each gage as either base flows or high flow pulses (HFP or pulse). Flows are then compared to base flow and HFP criteria. Compliance with environmental flow requirements is tracked at the diversion points in the Reservoir and Reach Files described in Sections H.4 and H.5 below, and summarized in the annual achievement report in the reporting file described in Section H.7 below.

H.2   Structure of Accounting Plan

The Accounting Plan consists of five Microsoft Excel workbooks and associated documentation. The five workbooks are:

Reference.xlsb	Miscellaneous data used in other workbooks, including historical data, reservoir information, conversion factors, etc.
IFCalcs.xlsb	Instream flow calculations
Reservoirs.xlsb	Information on the operation of the eleven existing BRA System reservoirs (Allens Creek not included at this time)
Reaches.xlsb	Tracking of water supply releases and return flows
Summary.xlsb	Summary and water rights reporting

Each workbook has several tables, which are discussed in detail below.

The Accounting Plan includes reports and calculations on both a daily and monthly basis. In general, monthly values are located at the top of each table and daily values are underneath. Colors and shading are used to help identify different categories of calculations and types of use. Columns with yellow shading are entered manually by BRA staff.

The Accounting Plan was developed using Microsoft Office 2016. Macros must be enabled for the workbooks to calculate correctly. It is recommended that the workbooks remain in binary format (xlsb extension) to reduce file size.

H.3 Reference File Tables

The Reference File is the primary location for entry of historical data by BRA staff. It also includes other data such as area-capacity-elevation tables and other miscellaneous data used in other parts of the Accounting Plan.

H.3.1 Table REF1 – Introduction and Table of Contents

This table contains title information for the Accounting Plan. BRA staff will enter the year of the Accounting Plan. The spreadsheet will determine if the year is a leap year. The table also includes a Table of Contents for the Reference File.

This table also includes a place to enter the current Demand Level for the year, as defined in Table 2.3 of the Water Management Plan and shown in Table H.1.2 above. The Demand Level sets the maximum diversion amount and reach limits for System Operation Permit diversions. A drop-down list limits the input into the cell to the four levels (A, B, C and D). Demand Level A assumes that Allens Creek Reservoir has not been built and that the Comanche Peak Nuclear Power Plant (CPNPP) has not been expanded. Demand Level B is the same as Level A but assumes expansion of CPNPP. Demand Level C has Allens Creek Reservoir operating without the CPNPP expansion, and

Demand Level D has both Allens Creek Reservoir and the CPNPP expansion. The scenarios with Allens Creek will require modification of the Accounting Plan to include that new reservoir. A warning message has been added to Demand Levels C and D stating that the current Accounting Plan, until modified, is not appropriate for these Demand Levels.

H.3.2 Table REF2 – Average Monthly and Daily Return Flows for Plants with BRA-Sourced Discharges

Table REF2 contains monthly average and daily return flows for plants that discharge return flows that originate as BRA water or are owned or operated by BRA (see Table H.1.5 above), referred to in this Accounting Plan as BRA Return Flows. Table REF2 includes plants that partially discharge BRA-sourced water (see Table H.1.6 above).

Monthly average return flows are in rows 12 through 23 and the daily return flows are in rows 29 through 394. Both monthly and daily data will be entered by BRA staff. If daily return flows are available, they will be entered in the lower portion of the table and average monthly return flows will be calculated for the upper table. However, it is anticipated that the most readily available data will be monthly average values in million gallons per day (MGD). If daily return flows are not available, then every day in the corresponding month will be set equal to the monthly average. The daily data are passed on to Table REF3, where the flows are divided into BRA sourced discharges (i.e. BRA Return Flows) and return flows from other sources.

Row 9 of the spreadsheet is the TPDES number for each discharge. The WAM control point for the discharge is in Row 10 of the spreadsheet. Row 11 of the spreadsheet shows the Accounting Plan table name where the return flow data are input to a reach or reservoir.

The following describes the columns in Table REF2. The values in the columns are the same for each column, i.e., either the monthly average or daily discharge.

Column No	Column Label	Units
L1	Month number	none
L2	Name	none
R1	Sportsman's World MUD WTP	MGD
R2	Double Diamond (The Cliffs WWTP)	MGD
R3	City of Granbury (WWTP)	MGD
R4	SWATS	MGD
R5	Acton MUD (Decordova Bend WWTP)	MGD
R6	Acton MUD (Pecan Plantation WWTP)	MGD
R7	AES Wolf Hollow Power Plant	MGD
R8	Bosque County Power Plant	MGD
R9	City of Hillsboro (WWTP)	MGD
R10	City of McGregor (South WWTP)	MGD
R11	City of Marlin WWTP	MGD
R12	City of DeLeon WWTP	MGD
R13	Upper Leon MWD WWTP	MGD
R14	City of Dublin WWTP	MGD
R15	City of Comanche WWTP	MGD
R16	City of Hamilton	MGD
R17	City of Copperas Cove (Northwest WWTP)	MGD
R18	City of Gatesville (Leon Plant WWTP)	MGD
R19	City of Gatesville (Stillhouse Branch)	MGD
R20	City of Copperas Cove (Northeast WWTP)	MGD
R21	City of Moody WWTP	MGD
R22	Bell County WCID #1 WWTP	MGD
R23	City of Lampasas (Henderson WWTF)	MGD
R24	City of Copperas Cove (South WWTP)	MGD
R25	City of Harker Heights WWTP	MGD
R26	Bell County WCID #1 WWTP 2	MGD
R27	Bell County WCID #1	MGD
R28	TBRSS (Temple Belton Regional WWTP)	MGD
R29	Bell County WCID #2 (Academy WWTP)	MGD
R30	Bell County WCID #2 (Little River WWTP)	MGD

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Column No	Column Label	Units
R31	Bell County WCID #3	MGD
R32	City of Georgetown (San Gabriel WWTP)	MGD
R33	City of Georgetown (Dove Springs WWTP)	MGD
R34	City of Georgetown (Pecan Branch WWTP)	MGD
R35	BCRWSS West (Brushy Creek Regional WWTP)	MGD
R36	BCRWSS East (Brushy Creek Regional WWTP East)	MGD
R37	City of Taylor (Mustang Creek WWTP)	MGD
R38	City of Holland WWTP	MGD
R39	City of Rosebud WWTP	MGD
R40	City of Brenham WWTP	MGD
R41	City of Hutto WWTP	MGD

H.3.3 Table REF3 – Average Monthly and Daily Return Flows Tracked for Bed-and-Banks Delivery

This table defines the portion of the BRA Return Flows listed in Table REF2 that will be tracked in the Accounting Plan. The portion of the return flows that originates from BRA sources and is appropriated under Texas Water Code § 11.042(b) and (c) is tracked. Some of the return flows of others appropriated under Texas Water Code §§ 11.046(c) and 11.121 may also be tracked if there is insufficient information to determine the portion of the return flows that originates from the return flows of others. For example, some dischargers may use water from BRA sources most of the time but use a small amount of groundwater for peaking purposes. All of the tracked return flows will count against the 47,332 acre-feet per year maximum diversion of BRA Return Flows authorized for BRA under Paragraph 1.B.(2) of the System Operation Permit.

Table REF3 is divided into four parts:

- Rows 7 through 21 contain the monthly historical percentages of the discharge that consists of BRA-sourced water. These values will be entered by BRA staff. If the portion is not known, then a value of 100% will be used, assuming that the volume of return flows from other sources is relatively small. If the volume of return flows from other sources is large, then historical averages from previous years may be used. Row 22 is the Annual Average of the BRA-sourced return flows, which is the sum of rows 71 through 436 divided by the sum of REF2_BRA Sourced Flows rows 29 through 394.

- Rows 29 through 43 contain the calculated monthly volume of return flows from BRA sources. These values are the monthly sum of the daily return flows from BRA sources in rows 69 through 436 multiplied by a conversion factor.

- Rows 48 through 62 contain the monthly volume of return flows that are from other sources. These values are calculated by multiplying the average monthly return flows from Table REF2 by the number of days in the month and the conversion factor, and then subtracting the volume from BRA sources in rows 29 through 43.

- Rows 69 through 436 are the daily return flows from REF2 multiplied by the appropriate monthly percentage to determine the daily amount of return flows from BRA sources. These are the return flows that are tracked as BRA Return Flows.

Line 68 of REF3 is where BRA staff enters the delivery factors for the return flows to each reach or reservoir in the Accounting Plan. The delivery factors are applied in the Tables BASIC 1 through 12 in the Reference File for use in the appropriate reservoir or reach location, as described in Sections H.4 and H.5 below.

The following describes the columns in Table REF3 and the units in the four portions of the table. All of the data in the respective sections are the same, as described in the bullets above.

Column Number	Name	Monthly Percentage Units	Monthly Return Flow Volume from BRA Sources Units	Monthly Return Flow Volume from Other Sources Units	Daily Return Flows from BRA Sources Units
L1	Month number	None	None	None	None
L2	Month end date	None	None	None	None
R1	Sportsmans World MUD WTP	None	acft	acft	MGD
R2	Double Diamond (The Cliffs WWTP)	None	acft	acft	MGD
R3	City of Granbury (WWTP)	None	acft	acft	MGD
R4	SWATS	None	acft	acft	MGD
R5	Acton MUD (Decordova Bend WWTP)	None	acft	acft	MGD
R6	Acton MUD (Pecan Plantation WWTP)	None	acft	acft	MGD
R7	AES Wolf Hollow Power Plant	None	acft	acft	MGD
R8	Bosque County Power Plant	None	acft	acft	MGD
R9	City of Hillsboro (WWTP)	None	acft	acft	MGD
R10	City of McGregor (South WWTP)	None	acft	acft	MGD
R11	City of Marlin WWTP	None	acft	acft	MGD
R12	City of DeLeon WWTP	None	acft	acft	MGD
R13	Upper Leon MWD WWTP	None	acft	acft	MGD
R14	City of Dublin WWTP	None	acft	acft	MGD
R15	City of Comanche WWTP	None	acft	acft	MGD
R16	City of Hamilton	None	acft	acft	MGD
R17	City of Copperas Cove (Northwest WWTP)	None	acft	acft	MGD
R18	City of Gatesville (Leon Plant WWTP)	None	acft	acft	MGD
R19	City of Gatesville (Stillhouse Branch	None	acft	acft	MGD
R20	City of Copperas Cove (Northeast WWTP)	None	acft	acft	MGD
R21	City of Moody WWTP	None	acft	acft	MGD
R22	Bell County WCID #1 WWTP	None	acft	acft	MGD
R23	City of Lampasas (Henderson WWTF)	None	acft	acft	MGD
R24	City of Copperas Cove (South WWTP)	None	acft	acft	MGD
R25	City of Harker Heights WWTP	None	acft	acft	MGD
R26	Bell County WCID #1 WWTP 2	None	acft	acft	MGD
R27	Bell County WCID #1	None	acft	acft	MGD
R28	TBRSS (Temple Belton Regional WWTP)	None	acft	acft	MGD

Column Number	Name	Monthly Percentage Units	Monthly Return Flow Volume from BRA Sources Units	Monthly Return Flow Volume from Other Sources Units	Daily Return Flows from BRA Sources Units
R29	Bell County WCID #2 (Academy WWTP)	None	acft	acft	MGD
R30	Bell County WCID #2 (Little River WWTP)	None	acft	acft	MGD
R31	Bell County WCID #3	None	acft	acft	MGD
R32	City of Georgetown (San Gabriel WWTP)	None	acft	acft	MGD
R33	City of Georgetown (Dove Springs WWTP)	None	acft	acft	MGD
R34	City of Georgetown (Pecan Branch WWTP)	None	acft	acft	MGD
R35	BCRWSS West (Brushy Creek Regional WWTP)	None	acft	acft	MGD
R36	BCRWSS East (Brusy Creek Regional WWTP East)	None	acft	acft	MGD
R37	City of Taylor (Mustang Creek WWTP)	None	acft	acft	MGD
R38	City of Holland WWTP	None	acft	acft	MGD
R39	City of Rosebud WWTP	None	acft	acft	MGD
R40	City of Brenham WWTP	None	acft	acft	MGD
R41	City of Hutto WWTP	None	acft	acft	MGD

Row 64 is a check that the sum of the volume of the BRA Return Flows and the portion of the Return Flows of Others equals the total in Table REF2.

H.3.4 Table REF4 – Average Monthly Return Flows from Others

Table REF4 contains the monthly Return Flows of Others, which consists of return flows that do not originate from BRA sources or BRA-owned or operated plants. These return flows are appropriated under Texas Water Code §§ 11.046(c) and 11.121. These return flows are not tracked by the Accounting Plan. Table SUM17 in the Summary File compares these return flows, along with the BRA Return Flows from Tables REF2 and REF3, to the amount used for the water availability analysis in the Water Management Plan.

The columns in this table are as follows. All data values are the monthly average return flows from the respective sources.

Column Number	Label	Units
L1	Month number	none
L2	End-of-month date	none
R1	City of Breckenridge WWTP	MGD
R2	City of Graham WWTP	MGD
R3	City of Ranger (Ranger WWTP)	MGD
R4	City of Mineral Wells (Willow Creek WWTP)	MGD
R5	City of Mineral Wells (Pollard Creek WWTP)	MGD
R6	City of Glen Rose WWTP	MGD
R7	City of Whitney (Polk Street WWTP)	MGD
R8	City of Itasca WWTP	MGD
R9	City of Stephenville (Stephenville WWTP)	MGD
R10	City of Hico WWTP	MGD
R11	City of Meridian WWTP	MGD
R12	City of Clifton WWTP	MGD
R13	City of Valley Mills	MGD
R14	City of West WWTP	MGD
R15	City of Robinson	MGD
R16	City of Eastland WWTP	MGD
R17	City of Florence WWTP	MGD
R18	Universal Services Fort Hood WWTP	MGD
R19	Liberty Hill Regional WWTP	MGD
R20	City of Cameron (Cameron WWTP)	MGD
R21	City of Cedar Park (Water Reclamation)	MGD
R22	City of Leander WWTP	MGD
R23	City of Bartlett WWTP	MGD
R24	City of Hearne WWTP 2	MGD
R25	City of Calvert	MGD
R26	City of Temple (Doshier Farm WWTP)	MGD
R27	City of Troy WWTP	MGD
R28	City of Lexington WWTP	MGD
R29	City of Rockdale WWTP	MGD
R30	City of Giddings (North WWTP)	MGD
R31	City of Caldwell	MGD
R32	TX Dept MHMR (Mexia State School)	MGD
R33	City of Teague West WWTP	MGD
R34	City of Mexia WWTP	MGD
R35	City of Groesbeck	MGD

Column Number	Label	Units
R36	City of Navasota (Old WWTP)	MGD
R37	Texas A&M University (TAMU Main Campus WWTP)	MGD
R38	City of Somerville WWTP	MGD
R39	Texas A&M University (Brayton Fire Training School)	MGD
R40	Texas Dept. of Criminal Justice (Pack Unit WWTP)	MGD
R41	Texas Dept. of Criminal Justice (Luther WWTP)	MGD
R42	Sanderson Farms Brazos Processing Division	MGD
R43	Sanderson Farms INC	MGD
R44	City of Bellville WWTP	MGD
R45	City of Sealy (Allens Creek WWTP)	MGD
R46	City of Rosenberg (Plant NO 1A WWTP)	MGD
R47	Prairie View A&M University WWTP	MGD
R48	Brookshire MWD WWTP	MGD
R49	Frito-Lay Inc. (Rosenberg Facility)	MGD
R50	Fort Bend Co. MUD 081	MGD
R51	City of Hempstead WWTP	MGD
R52	City of Wallis WWTP	MGD
R53	City of Fulshear WWTP	MGD
R54	City of Rosenberg WWTP 2	MGD
R55	City of Richmond	MGD
R56	City of Richmond	MGD
R57	Authority SLRSS (Surgarland North WWTP)	MGD
R58	Pecan Grove MUD	MGD
R59	City of Sugarland (South WWTP)	MGD
R60	Texas Department of Criminal Justice - Central	MGD
R61	Texas Department of Criminal Justice - Jester III	MGD
R62	Plantation MUD	MGD
R63	Fort Bend MUD 106	MGD
R64	Fort Bend MUD 112 (New Territory North Regional WWTP)	MGD
R65	Texas Department of Criminal Justice - Jester I	MGD
R66	Missouri City Steep Bank Flay Bank WWTP	MGD
R67	Quail Valley Utility District WWTP	MGD
R68	Sienna Plantation MUD 1	MGD
R69	City of Lake Jackson WWTP	MGD
R70	City of West Columbia WWTP	MGD
R71	City of Freeport (Central WWTP)	MGD

H.3.5 Table REF5 – Reach Diversions

Table REF5 is the entry point for the daily diversions by reach. All of these diversions are run-of-the-river diversions. Lakeside diversions from reservoirs are entered in the BASIC tables described below. All values are entered by BRA staff. Except for larger BRA customers, diversions are aggregated by reach. Each reach has five columns for data entry that are summed together in the Reach File. Major customers have their own entry column. Row 6 of the REF5 spreadsheet contains the table name from the Reach File. Row 7 shows the reach name (see Table H.1.9 above). In some cases, the reaches have been divided into sub-reaches because there is a gage or a major diversion in the reach. These sub-reaches are shown in Row 8. All values are assumed to be in acre-feet per day. BRA staff may change this to other units as long as the corresponding conversion factor in the Reach File is changed.

The following describes the columns in Table REF5:

Column	Reach Table	Reach	Sub-Reach	Units	Column Label	Description
L1				none	Month	Month number
L2				none	EOMonth	End-of-month date
L3				none	Date	Date
D1	REACH1	Possum Kingdom to Palo Pinto gage		acft	Div1	Daily diversion 1
D2				acft	Div2	Daily diversion 2
D3				acft	Div3	Daily diversion 3
D4				acft	Div4	Daily diversion 4
D5				acft	Div5	Daily diversion 5
D6	REACH2	Palo Pinto gage to Dennis gage		acft	Div1	Daily diversion 1
D7				acft	Div2	Daily diversion 2
D8				acft	Div3	Daily diversion 3
D9				acft	Div4	Daily diversion 4
D10				acft	Div5	Daily diversion 5
D11		Dennis Gage to Lk Granbury		acft	Div1	Daily diversion 1
D12				acft	Div2	Daily diversion 2
D13				acft	Div3	Daily diversion 3
D14				acft	Div4	Daily diversion 4
D15				acft	Div5	Daily diversion 5
D16	REACH3	Lk Granbury to Glen Rose Gage		acft	Div1	Daily diversion 1
D17				acft	Div2	Daily diversion 2
D18				acft	Div3	Daily diversion 3
D19				acft	Div4	Daily diversion 4

Column	Reach Table	Reach	Sub-Reach	Units	Column Label	Description
D20				acft	Div5	Daily diversion 5
D21		Glen Rose Gage to Lake Whitney		acft	Div1	Daily diversion 1
D22				acft	Div2	Daily diversion 2
D23				acft	Div3	Daily diversion 3
D24				acft	Div4	Daily diversion 4
D25				acft	Div5	Daily diversion 5
D26	REACH4	Lake Aquilla to Aquilla/Brazos Confluence	Above Gage	acft	Div1	Daily diversion 1
D27				acft	Div2	Daily diversion 2
D28				acft	Div3	Daily diversion 3
D29				acft	Div4	Daily diversion 4
D30				acft	Div5	Daily diversion 5
D31			Below Gage	acft	Div1	Daily diversion 1
D32				acft	Div2	Daily diversion 2
D33				acft	Div3	Daily diversion 3
D34				acft	Div4	Daily diversion 4
D35				acft	Div5	Daily diversion 5
D36	REACH5	Lk Whitney to Aquilla/Brazos Confluence	Above Gage	acft	Div1	Daily diversion 1
D37				acft	Div2	Daily diversion 2
D38				acft	Div3	Daily diversion 3
D39				acft	Div4	Daily diversion 4
D40				acft	Div5	Daily diversion 5
D41			Below Gage	acft	Div1	Daily diversion 1
D42				acft	Div2	Daily diversion 2
D43				acft	Div3	Daily diversion 3
D44				acft	Div4	Daily diversion 4
D45				acft	Div5	Daily diversion 5
D46	REACH6	Aquilla/Brazos Confluence to Waco Gage		acft	Div1	Daily diversion 1
D47				acft	Div2	Daily diversion 2
D48				acft	Div3	Daily diversion 3
D49				acft	Div4	Daily diversion 4
D50				acft	Div5	Daily diversion 5
D51		Waco Gage to Highbank Gage		acft	Div1	Daily diversion 1
D52				acft	Div2	Daily diversion 2
D53				acft	Div3	Daily diversion 3
D54				acft	Div4	Daily diversion 4
D55				acft	Div5	Daily diversion 5
D56		Highbank Gage to Brazos/Little Confluence		acft	Div1	Daily diversion 1
D57				acft	Div2	Daily diversion 2
D58				acft	Div3	Daily diversion 3
D59				acft	Div4	Daily diversion 4

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Column	Reach Table	Reach	Sub-Reach	Units	Column Label	Description
D60				acft	Div5	Daily diversion 5
D61				acft	Div1	Daily diversion 1
D62			Above Hasse Gage	acft	Div2	Daily diversion 2
D63	REACH7		Above Hasse Gage	acft	Div3	Daily diversion 3
D64				acft	Div4	Daily diversion 4
D65		Lake Proctor to Leon at Gatesville Gage		acft	Div5	Daily diversion 5
D66				acft	Div1	Daily diversion 1
D67			Below Hasse Gage	acft	Div2	Daily diversion 2
D68			Below Hasse Gage	acft	Div3	Daily diversion 3
D69				acft	Div4	Daily diversion 4
D70	REACH8			acft	Div5	Daily diversion 5
D71				acft	Div1	Daily diversion 1
D72				acft	Div2	Daily diversion 2
D73		Gatesville Gage to Lake Belton		acft	Div3	Daily diversion 3
D74				acft	Div4	Daily diversion 4
D75				acft	Div5	Daily diversion 5
D76				acft	Div1	Daily diversion 1
D77				acft	Div2	Daily diversion 2
D78		Lk Belton to Leon Belton Gage		acft	Div3	Daily diversion 3
D79				acft	Div4	Daily diversion 4
D80				acft	Div5	Daily diversion 5
D81	REACH9	City of Temple		acft		Daily City of Temple diversion
D82				acft	Div1	Daily diversion 1
D83				acft	Div2	Daily diversion 2
D84		Leon R nr Belton Gage to Little R at Little River Gage		acft	Div3	Daily diversion 3
D85				acft	Div4	Daily diversion 4
D86				acft	Div5	Daily diversion 5
D87				acft	Div1	Daily diversion 1
D88				acft	Div2	Daily diversion 2
D89		Stillhouse Hollow to Lampasas nr Belton Gage		acft	Div3	Daily diversion 3
D90				acft	Div4	Daily diversion 4
D91	REACH10			acft	Div5	Daily diversion 5
D92				acft	Div1	Daily diversion 1
D93				acft	Div2	Daily diversion 2
D94		Lampasas nr Belton Gage to Little R at Little River Gage		acft	Div3	Daily diversion 3
D95				acft	Div4	Daily diversion 4
D96				acft	Div5	Daily diversion 5
D97				acft	Div1	Daily diversion 1
D98	REACH11	Little R at Little R to Little/San Gabriel Confluence		acft	Div2	Daily diversion 2
D99				acft	Div3	Daily diversion 3

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Column	Reach Table	Reach	Sub-Reach	Units	Column Label	Description
D100				acft	Div4	Daily diversion 4
D101				acft	Div5	Daily diversion 5
D102		Lake Georgetown to N Fk San Gabriel Gage		acft	Div1	Daily diversion 1
D103				acft	Div2	Daily diversion 2
D104				acft	Div3	Daily diversion 3
D105				acft	Div4	Daily diversion 4
D106	REACH12			acft	Div5	Daily diversion 5
D107		N Fk San Gabriel Gage to Lake Granger		acft	Div1	Daily diversion 1
D108				acft	Div2	Daily diversion 2
D109				acft	Div3	Daily diversion 3
D110				acft	Div4	Daily diversion 4
D111				acft	Div5	Daily diversion 5
D112		Lake Granger to Laneport Gage		acft	Div1	Daily diversion 1
D113				acft	Div2	Daily diversion 2
D114				acft	Div3	Daily diversion 3
D115				acft	Div4	Daily diversion 4
D116	REACH13			acft	Div5	Daily diversion 5
D117		Laneport Gage to San Gabriel/Little Confluence		acft	Div1	Daily diversion 1
D118				acft	Div2	Daily diversion 2
D119				acft	Div3	Daily diversion 3
D120				acft	Div4	Daily diversion 4
D121				acft	Div5	Daily diversion 5
D122		Little/San Gabriel Confluence to Cameron Gage	Confluence to Alcoa Diversion	acft	Div1	Daily diversion 1
D123				acft	Div2	Daily diversion 2
D124				acft	Div3	Daily diversion 3
D125				acft	Div4	Daily diversion 4
D126				acft	Div5	Daily diversion 5
D127			Alcoa Diversion	acft	Alcoa	Daily Alcoa diversion
D128			Alcoa Diversion to Cameron	acft	Div1	Daily diversion 1
D129	REACH14			acft	Div2	Daily diversion 2
D130				acft	Div3	Daily diversion 3
D131				acft	Div4	Daily diversion 4
D132				acft	Div5	Daily diversion 5
D133		Cameron Gage to Little/Brazos Confluence		acft	Div1	Daily diversion 1
D134				acft	Div2	Daily diversion 2
D135				acft	Div3	Daily diversion 3
D136				acft	Div4	Daily diversion 4
D137				acft	Div5	Daily diversion 5
D138	REACH15			acft	Div1	Daily diversion 1

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Column	Reach Table	Reach	Sub-Reach	Units	Column Label	Description
D139		Brazos/Little Confluence to Bryan Gage		acft	Div2	Daily diversion 2
D140				acft	Div3	Daily diversion 3
D141				acft	Div4	Daily diversion 4
D142				acft	Div5	Daily diversion 5
D143		Bryan Gage to Brazos/Yegua Confluence		acft	Div1	Daily diversion 1
D144				acft	Div2	Daily diversion 2
D145				acft	Div3	Daily diversion 3
D146				acft	Div4	Daily diversion 4
D147				acft	Div5	Daily diversion 5
D148	REACH16	Lake Somerville to Yegua Gage		acft	Div1	Daily diversion 1
D149				acft	Div2	Daily diversion 2
D150				acft	Div3	Daily diversion 3
D151				acft	Div4	Daily diversion 4
D152				acft	Div5	Daily diversion 5
D153		Yegua Gage to Yegua/Brazos Confluence		acft	Div1	Daily diversion 1
D154				acft	Div2	Daily diversion 2
D155				acft	Div3	Daily diversion 3
D156				acft	Div4	Daily diversion 4
D157				acft	Div5	Daily diversion 5
D158	REACH17	Brazos/Yegua Confluence to Brazos/Navasota Confluence		acft	Div1	Daily diversion 1
D159				acft	Div2	Daily diversion 2
D160				acft	Div3	Daily diversion 3
D161				acft	Div4	Daily diversion 4
D162				acft	Div5	Daily diversion 5
D163	REACH18	Lake Limestone to Easterly Gage		acft	Div1	Daily diversion 1
D164				acft	Div2	Daily diversion 2
D165				acft	Div3	Daily diversion 3
D166				acft	Div4	Daily diversion 4
D167				acft	Div5	Daily diversion 5
D168		Easterly Gage to Navasota/Brazos Confluence		acft	TMPA	Daily TMPA diversion
D169				acft	Div1	Daily diversion 1
D170				acft	Div2	Daily diversion 2
D171				acft	Div3	Daily diversion 3
D172				acft	Div4	Daily diversion 4
D173				acft	Div5	Daily diversion 5
D174	REACH19	Brazos/Navasota Confluence to Hempstead Gage		acft	Div1	Daily diversion 1
D175				acft	Div2	Daily diversion 2
D176				acft	Div3	Daily diversion 3
D177				acft	Div4	Daily diversion 4
D178				acft	Div5	Daily diversion 5

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Column	Reach Table	Reach	Sub-Reach	Units	Column Label	Description
D179				acft	Div1	Daily diversion 1
D180				acft	Div2	Daily diversion 2
D181			Hempstead to Canal A	acft	Div3	Daily diversion 3
D182				acft	Div4	Daily diversion 4
D183				acft	Div5	Daily diversion 5
D184			Canal A	acft		Daily Canal A diversion
D185				acft	Div1	Daily diversion 1
D186	REACH20	Hempstead to Richmond Gage		acft	Div2	Daily diversion 2
D187			Canal A to NRG	acft	Div3	Daily diversion 3
D188				acft	Div4	Daily diversion 4
D189				acft	Div5	Daily diversion 5
D190			NRG Excess Flows	acft		Daily NRG diversion assigned to Excess Flows permit (COA 12-5166)
D191			NRG Other	acft		Daily NRG diversions under other BRA water rights
D192				acft	Div1	Daily diversion 1
D193				acft	Div2	Daily diversion 2
D194			Richmond Gage to GCWA1	acft	Div3	Daily diversion 3
D195				acft	Div4	Daily diversion 4
D196				acft	Div5	Daily diversion 5
D197			GCWA1	acft		Daily GCWA diversion
D198				acft	Div1	Daily diversion 1
D199				acft	Div2	Daily diversion 2
D200			GCWA1 to GCWA2	acft	Div3	Daily diversion 3
D201				acft	Div4	Daily diversion 4
D202				acft	Div5	Daily diversion 5
D203			GCWA2	acft		Daily GCWA diversion
D204	REACH21	Richmond Gage to Gulf		acft	Div1	Daily diversion 1
D205				acft	Div2	Daily diversion 2
D206			Rosharon Gage to Dow Harris	acft	Div3	Daily diversion 3
D207				acft	Div4	Daily diversion 4
D208				acft	Div5	Daily diversion 5
D209			Dow Harris	acft		Daily Dow Harris diversion
D210				acft	Div1	Daily diversion 1
D211				acft	Div2	Daily diversion 2
D212			Dow Harris to Dow Brazoria	acft	Div3	Daily diversion 3
D213				acft	Div4	Daily diversion 4
D214				acft	Div5	Daily diversion 5
D215			Dow Brazoria	acft		Daily Dow Brazoria diversion

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H.3.6 Table REF6 – Reservoir Data

Table REF6 contains conservation elevation and total storage for the eleven BRA System reservoirs. Additional data regarding BRA's authorized storage, conservation storage, hydropower storage (SWPA storage) and dead storage are included for Lake Whitney. These data are referenced in the IFCalc and Reservoir Files.

The storage is calculated from elevation using the Excel user function INTERPOLATE. Macros must be enabled in order for this function to perform its calculations, and the workbooks must be saved as a macro-enabled file type (.xlsm or .xlsb).

The following is a description of the columns in Table REF6:

Column	Label	Units	Description
R1	Reservoir	none	Reservoir name
R2	Elevation	feet	Elevation at the top of the reservoir conservation pool
R3	Storage	acft	Total storage volume below the top of conservation pool. Calculated from Area-Capacity-Elevation table in Reference spreadsheet. Uses special INTERPOLATE function.
R4	Feature	None	Storage and elevation associated with Lake Whitney features (BRA storage, bottom of conservation pool, SWPA or hydropower storage, and dead storage).
R5	Elevation	feet	Elevation associated with Lake Whitney storage feature
R6	Storage	acft	Storage volume associated with Lake Whitney storage feature

H.3.7 Table REF7 – Pan Factors

Table REF7 contains the pan factors used to convert pan evaporation measured at the BRA System reservoirs to gross reservoir evaporation. These factors are used in the

Reservoir File as part of the inflow calculation. There is a unique set of factors for each reservoir.

The following describes the columns in Table REF7:

Column	Label	Units	Description
F1	Month	None	Month
F2	Possum Kingdom Lake	None	Monthly evaporation pan factors
F3	Lake Granbury	None	Monthly evaporation pan factors
F4	Lake Whitney	None	Monthly evaporation pan factors
F5	Lake Aquilla	None	Monthly evaporation pan factors
F6	Lake Proctor	None	Monthly evaporation pan factors
F7	Lake Belton	None	Monthly evaporation pan factors
F8	Lake Stillhouse Hollow	None	Monthly evaporation pan factors
F9	Lake Georgetown	None	Monthly evaporation pan factors
F10	Lake Granger	None	Monthly evaporation pan factors
F11	Lake Somerville	None	Monthly evaporation pan factors
F12	Lake Limestone	None	Monthly evaporation pan factors

H.3.8 Table REF8 – Conversion Factors

Table REF8 has conversion factors used to change units from cfs to acft/day, MGD to cfs and MGD to acft/day. All workbooks use these factors.

H.3.9 Table REF9 – Reach Diversion Limits and Water Right Diversion Limits

Table REF9 contains the maximum limits to diversions for Water Use Permit No. 5851 (the System Operation Permit), which vary by diversion reach and Demand Level, as well as the limits for other existing BRA water rights. The System Operation Permit Demand Level, which is shown in cell H3, is set in Table REF1.

Rows 5 through 48 contain the diversion limits for the System Operation Permit. Rows 7 through 46 have the limits for each reach. Table H.1.9 is a list of these reaches. Rows 47 and 48 have the total limits for diversion of natural flows and the Return Flows of Others and the maximum diversion of the tracked BRA Return Flows. The last column in

this part of the table is the selected limit for the current Accounting Plan, as set in Table REF1.

Rows 51 through 65 contain the maximum diversion for the BRA reservoir water rights (COA Nos. 12-5155 through 12-5165) and the Excess Flows Permit (COA No. 12-5166). The table includes both the priority diversions for each water right, as well as the maximum System Order diversions by type of use. The total diversion from all of these rights is limited to 661,901 acre-feet per year. So even though the total priority plus System Order diversions from Possum Kingdom totals 955,550 acre-feet, no more than 661,901 acre-feet could be diverted (assuming that all diversions under these rights occurred at Possum Kingdom).

H.3.10 Table DATA1 – Basic Data for USGS Gages and Reservoirs

Table DATA1 is the entry point for historical gage flows used for environmental flow calculations. These data will be entered by BRA staff. The table also imports elevation data from the BASIC data tables in the Reference File and calculates daily storage values, using the area-capacity data from the ACE tables.

The following describes the columns in Table DATA1:

Column	Label	Units	Description	Tables Referenced
L1	Date	none	Date	
G1	SOUT2 USGS 08088000 Brazos River nr South Bend	cfs	Historical daily average streamflow at 08088000. Used in Table IF 1 of the instream flow file.	
G2	PLOT2 USGS 08089000 Brazos Rv nr Palo Pinto	cfs	Historical daily average streamflow at 08089000. Used in Table IF2 of the instream flow file and table REACH 1 of the reaches file.	
G3	GLRT2 USGS 08091000 Brazos Rv nr Glen Rose	cfs	Historical daily average streamflow at 08091000. Used in Table IF3 of the instream flow file and table REACH 3 of the reaches file.	
G4	WBAT2 USGS 08096500 Brazos River at Waco	cfs	Historical daily average streamflow at 08096500. Used in Table IF4 of the instream flow file.	
G5	GAST2 USGS 08100500 Leon Rv at Gatesville	cfs	Historical daily average streamflow at 08100500. Used in Table IF 5 of the instream flow file and table REACH 8 of the reaches file.	
G6	LRIT2 USGS 08104500 Little Rv nr Little River	cfs	Historical daily average streamflow at 08104500. Used in Table IF6 of the instream flow file and table REACH 11 of the reaches file.	

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Column	Label	Units	Description	Tables Referenced
G7	CMNT2 USGS 08106500 Little Rv nr Cameron	cfs	Historical daily average streamflow at 08106500. Used in table IF7 of the instream flow file and table REACH 14 of the reaches file.	
G8	BBZT2 USGS 08108700 Brazos Rv at SH 21 nr Bryan, TX	cfs	Historical daily average streamflow at 08108700. Used in table IF8 of the instream flow file and table REACH 15 of the reaches file.	
G9	EAST2 USGS 08110500 Navasota Rv nr Easterly	cfs	Historical daily average streamflow at 08110500. Used in table IF9 of the instream flow file and table REACH 18 of the reaches file.	
G10	HPDT2 USGS 08111500 Brazos Rv nr Hempstead, TX	cfs	Historical daily average streamflow at 08111500. Used in table IF10 of the instream flow file and table REACH 19 of the reaches file.	
G11	RMOT2 USGS 08114000 Brazos Rv at Richmond	cfs	Historical daily average streamflow at 08114000. Used in table IF11 of the instream flow file and table REACH 20 of the reaches file.	
G12	ROST2 USGS 08116650 Brazos Rv nr Rosharon	cfs	Historical daily average streamflow at 08116650. Used in table IF11 of the instream flow file and table REACH 21 of the reaches file.	
G13	DNNT2 USGS 08090800 Brazos Rv nr Dennis, TX	cfs	Historical daily average streamflow at 08090800. Used in table REACH 2 of the reaches file.	
G14	HSLT2 USGS 08099500 Leon Rv nr Hasse, TX	cfs	Historical daily average streamflow at 08099500. Used in table REACH 7 of the reaches file.	
G15	HPDT2 USGS 08098290 Brazos Rv nr Highbank	cfs	Historical daily average streamflow at 08098290. Used in table REACH 6 of the reaches file.	
G16	SMVT2 USGS 08110000 Yegua Ck nr Somerville	cfs	Historical daily average streamflow at 08110000. Used in table REACH 16 of the reaches file.	
G17	AQIT2 USGS 08093360 Aquilla Ck abv Aquilla	cfs	Historical daily average streamflow at 08093360. Used in table REACH 4 of the reaches file.	
G18	AQLT2 USGS 08093100 Brazos Rv nr Aquilla	cfs	Historical daily average streamflow at 08093100. Used in table REACH 5 of the reaches file.	
G19	BLET2 USGS 08102500 Leon Rv nr Belton	cfs	Historical daily average streamflow at 08102500. Used in Table REACH 9 of the reaches file.	
G20	BLPT2 USGS 08104100 Lampasas Rv nr Belton	cfs	Historical daily average streamflow at 08104100. Used in table REACH 10 of the reaches file.	
G21	GERT2 USGS 08104700 N Fk San Gabriel Rv nr Georgetown	cfs	Historical daily average streamflow at 08104700. Used in table REACH 12 of the reaches file.	
G22	GGRT2 USGS 08105700 San Gabriel Rv at Laneport	cfs	Historical daily average streamflow at 08105700. Usedin table REACH 13 of the reaches file.	
E1	PSMT2 Possum Kingdom	feet	Historical reservoir elevation for Possum Kingdom	BASIC1
E2	GBYT2 Granbury	feet	Historical reservoir elevation for Granbury	BASIC2
E3	WTYT2 Whitney	feet	Historical reservoir elevation for Whitney	BASIC3
E4	ALAT2 Aquilla	feet	Historical reservoir elevation for Aquilla	BASIC4
E5	PCTT2 Proctor	feet	Historical reservoir elevation for Proctor	BASIC5
E6	BLNT2 Belton	feet	Historical reservoir elevation for Belton	BASIC6
E7	STIT2 Stillhouse	feet	Historical reservoir elevation for Stillhouse	BASIC7
E8	GGLT2 Georgetown	feet	Historical reservoir elevation for Georgetown	BASIC8
E9	GLKT2 Granger	feet	Historical reservoir elevation for Granger	BASIC9
E10	SOMT2 Somerville	feet	Historical reservoir elevation for Somerville	BASIC10

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Column	Label	Units	Description	Tables Referenced
E11	LLST2 Limestone	feet	Historical reservoir elevation for Limestone	BASIC11
V1	PSMT2 Possum Kingdom	acft	Reservoir storage volume for Possum Kingdom. Calculated from Area-Capacity-Elevation table in Reference spreadsheet. Uses special INTERPOLATE function.	ACE1
V2	GBYT2 Granbury	acft	Reservoir storage volume for Lk Granbury. Calculated from Area-Capacity-Elevation table in Reference spreadsheet. Uses special INTERPOLATE function.	ACE2
V3	WTYT2 Whitney	acft	Reservoir storage volume for Lk Whitney. Calculated from Area-Capacity-Elevation table in Reference spreadsheet. Uses special INTERPOLATE function.	ACE3
V4	ALAT2 Aquilla	acft	Reservoir storage volume for Lk Aquilla. Calculated from Area-Capacity-Elevation table in Reference spreadsheet. Uses special INTERPOLATE function.	ACE4
V5	PCTT2 Proctor	acft	Reservoir storage volume for Lk Proctor. Calculated from Area-Capacity-Elevation table in Reference spreadsheet. Uses special INTERPOLATE function.	ACE5
V6	BLNT2 Belton	acft	Reservoir storage volume for Lk Belton. Calculated from Area-Capacity-Elevation table in Reference spreadsheet. Uses special INTERPOLATE function.	ACE6
V7	STIT2 Stillhouse	acft	Reservoir storage volume for Lk Stillhouse Hollow. Calculated from Area-Capacity-Elevation table in Reference spreadsheet. Uses special INTERPOLATE function.	ACE7
V8	GGLT2 Georgetown	acft	Reservoir storage volume for Lk Georgetown. Calculated from Area-Capacity-Elevation table in Reference spreadsheet. Uses special INTERPOLATE function.	ACE8
V9	GLKT2 Granger	acft	Reservoir storage volume for Lk Granger. Calculated from Area-Capacity-Elevation table in Reference spreadsheet. Uses special INTERPOLATE function.	ACE9
V10	SOMT2 Somerville	acft	Reservoir storage volume for Lk Somerville. Calculated from Area-Capacity-Elevation table in Reference spreadsheet. Uses special INTERPOLATE function.	ACE10
V11	LLST2 Limestone	acft	Reservoir storage volume for Lk Limestone. Calculated from Area-Capacity-Elevation table in Reference spreadsheet. Uses special INTERPOLATE function.	ACE11
V12	Total Storage	acft	Sum of columns [V1] through [V11]	

Appendix H

H.3.11 Table DATA2 – Palmer Hydrological Drought Indices

Table DATA2 contains historical Palmer Hydrological Drought Indices (PHDI) for the last day of the previous season. These values are used in the Instream Flow File to determine the climatic condition for each season. As of the time of development of this Accounting Plan, the link to these data is as follows:

https://www.ncdc.noaa.gov/temp-and-precip/drought/

This link has changed several times in recent years. If this link is no longer active, go to the National Centers for Environmental Information (NCEI, formerly NCDC) website and search for Palmer Index.

The following is a description of the columns in Table DATA2:

Column	Units	Label	Description
PD1	none	Season	Name of season (Winter, Spring or Summer)
PD2	none	Date	Date of the end of the previous season
PD3	none	Div 1 High Plains PHDI	PHDI for the High Plains region on the associated date
PD4	none	Div 2 Low Rolling Plains PHDI	PHDI for the Low Rolling Plains region on the associated date
PD5	none	Div 3 North Central PHDI	PHDI for the North Central region on the associated date
PD6	none	Div 4 East Texas PHDI	PHDI for the East Texas region on the associated date
PD7	none	Div 6 Edwards Plateau PHDI	PHDI for the Edwards Plateau region on the associated date
PD8	none	Div 7 South Central PHDI	PHDI for the South Central region on the associated date
PD9	none	Div 8 Upper Coast PHDI	PHDI for the Upper Coast region on the associated date

H.3.12 Tables ACE1 through ACE11

Tables ACE1 through ACE11 are area-capacity-elevation tables for the eleven BRA System reservoirs. Information about the source of the data is included below the table title. These tables are used here in the Reference File to calculate storage from elevations, in the Reservoir File to calculate surface areas, and at other locations in the Accounting Plan.

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The following is a description of the columns in the ACE tables:

Column No	Label	Units	Description
R1	Elevation	feet	Elevation
R2	Area	acres	Reservoir water surface area corresponding to a particular elevation.
R3	Volume	acft	Reservoir storage volume corresponding to a particular elevation.

H.3.13 Tables BASIC1 through BASIC11

Tables BASIC1 through BASIC11 contain basic information for use in the Reservoir File, as well as data that is passed on to reaches that are immediately below reservoirs. BRA staff enter daily data for evaporation, rainfall, diversions directly from the reservoir, downstream releases (both total releases and the portion of the release dedicated for water supply), and reservoir elevation. The tables import information from the IFCalc File regarding applicable instream flow criteria for reference. The tables also sum up return flows that are returned directly into the reservoir or into a tributary of the reservoir that is not one of the reaches in Table H.1.9. For return flows that are upstream of the reservoir, losses may be applied. The delivery factors used in the loss calculation are shown in Table REF3 Tracked Return Flows (described above) and are derived from the Brazos WAM.

Most of the tables have a standard layout. Tables for Lake Granbury (BASIC2), Lake Aquilla (BASIC4), Lake Proctor (BASIC5), Lake Stillhouse Hollow (BASIC7), Lake Granger (BASIC9), Lake Somerville (BASIC10) and Lake Limestone (BASIC11) all use the same layout. The following is a description of the columns for tables using the standard layout:

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Column	Label	Units	Description
L1	Month	none	Month number for associated data value
L2	End of Month	none	End-of-month associated with date value
L3	Date	none	Date
F1	Evaporation	inches	Daily recorded evaporation. Entered by BRA staff.
F2	Rainfall	inches	Daily recorded rainfall. Entered by BRA staff.
F3	Lakeside Diversions	dsf	Daily lakeside diversions from the reservoir. Entered by BRA staff.
F4	Downstream Release	dsf	Daily downstream releases from the reservoir. Entered by BRA staff.
F5	Elevation	feet	Daily recorded reservoir water surface elevation. Entered by BRA staff.
F6	Water Supply Release	dsf	Daily water supply releases from the reservoir. Entered by BRA staff.
F7	Downstream Flows Exceed Criteria?	none	TRUE if flows at the downstream measurement point exceed the instream flow criteria. Otherwise, FALSE. Imported from the measurement point for each reservoir.
F8	Return Flows into Reservoir	MGD	Return flows to the reservoir reach. Sum of columns [RF1] through [RF10].
RF1	[Return Flow Name]	MGD	Return flows from Table REF3 that either flow directly into the reservoir or flow into a tributary to the reservoir that is not a BRA reach. Multiplied by the appropriate delivery factor from REF3 if applicable.
RF2	[Return Flow Name]	MGD	Return flows from Table REF3 that either flow directly into the reservoir or flow into a tributary to the reservoir that is not a BRA reach. Multiplied by the appropriate delivery factor from REF3 if applicable.
RF3	[Return Flow Name]	MGD	Return flows from Table REF3 that either flow directly into the reservoir or flow into a tributary to the reservoir that is not a BRA reach. Multiplied by the appropriate delivery factor from REF3 if applicable.
RF4	[Return Flow Name]	MGD	Return flows from Table REF3 that either flow directly into the reservoir or flow into a tributary to the reservoir that is not a BRA reach. Multiplied by the appropriate delivery factor from REF3 if applicable.
RF5	[Return Flow Name]	MGD	Return flows from Table REF3 that either flow directly into the reservoir or flow into a tributary to the reservoir that is not a BRA reach. Multiplied by the appropriate delivery factor from REF3 if applicable.
RF6	[Return Flow Name]	MGD	Return flows from Table REF3 that either flow directly into the reservoir or flow into a tributary to the reservoir that is not a BRA reach. Multiplied by the appropriate delivery factor from REF3 if applicable.
RF7	[Return Flow Name]	MGD	Return flows from Table REF1 that either flow directly into the reservoir or flow into a tributary to the reservoir that is not a BRA reach. Multiplied by the appropriate delivery factor from REF3 if applicable.
RF8	[Return Flow Name]	MGD	Return flows from Table REF3 that either flow directly into the reservoir or flow into a tributary to the reservoir that is not a BRA reach. Multiplied by the appropriate delivery factor from REF3 if applicable.

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Column	Label	Units	Description
RF9	[Return Flow Name]	MGD	Return flows from Table REF3 that either flow directly into the reservoir or flow into a tributary to the reservoir that is not a BRA reach. Multiplied by the appropriate delivery factor from REF3 if applicable.
RF10	[Return Flow Name]	MGD	Return flows from Table REF3 that either flow directly into the reservoir or flow into a tributary to the reservoir that is not a BRA reach. Multiplied by the appropriate delivery factor from REF3 if applicable.

Possum Kingdom Lake (BASIC1) adds an additional column for the upstream environmental flow criteria, which apply to diversions or water supply releases from the reservoir:

Column	Label	Units	Description
L1	Month	none	Month number for associated data value
L2	End of Month	none	End-of-month associated with date value
L3	Date	none	Date
F1	Evaporation	inches	Daily recorded evaporation. Entered by BRA staff.
F2	Rainfall	inches	Daily recorded rainfall. Entered by BRA staff.
F3	Lakeside Diversions	dsf	Daily lakeside diversions from the reservoir. Entered by BRA staff.
F4	Downstream Release	dsf	Daily downstream releases from the reservoir. Entered by BRA staff.
F5	Elevation	feet	Daily recorded reservoir water surface elevation. Entered by BRA staff.
F6	Water Supply Release	dsf	Daily water supply releases from the reservoir. Entered by BRA staff.
F7	Upstream Flows Exceed Criteria?	none	TRUE if flows at the South Bend gage exceed the instream flow criteria plus diversions and water supply releases from PK. Otherwise, FALSE. Imported from the South Bend instream flow calculations.
F8	Downstream Flows Exceed Criteria?	none	TRUE if flows at the Palo Pinto gage exceed the instream flow criteria. Otherwise, FALSE. Imported from the measurement point for each reservoir.
F9	Return Flows into Reservoir	MGD	Return flows to the reservoir reach. Sum of columns [RF1] through [RF10].
RF1	[Return Flow Name]	MGD	Return flows from Table REF3 that either flow directly into the reservoir or flow into a tributary to the reservoir that is not a BRA reach. Multiplied by the appropriate delivery factor from REF3 if applicable.
RF2	[Return Flow Name]	MGD	Return flows from Table REF3 that either flow directly into the reservoir or flow into a tributary to the reservoir that is not a BRA reach. Multiplied by the appropriate delivery factor from REF3 if applicable.
RF3	[Return Flow Name]	MGD	Return flows from Table REF3 that either flow directly into the reservoir or flow into a tributary to the reservoir that is not a BRA reach. Multiplied by the appropriate delivery factor from REF3 if applicable.

Column	Label	Units	Description
RF4	[Return Flow Name]	MGD	Return flows from Table REF3 that either flow directly into the reservoir or flow into a tributary to the reservoir that is not a BRA reach. Multiplied by the appropriate delivery factor from REF3 if applicable.
RF5	[Return Flow Name]	MGD	Return flows from Table REF3 that either flow directly into the reservoir or flow into a tributary to the reservoir that is not a BRA reach. Multiplied by the appropriate delivery factor from REF3 if applicable.
RF6	[Return Flow Name]	MGD	Return flows from Table REF3 that either flow directly into the reservoir or flow into a tributary to the reservoir that is not a BRA reach. Multiplied by the appropriate delivery factor from REF3 if applicable.
RF7	[Return Flow Name]	MGD	Return flows from Table REF3 that either flow directly into the reservoir or flow into a tributary to the reservoir that is not a BRA reach. Multiplied by the appropriate delivery factor from REF3 if applicable.
RF8	[Return Flow Name]	MGD	Return flows from Table REF3 that either flow directly into the reservoir or flow into a tributary to the reservoir that is not a BRA reach. Multiplied by the appropriate delivery factor from REF3 if applicable.
RF9	[Return Flow Name]	MGD	Return flows from Table REF3 that either flow directly into the reservoir or flow into a tributary to the reservoir that is not a BRA reach. Multiplied by the appropriate delivery factor from REF3 if applicable.
RF10	[Return Flow Name]	MGD	Return flows from Table REF3 that either flow directly into the reservoir or flow into a tributary to the reservoir that is not a BRA reach. Multiplied by the appropriate delivery factor from REF3 if applicable.

Lake Whitney (BASIC3) has a column for hydropower releases plus a column for upstream environmental flow criteria:

Column	Label	Units	Description
L1	Month	None	Month number for associated data value
L2	End of Month	None	End-of-month associated with date value
L3	Date	None	Date
F1	Evaporation	Inches	Daily recorded evaporation. Entered by BRA staff.
F2	Rainfall	Inches	Daily recorded rainfall. Entered by BRA staff.
F3	Turbine release	dsf	Average daily hydropower release. Entered by BRA staff.
F4	Lakeside Diversions	dsf	Daily lakeside diversions from the reservoir. Entered by BRA staff.
F5	Downstream Release	dsf	Daily downstream releases from the reservoir. Entered by BRA staff.
F6	Elevation	Feet	Daily recorded reservoir water surface elevation. Entered by BRA staff.
F7	Water Supply Release	dsf	Daily water supply releases from the reservoir. Entered by BRA staff.
F8	Upstream Flows Exceed Criteria?	None	TRUE if flows at the Glen Rose gage exceed the instream flow criteria plus diversions and water supply releases from Lake Whitney. Otherwise, FALSE. Imported from the South Bend instream flow calculations.

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Column	Label	Units	Description
F9	Downstream Flows Exceed Criteria?	none	TRUE if flows at the Waco gage exceed the instream flow criteria. Otherwise, FALSE. Imported from the measurement point for each reservoir.
F9	Return Flows into Reservoir	MGD	Return flows to the reservoir reach. Sum of columns [RF1] through [RF10].
RF1	Not used	MGD	Not used
RF2	Not used	MGD	Not used
RF3	Not used	MGD	Not used
RF4	Not used	MGD	Not used
RF5	Not used	MGD	Not used
RF6	Not used	MGD	Not used
RF7	Not used	MGD	Not used
RF8	Not used	MGD	Not used
RF9	Not used	MGD	Not used
RF10	Not used	MGD	Not used

Lake Belton (BASIC6) adds a column for diversions under the Fort Hood water right (COA No. 12-2936), which are used in the mass balance calculation for Lake Belton:

Column	Label	Units	Description
L1	Month	none	Month number for associated data value
L2	End of Month	none	End-of-month associated with date value
L3	Date	none	Date
F1	Evaporation	inches	Daily recorded evaporation. Entered by BRA staff.
F2	Rainfall	inches	Daily recorded rainfall. Entered by BRA staff.
F3	Lakeside Diversions	dsf	Daily lakeside diversions from the reservoir. Entered by BRA staff.
F4	Downstream Release	dsf	Daily downstream releases from the reservoir. Entered by BRA staff.
F5	Elevation	feet	Daily recorded reservoir water surface elevation. Entered by BRA staff.
F6	Water Supply Release	dsf	Daily water supply releases from the reservoir. Entered by BRA staff.
F7	Fort Hood Diversion	acft	Diversions from Lake Belton made under COA 12-2936. Entered by BRA staff. Used for Lake Belton water balance calculations (Table RES6 of Reservoir File).
F8	Downstream Flows Exceed Criteria?	none	TRUE if flows at the Little River gage exceed the instream flow criteria. Otherwise, FALSE. Imported from the measurement point for each reservoir.
F9	Return Flows into Reservoir	MGD	Return flows to the reservoir reach. Sum of columns [RF1] through [RF10].
RF1	City of Copperas Cove (Northwest WWTP)	MGD	Return flows from column [R17] of Table REF3, multiplied by the Brazos WAM delivery factor.

Column	Label	Units	Description
RF2	City of Copperas Cove (Northeast WWTP)	MGD	Return flows from column [R20] of Table REF3, multiplied by the Brazos WAM delivery factor.
RF3	City of Moody WWTP	MGD	Return flows from column [R21] of Table REF3, multiplied by the Brazos WAM delivery factor.
RF4	Bell County WCID #1 WWTP	MGD	Return flows from column [R22] of Table REF3, multiplied by the Brazos WAM delivery factor.
RF5	Not used	MGD	Not used
RF6	Not used	MGD	Not used
RF7	Not used	MGD	Not used
RF8	Not used	MGD	Not used
RF9	Not used	MGD	Not used
RF10	Not used	MGD	Not used

Lake Georgetown (BASIC8) adds a column for water pumped into the reservoir from Lake Stillhouse Hollow:

Column	Label	Units	Description
L1	Month	none	Month number for associated data value
L2	End of Month	none	End-of-month associated with date value
L3	Date	none	Date
F1	Evaporation	inches	Daily recorded evaporation. Entered by BRA staff.
F2	Rainfall	inches	Daily recorded rainfall. Entered by BRA staff.
F3	Lakeside Diversions	dsf	Daily lakeside diversions from the reservoir. Entered by BRA staff.
F4	Downstream Release	dsf	Daily downstream releases from the reservoir. Entered by BRA staff.
F5	Elevation	feet	Daily recorded reservoir water surface elevation. Entered by BRA staff.
F6	Water Supply Release	dsf	Daily water supply releases from the reservoir. Entered by BRA staff.
F7	Pumping from Stillhouse	dsf	Daily water pumped from Lake Stillhouse Hollow into Lake Georgetown. Entered by BRA staff.
F8	Downstream Flows Exceed Criteria?	none	TRUE if flows at the Cameron gage exceed the instream flow criteria. Otherwise, FALSE. Imported from the measurement point for each reservoir.
F9	Return Flows into Reservoir	MGD	Return flows to the reservoir reach. Sum of columns [RF1] through [RF10].
RF1	Not used	MGD	Not used
RF2	Not used	MGD	Not used
RF3	Not used	MGD	Not used
RF4	Not used	MGD	Not used
RF5	Not used	MGD	Not used

Column	Label	Units	Description
RF6	Not used	MGD	Not used
RF7	Not used	MGD	Not used
RF8	Not used	MGD	Not used
RF9	Not used	MGD	Not used
RF10	Not used	MGD	Not used

H.3.14 Table BASIC12 – Return Flow by Reach

Table BASIC12 takes the tracked BRA Return Flows in Table REF3 and distributes them by reach for use elsewhere in the Accounting Plan. The table includes placeholders for potential future return flows. The values in the columns are the daily BRA Return Flows multiplied by the delivery factors listed in Row 9. The delivery factors are imported from Table REF3.

The columns in Table BASIC12 are as follows:

Column Number	Reach	Column Label/Plant Name	Units
L1		Month	
L2		Date	
F1		Double Diamond (The Cliffs WWTP)	MGD
F2	Reach 2 - Possum Kingdom Lake Dam to Palo Pinto gage		
F3		Total	MGD
F4			
F5	Reach 3 - Palo Pinto gage to Dennis gage		
F6		Total	
F7			
F8	Reach 4a - Dennis gage to Lk Granbury headwaters		
F9		Total	
F10		Acton MUD (Pecan Plantation WWTP)	MGD
F11	Reach 5 - Lake Granbury Dam to Glen Rose gage	AES Wolf Hollow Power Plant	MGD
F12		Total	
F13			
F14	Reach 6a - Glen Rose to Lk Whitney headwaters		
F15		Total	
F16		Bosque County Power Plant	MGD
F17	Reach 7a - Lake Whitney Dam to Brazos nr Aquilla gage		
F18		Total	

Column Number	Reach	Column Label/Plant Name	Units
F19	Reach 7b - Brazos nr Aquilla Gage to Aquilla Creek/Brazos Rv confluence		
F20			
F21		Total	
F22	Reach 9 -Lake Aquilla Dam to Aquilla Creek gage		
F23			
F24		Total	
F25	Reach 10 - Aquilla Creek gage to Aquilla Creek/Brazos Rv confluence		
F26			
F27		Total	
F28	Reach 11a - Aquilla Creek/ Brazos confluence to Brazos at Waco Gage		
F29			
F30		Total	
F31	Reach 11b - Brazos at Waco gage to Highbank gage	City of McGregor (South WWTP)	MGD
F32		City of Marlin WWTP	MGD
F33		Total	
F34	Reach 13a - Lake Proctor Dam to Leon Rv nr Hasse gage	Upper Leon MWD WWTP	MGD
F35			
F36		Total	
F37	Reach 13b - Leon nr Hasse gage to Leon Rv at Gatesville gage	City of Dublin WWTP	MGD
F38		City of Comanche WWTP	MGD
F39		City of Hamilton	MGD
F40		Total	
F41	Reach 14a - Leon Rv at Gatesville to Lake Belton headwaters	City of Gatesville (Leon Plant WWTP)	MGD
F42		City of Gatesville (Stillhouse Branch	MGD
F43		Total	
F44	Reach 15 - Lake Belton Dam to Leon Rv nr Belton gage		
F45			
F46		Total	
F47	Reach 16 - Leon Rv nr Belton gage to Little River gage	City of Harker Heights WWTP	MGD
F48		Bell County WCID #1 WWTP 2	MGD
F49		Bell County WCID #1	MGD
F50		TBRSS (Temple Belton Regional WWTP)	MGD
F51		Bell County WCID #2 (Academy WWTP)	MGD
F52		Bell County WCID #2 (Little River WWTP)	MGD
F53		Bell County WCID #3	MGD
F54		Total	
F55	Reach 18 - Lake Stillhouse Hollow Dam to Lampasas Rv nr Belton gage		
F56			
F57		Total	
F58	Reach 19 - Lampasas Rv nr Belton gage to Little River gage		
F59			

Column Number	Reach	Column Label/Plant Name	Units
F60		Total	
F61	Reach 20 - Little River gage to Little Rv/San Gabriel Rv confluence	City of Holland WWTP	MGD
F62			
F63		Total	
F64	Reach 22 - Lake Georgetown Dam to N San Gabriel gage		
F65			
F66		Total	
F67	Reach 23a - N San Gabriel gage to Lake Granger headwaters	City of Georgetown (San Gabriel WWTP)	MGD
F68		City of Georgetown (Dove Springs WWTP)	MGD
F69		City of Georgetown (Pecan Branch WWTP)	MGD
F70		Total	
F71	Reach 24 - Lake Granger Dam to Laneport gage		
F72			
F73		Total	
F74	Reach 25 - Laneport gage to Little Rv/San Gabriel confluence	BCRWSS West (Brushy Creek Regional WWTP)	MGD
F75		BCRWSS East (Brusy Creek Regional WWTP East)	MGD
F76		City of Taylor (Mustang Creek WWTP)	MGD
F77		City of Hutto WWTP	MGD
F78		Total	
F79	Reach 26a - Little/San Gabriel confluence to Alcoa diversion		
F80			
F81		Total	
F82	Reach 26b - Alcoa diversion to Little Rv at Cameron gage		
F83			
F84		Total	
F85	Reach 27 - Cameron gage to Brazos Rv/Little Rv confluence		
F86			
F87		Total	
F88	Reach 28 - Highbank gage to Brazos Rv/Little Rv confluence		
F89			
F90		Total	
F91	Reach 29 - Brazos Rv/Little Rv confluence to Bryan gage	City of Rosebud WWTP	MGD
F92			
F93		Total	
F94	Reach 30 - Bryan gage to Brazos Rv/Yegua Crk confluence		
F95			
F96		Total	
F97	Reach 32 - Lake Somerville Dam to Yegua Crk gage		
F98			
F99		Total	

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Column Number	Reach	Column Label/Plant Name	Units
F100	Reach 33 - Yegua Crk gage to Brazos Rv/Yegua Crk confluence		
F101			
F102		Total	
F103	Reach 34 - Brazos Rv/Yegua Crk confluence to Brazos Rv/Navasota Rv confluence		
F104			
F105		Total	
F106	Reach 36 - Lake Limestone Dam to Easterly gage		
F107			
F108		Total	
F109	Reach 37 - Easterly gage to Brazos Rv/Navasota Rv confluence		
F110			
F111		Total	
F112	Reach 38 - Brazos Rv/Navasota Rv confluence to Hempstead gage	City of Brenham WWTP	MGD
F113			
F114		Total	
F115	Reach 39a - Hempstead gage to Canal A diversion		
F116			
F117		Total	
F118	Reach 39b - Canal A diversion to Richmond gage		
F119			
F120		Total	
F121	Reach 40a - Richmond gage to GCWA Briscoe diversion		
F122			
F123		Total	
F124	Reach 40b - GCWA Briscoe diversion to Rosharon gage		
F125			
F126		Total	
F127	Reach 40c - Rosharon gage to Dow Harris diversion		
F128			
F129		Total	
F130	Reach 40d - Dow Harris diversion to Dow Brazoria diversion		
F131			
F132		Total	

H.4   Reservoir File Tables

The Accounting Plan includes daily reservoir accounting for the eleven BRA System reservoirs: Possum Kingdom, Granbury, Whitney, Aquilla, Proctor, Belton, Stillhouse

Hollow, Georgetown, Granger, Somerville, and Limestone. The worksheet for each reservoir includes inputs, inflow calculation, lakeside use accounting, downstream use accounting, storage accounting, and accounting for impoundment under the System Operation Permit. With the exception of Lakes Whitney and Belton, the format of the worksheets for the reservoirs is identical. The worksheets are described by section below, including descriptions of each column in the computation.

The reservoir accounting assigns lakeside diversions and releases for downstream use to the various BRA authorizations at the reservoir. The reservoir accounting uses a default order, which may be overridden on any day by BRA staff. The default order for assignment is as follows:

1. Lakeside Demands (i.e. diversion directly from the reservoir) uses this default order:
    a. If using SysOps water (instream flow requirements must be met)
        i. BRA Return Flows (BRA staff must assign amount of demand met from this source)
        ii. Natural inflows and Return Flows of Others (BRA staff must assign amount of demand met from this source)
    b. Water supply releases from upstream reservoirs, after applying losses and travel times
    c. BRA Return Flows appropriated by the reservoir's water right
    d. Natural inflows and Return Flows of Others appropriated by the reservoir's water right
    e. Bed and Banks Return Flow storage account
    f. Upstream Release storage account
    g. Reservoir's water right storage account
2. Water Supply Releases (i.e. water released to meet downstream BRA customer demands) uses this default order:
    a. If using SysOps water (instream flow requirements must be met)

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    i. BRA Return Flows (BRA staff must assign amount of demand met from this source)

    ii. Natural inflows and Return Flows of Others (BRA staff must assign amount of demand met from this source)

    b. Water supply releases from upstream reservoirs, after applying losses and travel times

    c. BRA Return Flows appropriated by the reservoir's water right

    d. Natural inflows and Return Flows of Others appropriated by the reservoir's water right

    e. Upstream Release storage account

    f. Bed and Banks Return Flow storage account

    g. Reservoir's water right storage account

The only difference in order between lakeside and downstream use is in the use from the storage account. Lakeside use comes first from Bed and Banks Return Flow storage, while downstream releases come first from Upstream Release storage.

H.4.1 Inputs

Columns I1 through I10 give basic data to be used in the computation. The inputs include the portion of lakeside and downstream use that is under the System Operation Permit. The inputs section is preceded by two columns that give the month and date.

The columns for the date and the inputs are the same for all reservoirs and are as follows:

Column	Label	Units	Daily Description	Tables Referenced
L1	Month	none	Numeric monthly index (1-12)	
L2	Date	none	Current date from basic data	BASIC
I1	Total Lakeside Use	acft	Total BRA lakeside use from basic data in the Reference spreadsheet.	BASIC
I2	Total Water Supply Release	acft	Total BRA release from basic data in the Reference spreadsheet.	BASIC

Column	Label	Units	Daily Description	Tables Referenced
I3	SysOps Lakeside Use	acft	Portion of lakeside use of natural inflows and stored natural inflows that is under SysOps. Daily values are entered by BRA staff.	
I4	SysOps Downstream Use	acft	Portion of downstream use of natural inflows and stored natural inflows released from this lake that is under SysOps. Daily values are entered by BRA staff	
I5	SysOps Lakeside Return Flow Use	acft	Portion of lakeside return flow use that is under SysOps. Daily values are entered by BRA staff.	
I6	SysOps Downstream Return Flow Use	acft	Portion of downstream use of return flow released from this lake that is under SysOps. Daily values are entered by BRA staff.	
I7	Use Check	none	Check to see if SysOps use is less than or equal to total use.	
I8	Flows > Instream Flow Criteria During Month?	none	If TRUE then flows at the applicable measurement point are greater than the calculated instream flow criteria from the instream flow file. Referenced through the BASIC tables for the reservoir in the reference file. For PK and Whitney, this is an upstream gage. For all other files, it is a downstream measurement point.	BASIC
I9	Upstream Water Supply Releases	acft	BRA Water Supply Releases passed into reservoir from the upstream reach or delivered via pipeline from another BRA reservoir. If no reach upstream or no pipeline, set to zero.	Upstream Reach Worksheet
I10	BRA Return Flows	acft	BRA Return Flows passed into reservoir from the upstream reach plus return flows directly into the reservoir from BASIC data in the Reference spreadsheet for the reservoir.	Upstream Reach Worksheet and BASIC

H.4.2 Inflow Calculation

Columns F1 through F13 compute inflows into the reservoir. The total inflow is computed by a mass balance. Natural inflows available to BRA are determined by adjusting total inflows for upstream releases, return flows, and bypasses (downstream releases that are

not BRA water supply releases). Because of inconsistent data, daily reservoir inflows may be negative on some days. When this happens, the Accounting Plan assigns diversions to stored water to maintain the proper mass balance. The columns for the inflow calculation are as follows:

Column	Label	Units	Daily Description	Tables Referenced
F1	End-of-Day Elevation	feet	End-of-day reservoir elevation from BASIC data in the Reference spreadsheet.	BASIC
F2	End-of-Day Reservoir Storage	acft	End-of-day reservoir storage, calculated from gage data from BASIC table in Reference spreadsheet. Uses special INTERPOLATE function.	ACE
F3	Precipitation	inches	Daily precipitation from BASIC data in Reference spreadsheet.	BASIC
F4	Pan Evaporation	inches	Daily pan evaporation from basic data in Reference spreadsheet.	BASIC
F5	Pan Factor	none	Monthly pan factor for the reservoir from basic data in Reference spreadsheet.	REF
F6	Net Evaporation	feet	Daily net evaporation. Pan factor in column [F4] multiplied by the pan evaporation in column [F5] less the precipitation in column [F3], divided by 12 to convert to feet.	
F7	End-of-Day Surface Area	acres	End-of-day surface area, calculated from Area-Capacity-Elevation table in Reference spreadsheet.	ACE
F8	Evaporation	acft	Net evaporative loss. Calculated by multiplying net evaporation rate times previous day's surface area.	
F9	Lakeside Diversion	acft	Total diversion taken lakeside (includes non-BRA diversions, if any). Repeat of column [I1] for al reservoirs except Lake Belton. (For Lake Belton, U.S. Army diversions from Table BASIC6 in the reference spreadsheet are added.)	BASIC6 (Belton only)
F10	Total Outflow	acft	Total of all releases from reservoir, including BRA Water Supply releases and other releases. From BASIC data in Reference spreadsheet.	BASIC

Column	Label	Units	Daily Description	Tables Referenced
F11	Calculated Inflow	acft	Today's storage less previous day's storage (column [F2]) plus Total Outflow (column [F10]) plus Lakeside Diversions (column [F9]) plus Evaporation (column [F8])	
F12	Non-determinant Outflow	acft	Amount of outflow that is not a BRA water supply release. Includes spills as well as operational releases from storage not intended for use as water supply downstream, such as environmental releases and releases for downstream senior rights. For all reservoirs except Lake Whitney, calculated as the difference between the Downstream Release (Column [F4] in the reservoir's BASIC table in the Reference file) and the Water Supply Release (Column [F6] in the BASIC table), multiplied by the appropriate conversion factor. Not used for Lake Whitney because BRA only uses a portion of the storage and the large volume of releases for hydropower operation.	BASIC
F13	Available Natural Inflows	acft	For all reservoirs except Lake Whitney, this is the Calculated Inflow in column [F11] less upstream BRA Water Supply Releases (column [I9]), BRA Return Flows (column [I10]), and the Non-determinant Outflow (Column [F12]). For Lake Whitney, the Non-determinant Outflow is not subtracted in the calculation.	

H.4.3 Lakeside Use Accounting

Columns LU1 through LU17 give the accounting for lakeside use from the reservoir. The lakeside use accounting tracks use of upstream releases, BRA Return Flows, natural inflows and stored water separately. It is identical for all reservoirs.

The columns for the lakeside use accounting are as follows:

Column	Label	Units	Daily Description
LU1	Lakeside Use of Upstream Releases	acft	Portion of Lakeside Demand met from Upstream BRA Water Supply Releases. Limited to positive flows. Use will be assigned to the source of the upstream release. This source will be used THIRD, if available, after use of natural flows (column [LU7]) and return flows (column [LU6]) under SysOps.
LU2	Lakeside Use from Upstream Release Override	none	A non-negative value overrides the previous column.
LU3	Lakeside Use BRA Return Flows under CAXXXX	acft	Portion of Lakeside Demand met from Upstream BRA Return Flows, appropriated under the reservoir's water rights permit. This source is used FOURTH, after use of upstream releases (column [LU1]) and use under SysOps, if any (columns [LU6] and [LU7]).
LU4	Override of Lakeside Use BRA Return Flows under CAXXXX	none	A non-negative value overrides the previous column.
LU5	Lakeside Use Natural Inflow under CAXXXX	acft	Portion of Lakeside Demand met from natural inflows appropriated under reservoir's water rights permit. This source is used FIFTH, after return flow use (column [LU3]) and use of inflows under SysOps, if any (columns [LU6] and [LU7]).
LU6	Lakeside Use BRA Return Flows under SysOps	acft	Portion of Lakeside Demand met from BRA Return Flows appropriated under the System Operation Permit (P5851). If instream flow criteria are met (column [I8]) and diversions are being made under SysOps (Column [I5]), then this source is used FIRST. Use is manually entered in column [I5]. Limited to the actual amount of return flow in column [I12].
LU7	Lakeside Use of Natural Inflows under SysOps	acft	Portion of Lakeside Demand met from natural inflows appropriated under the System Operation Permit (P5851). If instream flow criteria are met (column [I8]) and diversions are being made under SysOps (Column [I3]), then this source is used SECOND, after SysOps use of BRA Return Flows. Use is manually entered in Column [I3]. Limited to the available inflow in column [F13].
LU8	Lakeside Use from Storage	acft	Remaining Lakeside Demand not met from inflows. Column [F9] less columns [LU1], [LU3] and columns [LU5] through [LU7].
LU9	Lakeside Use from CAXXXX Storage	acft	Portion of Lakeside Demand met from reservoir's permit storage account. This stored water is used LAST. Since this value is calculated last there is no override. Column [LU8] less columns [LU10] and [LU12].

Column	Label	Units	Daily Description
LU10	Lakeside Use from Upstream Release Storage	acft	Portion of Lakeside Demand met from Upstream Release storage account. Default order causes this stored water to be used SEVENTH, after use from inflows and the Return Flow storage account (column [LU12]). Limited to the amount in the account on the previous day (column [ST11]). Default distribution can be manually overridden in column [LU11].
LU11	Upstream Release Storage Override	none	A non-negative value overrides the previous column.
LU12	Lakeside Use from SysOps Return Flow Storage	acft	Portion of Lakeside Demand met from SysOps Bed and Banks Return Flow storage account. Default order causes this stored water to be used SIXTH, after the use of inflows (columns [LU1] through [LU7]). Limited to the amount in the storage account (column [ST12]). Default distribution can be manually overridden in the next column.
LU13	Return Flow Storage Override	none	A non-negative value overrides the previous column.
LU14	Lakeside Diversion Check	none	If all Lakeside Demand met exactly then value will be zero. A positive value indicates that Lakeside demand is over-supplied. A negative value indicates an under-supply. Non-zero amounts must be corrected.
LU15	Remaining Upstream Release	acft	Remaining upstream BRA Water Supply Release after meeting Lakeside Demands. Column [I9] less column [LU1].
LU16	Remaining Return Flow	acft	Remaining BRA Return Flows after meeting Lakeside Demands. Column [I10] less columns [LU3] and [LU6].
LU17	Remaining Natural Inflow	acft	Remaining available natural inflow after meeting Lakeside Demands. Column [F13] less columns [LU5] and [LU7].

H.4.4 Downstream Use Accounting

Columns DS1 through DS15 give the accounting for downstream use of releases from the reservoir. The downstream use accounting tracks use of upstream releases, return flows, natural inflows and stored water separately. It is identical for all reservoirs.

The columns for the downstream use accounting are as follows:

Column	Label	Units	Daily Description
DS1	Water Supply Release	acft	Water supply release. Repeated from Column [I2]
DS2	Pass Through of Upstream Release	acft	Portion of downstream BRA Water Supply Release to be met by passing through upstream BRA Water Supply Releases. Minimum of columns [LU15] and [DS1], less SysOps diversions in columns [DS8] and [DS9]. The default distribution causes this source to be used THIRD. Default distribution can be overridden in next column.
DS3	Upstream Release Override	none	A non-negative value overrides the previous column.
DS4	Pass Through of Inflows to meet downstream demand	acft	Portion of downstream BRA Water Supply Release to be met by passing natural inflows. The default order of use for this source is FIFTH. Minimum of column [LU17] and column [DS1] less columns [DS2], [DS6], [DS8] and [DS9]. Default distribution can be overridden in next column.
DS5	Inflow Pass Through Override	none	A non-negative value overrides the previous column.
DS6	Pass Through of Return Flows	acft	Portion of downstream BRA Water Supply Release to be met by passing BRA Return Flows. In the default order of use this source is used FOURTH. Minimum of the remaining return flow (column [LU16] and the water supply release (column [DS1]), less pass through of upstream release column [DS2] and SysOps diversions in columns [DS8] and [DS9]. Default distribution can be overridden in next column.
DS7	Return Flow Pass Through Override	none	A non-negative value overrides the previous column.
DS8	Downstream Use BRA Return Flows under SysOps	acft	Portion of downstream BRA Water Supply Release met from BRA Return Flows appropriated under the System Operation Permit (P5851). If instream flow criteria are met (column [I8]) and diversions are being made under SysOps (Column [I6]), then this source is used FIRST. Use is manually entered in column [I6]. Limited to the actual amount of remaining return flow after lakeside diversions in column [LU16].
DS9	Downstream Use of Natural Inflows under SysOps	acft	Portion of downstream BRA Water Supply Release met from natural inflows appropriated under the System Operation Permit (P5851). If instream flow criteria are met (column [I8]) and diversions are being made under SysOps (Column [I4]), then this source is used SECOND, after SysOps use of BRA Return Flows. Use is manually entered in Column [I4]. Limited to the available inflow after lakeside diversions in column [LU17].

Column	Label	Units	Daily Description
DS10	Release from CAXXXX Storage	acft	Portion of downstream BRA Water Supply Release to be met by releasing water from reservoir's base right storage account. Formula will cause this source to be used LAST. The Water Supply Release (column [DS1]) less the other releases from storage (columns [DS11] and [DS13]) or pass through of inflows, upstream releases or BRA Return Flows (columns [DS2], [DS4], [DS6], [DS8] and [DS9]). Since this formula is executed last, there is no override.
DS11	Release from Upstream Release Storage	acft	Portion of downstream BRA Water Supply Release to be met by releasing water from Upstream Release Storage account (use will be charged to upstream water right). Formula will cause this source to be used SIXTH. Minimum of the water in the storage account (column [ST11] and the Water Supply Release (column [DS1]) less pass-throughs (columns [DS2], [DS4] and [DS6]) less downstream use (columns [DS8] and [DS9]). Default distribution can be overridden in next column.
DS12	Upstream Release Storage Override	none	A non-negative value overrides the previous column.
DS13	Release from SysOps Return Flow Storage	acft	Portion of downstream BRA Water Supply Release to be met by releasing water from Bed and Banks Return Flow Storage account. Minimum of the water in the storage account on the previous day (column [ST12]) and the Water Supply Release (column [DS1]) less pass throughs (columns [DS2], [DS4], [DS6], [DS8] and [DS9]) and water from Upstream Release Storage (column [DS11]). Formula will cause this source to be used SEVENTH. Default distribution can be overridden in next column.
DS14	Return Flow Storage Override	none	A non-negative value overrides the previous column.
DS15	Water Supply Release Check	none	A zero value means all BRA downstream water supply releases have been met. A negative value indicates an under-supply. A positive value indicates an over-supply. Should be corrected if non-zero.

H.4.5 Storage Accounting

Columns ST1 through ST22 give the accounting for storage in the reservoir. The storage accounting tracks storage of upstream releases, storage of return flows under the System

Operation Permit and storage under the reservoir's existing water right separately. The storage accounting is different for Lake Whitney, as will be described below. The columns for storage accounting for all reservoirs but Whitney are as follows:

Column	Label	Units	Daily Description
ST1	Unused Inflows	acft	Inflows that are not used for Lakeside Demand or Downstream Water Supply and are not stored in BRA conservation storage. Examples include spills and inflows that go to flood storage. The remaining natural flow (column [LU17]) less the inflow to water right storage (column [ST3]) and the natural flow passed downstream (column [DS4]).
ST2	Upstream Release to Storage	acft	Upstream BRA Water Supply release going into Upstream Release storage account. Calculated from the remaining upstream release after diversions (column [LU15]) less the upstream release passed downstream (column [DS2]).
ST3	Inflows to CAXXXX Storage	acft	Natural inflows going into reservoir's water right storage account. Natural flow after diversions (column [LU17]) less the natural flow passed downstream (column [DS4]). Set to zero if storage is full.
ST4	Return Flows to CAXXXX Storage	acft	Remaining BRA Return Flows assigned to reservoir's water right storage account. Will only occur if reservoir is less than full and not using all return flows under SysOps. Return flow after diversions (column [LU16]) less return flows passed downsteam (column [DS6]) and return flows to SysOps return flow storage (column [ST5]).
ST5	Return Flows to SysOps Return Flow Storage	acft	Remaining return flows assigned to BRA SysOps Return Flow storage account. Will not occur if instream flows are not met. Calculated as remaining return flow after diversion (column [LU16]) less the return flows passed downstream (columns [DS6] and [DS8]).
ST6	Inflow check	none	Check to see if all available natural inflows have been distributed. Sum of all use of natural flow (columns [LU5], [LU7], [DS4], [DS9], [ST1], and [ST3]) less the available natural flow (column [F13]). A positive value indicates more inflows have been assigned than occurred. A negative value indicates that some of the inflow is unassigned.
ST7	Upstream Release Check	none	Check to see if all Upstream BRA Water Supply releases have been distributed. Sum of all upstream release use (columns [LU1], [DS2], and [ST2]) less the upstream release (column [I9]). A non-zero value indicates a problem with the calculation.

Column	Label	Units	Daily Description
ST8	Return Flow Check	none	Check to see if all BRA Return Flows have been distributed. Lakeside use of return flow under the reservoir water right (column [LU3]) plus lakeside use under SysOps (column [LU6]) plus flows passed downstream (columns [DS6] and [DS8]) plus return flows to the reservoir's water right storage (column [ST4]) plus flows to SysOps return flow storage (column [ST5]) less the Bed and Banks Return Flow (column [I10]). A non-zero value indicates a problem with the calculation.
ST9	End-of-Day Conservation Storage	acft	Calculated storage, limited to storage below the top of conservation elevation. Includes water in sediment or dead storage. Minimum of the storage in column [F2] and the conservation storage in cell B23.
ST10	End-of-Day CAXXXX Storage	acft	Storage account for reservoir's existing water right. If reservoir is at conservation storage, this is the conservation storage (column [ST9]) less the other storage accounts (columns [ST11] and [ST12]). Otherwise calculated as the previous day's storage (column [ST10]) plus inflows into account (columns [ST3] and [ST4]) less outflows (columns [DS10] and [LU9]) and proportioned evaporation (column [ST20]). Also added in is the previous day's flood pool storage (column [F2] less column [ST9]). Can be manually overridden in column [ST14].
ST11	End-of-Day Upstream Release Storage	acft	Storage account for Upstream BRA Water Supply releases. Calculated as previous day's storage (column [ST11] plus inflows (column [ST2]) less outflows (columns [DS11] and [LU10]) and proportioned evaporation (column [ST21]). Can be manually overridden in column [ST15].
ST12	End-of-Day SysOps Return Flow Storage	acft	Storage account for BRA Return Flows impounded under SysOps. Calculated as previous day's storage (column [ST12]) plus inflows [column [ST5]) less outflows (columns [DS13] and [LU12]) and proportioned evaporation (column [ST22]). Can be manually overridden in column [ST16].
ST13	Stor Check	none	Check to see if storage accounts add up to storage, limited to conservation storage. Sum of calculated storage accounts (columns [ST10], [ST11] and [ST12]) less the conservation storage (column [ST9]). A non-zero value indicates a problem with the calculation.
ST14	CAXXXX Storage Override	acft	A non-negative value overrides the reservoir's existing water right storage account calculated in column [ST10].
ST15	Upstream Release Storage Override	acft	A non-negative value overrides the Upstream Water Supply storage account calculated in column [ST11].

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Column	Label	Units	Daily Description
ST16	SysOps Return Flow Storage Override	acft	A non-negative value overrides the SysOps Return Flow storage account calculated in column [ST12].
ST17	End-of-Day % CAXXXX Storage	none	Percent of total conservation storage in reservoir's existing water right storage account. Calculated as 1 less the percent in the other two storage accounts (columns [ST18] and [ST19]). Used for evaporation distribution in the next day.
ST18	End-of-Day % Upstream Release Storage	none	Percent of total conservation storage in Upstream Release storage account. Calculated as the amount in the Upstream Release account (column [ST11]) divided by the total conservation storage (column [ST9]). Used for evaporation distribution in the next day.
ST19	End-of-Day % SysOps Return Flow Storage	none	Percent of total conservation storage in SysOps Return Flow storage account. Calculated as the return flow account storage (column [ST12]) divided by the total conservation storage (column [ST9]). Used for evaporation distribution in the next day.
ST20	CAXXXX Storage Evaploss	acft	Portion of evaporative loss assigned to the reservoir's permit. Equal to total evaporative loss (column [F8]) less portions assigned to the storage accounts for SysOps return flows (column [ST22]) and Upstream Release (column [ST21]).
ST21	Upstream Release Storage Evaploss	acft	Portion of evaporative loss assigned to the Upstream Release storage account. Equal to the lesser of the previous day's percentage of upstream release storage under the account (column [ST18]) multiplied by total evaporation (column [F8]) or the sum of the prior day's account storage (column [ST11]) and current day inflows to the account (column [ST2]) less lakeside use (column [LU10]) and downstream release from the account (column [DS11]).
ST22	SysOps Return Flow Storage Evaploss	acft	Portion of evaporative loss assigned to the SysOps Return Flow storage account. Equal to the lesser of the previous day's percentage of return flow storage under SysOps (column [ST19]) multiplied by total evaporation (column [F8]) or the sum of the prior day's account storage (column [ST12] and current day inflows to the account (column [ST5] less lakeside use (column [LU12]) and downstream release from the account (column [DS13]).

The Lake Whitney storage accounting is the same as the other reservoirs for Columns [ST1] through [ST9]. Additional Columns [ST10] through [ST12] are included to apportion

conservation storage between BRA storage and hydropower storage. Columns [ST13] through [ST25] are the same as [ST10] through [ST22] for the other reservoirs. The columns for storage accounting for Lake Whitney are as follows:

Column	Label	Units	Daily Description
ST1	Unused Inflows	acft	Inflows that are not used for Lakeside Demand or Downstream Water Supply and are not stored in BRA storage. Examples include spills and inflows to flood storage. The remaining natural flow (column [LU17]) less the inflow to water right storage (column [ST3]) and the natural flow passed downstream (column [DS4]).
ST2	Upstream Release to Storage	acft	Upstream BRA Water Supply release going into Upstream Release storage account. Calculated from the remaining upstream release after diversions (column [LU15]) less the upstream release passed downstream (column [DS2]).
ST3	Inflows to COA5157 Storage	acft	Natural inflows going into reservoir's water right storage account. Natural flow after diversions (column [LU17]) less the natural flow passed downstream (column [DS4]). Set to zero if total storage (BRA, hydropower and dead storage) is full.
ST4	Return Flows to COA5157 Storage	acft	Remaining BRA Return Flows assigned to water right COA 5157 storage account. Will only occur if reservoir is less than full and not using all return flows under SysOps. Return flow after diversions (column [LU16]) less return flows passed downsteam (column [DS6]) and return flows to SysOps return flow storage (column [ST5]).
ST5	Return Flows to SysOps Return Flow Storage	acft	Remaining return flows assigned to BRA SysOps Return Flow storage account. Will not occur if instream flows are not met. Calculated as remaining return flow after diversion (column [LU16]) less the return flows passed downstream (column [DS6]).
ST6	Inflow check	none	Check to see if all available natural inflows have been distributed. Sum of all use of natural flow (columns [LU5], [LU7], [DS4], [DS9], [ST1], and [ST3]) less the available natural flow (column [F13]). A positive value indicates more inflows have been assigned than occurred. A negative value indicates that some of the inflow is unassigned.
ST7	Upstream Release Check	none	Check to see if all Upstream BRA Water Supply releases have been distributed. Sum of all upstream release use (columns [LU1], [DS2], and [ST2]) less the upstream release (column [I9]). A non-zero value indicates a problem with the calculation.

Column	Label	Units	Daily Description
ST8	Return Flow Check	none	Check to see if all BRA Return Flows have been distributed. Lakeside use of return flow under the reservoir water right (column [LU3]) plus lakeside use under SysOps (column [LU6]) plus flows passed downstream (columns [DS6] and [DS8]) plus return flows to the reservoir's water right storage (column [ST4]) plus flows to SysOps return flow storage (column [ST5]) less the Bed and Banks Return Flow (column [I10]). A non-zero value indicates a problem with the calculation.
ST9	End-of-Day Conservation Storage	acft	Calculated storage, limited to storage below the top of conservation elevation. Does NOT include water in dead storage below elevation 520 feet. Minimum of the storage in column [F2] and the conservation storage in cell B23. less the storage at elevation 520 feet in cell B25.
ST10	End-of-Day SWPA Storage	acft	SWPA (hydropower) storage volume. Equal to end-of-day conservation storage (column [ST9]) less adjusted end-of-day BRA storage (column [ST12]).
ST11	Calculated End-of-Day BRA Storage	acft	Portion of storage assigned to BRA. Calculated by adding the inflows to storage (columns [ST2] and [ST3]) and return flows to storage (columns [ST4] and [ST5]) and subtracting diversions and releases (columns [LU8], [DS10], [DS11], and [DS13]), and evaporative losses (columns [ST23], [ST24] and [ST25]). This value is then added to the previous day's storage (column [ST11]). Storage is limited to the BRA portion of conservation storage (50,000 acft).
ST12	Adjusted End-of-Day BRA Storage	acft	Total end of day storage in the BRA portion of Lake Whitney after applying adjustments. The sum of columns [ST13], [ST14] and [ST15].
ST13	End-of-Day COA5157 Storage	acft	Storage account for reservoir's existing water right. If BRA's portion of the conservation storage is full (column [ST11]), this is the BRA storage less the other storage accounts (columns [ST14] and [ST15]). Otherwise calculated as the previous day's storage (column [ST13]) plus inflows into account (columns [ST3] and [ST4]) less outflows (columns [DS10] and [LU9]) and proportioned evaporation (column [ST23]). Can be manually overridden by column [ST17].
ST14	End-of-Day Upstream Release Storage	acft	Storage account for Upstream BRA Water Supply releases. Calculated as previous day's storage (column [ST14]) plus inflows (column [ST2]) less outflows (columns [DS11] and [LU10]) and proportioned evaporation (column [ST24]). Can be manually overridden by column [ST18].

Column	Label	Units	Daily Description
ST15	End-of-Day SysOps Return Flow Storage	acft	Storage account for BRA Return Flows impounder under SysOps. Calculated as previous day's storage (column [ST15]) plus inflows (column [ST5]) less outflows (columns [DS13] and [LU12]) and proportioned evaporation (column [ST25]). Can be manually overridden by column [ST19].
ST16	Stor Check	none	Check to see if storage accounts add up to storage, limited to conservation storage. Sum of calculated storage accounts (columns [ST13], [ST14] and [ST15]) less the conservation storage (column [ST11]). A non-zero value indicates a problem with the calculation.
ST17	COA5157 Storage Override	acft	A non-negative value overrides the reservoir's existing water right storage account calculated in column [ST13].
ST18	Upstream Release Storage Override	acft	A non-negative value overrides the Upstream Water Supply storage account calculated in column [ST14].
ST19	SysOps Return Flow Storage Override	acft	A non-negative value overrides the SysOps Return Flow storage account calculated in column [ST15].
ST20	End-of-Day % COA5157 Storage	none	Percent of total conservation storage (BRA plus SWPA storage) in reservoir's existing water right storage account. Calculated as the water right storage (column [ST13]) divided by the total conservation storage (column [ST9]). Used for evaporation distribution in the next day.
ST21	End-of-Day % Upstream Release Storage	none	Percent of total conservation storage in Upstream Release storage account. Calculated as the amount in the Upstream Release account (column [ST14]) divided by the total conservation storage (column [ST9]). Used for evaporation distribution in the next day.
ST22	End-of-Day % SysOps Return Flow Storage	none	Percent of total conservation storage in SysOps Return Flow storage account. Calculated as the return flow account storage (column [ST15]) divided by the total conservation storage (column [ST9]). Used for evaporation distribution in the next day.
ST23	COA5157 Storage Evaploss	acft	Portion of evaporative loss assigned to the COA5157 storage. Equal to the lesser of the previous day's percentage of COA5157 storage (column [ST20]) multiplied by the total evaporative loss (column [F8]) or the sum of the prior day's account storage (column [ST13]) and the current day's inflows into the account (columns [ST3] and [ST4]) less lakeside and downstream use from the account (columns [DS10] and [LU9]).

Column	Label	Units	Daily Description
ST24	Upstream Release Storage Evaploss	acft	Portion of evaporative loss assigned to the Upstream Release storage account. Equal to the lesser of the previous day's percentage of return flow storage under the account (column [ST21]) multiplied by total evaporation (column [F8]) or the sum of the prior day's account storage (column [ST14]) and current day inflows to the account (column [ST2]) less lakeside use (column [LU10]) and downstream release from the account (column [DS9]).
ST25	SysOps Return Flow Storage Evaploss	acft	Portion of evaporative loss assigned to the SysOps Return Flow storage account. Equal to the lesser of the previous day's percentage of return flow storage under SysOps (column [ST22]) multiplied by total evaporation (column [F8]) or the sum of the prior day's account storage (column [ST15]) and current day inflows to the account (column [ST5]) less lakeside use (column [LU12]) and downstream release from the account (column [DS13]).

H.4.6 Accounting for Impoundment under the System Operation Permit

Columns [SO1] through [SO23] account for impoundment under the System Operation Permit. This part of the Accounting Plan tracks storage emptied and refilled under the System Operation Permit. When water is being stored under the System Operation Permit, this part of the Accounting Plan tracks storage of pulse flows and, if appropriate, the release of stored pulse flows from storage. Accounting for impoundment under the System Operation Permit is the same for all reservoirs, and the columns are as follows:

Column	Label	Units	Daily Description
SO1	Return Flows Used under SysOps	acft	Return flows diverted under SysOps. Sum of columns [LU6] and [LU12].
SO2	Other Use Under SysOps	acft	Other flows diverted under SysOps. Sum of columns [I3] and [I4].
SO3	End-of-Day Actual Empty Storage	acft	Empty conservation storage. The conservation storage in cell B23 less the reservoir storage in column [F2].

Column	Label	Units	Daily Description
SO4	End-of-Day Storage Emptied by SysOps	acft	Storage emptied by diversions under SysOps. Calculated in column [SO12].
SO5	End-of-Day Storage without SysOps	acft	What storage would have been without SysOps diversions. Calculated as the storage emptied by SysOps (column [SO4]) plus current storage (column [F2]).
SO6	End-of-Day Actual Surface Area	acres	Actual surface area, as calculated in column [F7]
SO7	End-of-Day Surface Area without SysOps	acres	Surface area if there were no SysOps diversions. Uses custom INTERPOLATE worksheet function to calculate area based on storage without SysOps in column [SO5] using area-capacity-elevation tables in Reference spreadsheet.
SO8	Net Evaporation	feet	Net evaporation rate calculated in column [F6].
SO9	Actual Evaploss	acft	Actual evaporative loss, as calculated in column [F8].
SO10	Evaploss without SysOps	acft	What the evaporation would have been if there were no SysOps diversions. Calculated using the previous day's area without SysOps diversions in column [SO7] multiplied by the evaporation rate in column [SO8].
SO11	Change in Evaploss due to SysOps	acft	Change in evaporation due to SysOps diversions. Column [SO10] less column [SO9].
SO12	End-of-Day Empty Storage due to SysOps	acft	Storage emptied by SysOps diversions. Calculated as the minimum of the current empty storage (column [SO3] and the previous day's empty storage due to SysOps (column [SO12]) less the change in evaporative loss (column [SO11]) plus diversions under SysOps (columns [SO1] and [SO2]).
SO13	Non-Release Inflow	acft	Portion of inflow potentially subject to instream flows if appropriated under SysOps. Total inflow into reservoir (column [F11]) less upstream water supply releases (column [I9]).
SO14	Impounded Water	acft	Amount impounded under the storage accounts for the reservoir's permit and SysOps. Sum of columns [ST3], [ST4] and [ST5]. Assigned a value of zero if the net impoundment is negative.
SO15	Change in Storage Emptied by SysOps	acft	Today's change in the amount of storage emptied by SysOps. Equal to the current day's empty storage due to SysOps less the prior day's empty storage due to SysOps (column [SO12]).
SO16	Reservoir Outflow	acft	Total outflow from reservoir. Repeated from column [F10].

Column	Label	Units	Daily Description
SO17	Water Stored under SysOps	acft	Water impounded under the System Operation Permit during the day. Equal to change in storage (negative of column [SO15]) less change in evaporation due to SysOps (column [SO11} with a maximum of zero.
SO18	Pulse Storage under SysOps	acft	Amount of a pulse that has been stored under SysOps. Entered by BRA staff based on information from the Instream Flow file.
SO19	Cumulative Pulse Storage under SysOps	acft	Cumulative amount of pulse flow stored under SysOps. Equal to the current day pulse storage under SysOps (column [SO18]) plus the cumulative pulse storage under SysOps for the prior day (column [SO19]) minus Pulse passage (the amount of stored pulse flows released in column [SO20]).
SO20	Pulse Passage	acft	Amount of a pulse that has been passed. Entered by BRA staff based on releases from the reservoir for environmental flows.
SO21	Cumulative Pulse Passage	acft	Cumulative amount of flow passed in an ongoing pulse passage. The value in the column returns to zero if column [SO20] is zero.
SO22	Impounding Under SysOps?	none	Indicates whether water is being impounded under SysOps. If column [SO17] is greater than zero then value is TRUE. Otherwise FALSE.
SO23	Flows > Instream Flow Criteria?	none	For PK and Whitney, this refers to the downstream measurement point for the reservoir, which applies to passage of pulse flows. For other reservoirs, this is a repeat of column [I8]. TRUE if flows at the measurement point exceed the instream flow criteria. Value set in the IFCalcs file.
SO24	Comments	none	Column for recording details of any manual overrides added in this sheet while using the accounting plan or other explanatory text describing data entry.

H.5   Reach File Tables

The REACH tables (a) route and track BRA upstream reservoir releases and BRA Return Flows, collectively called BRA flows, as they travel through the reaches shown in Table H.1.9 above, and (b) account for diversions of BRA water and other flows within the reach. The tables apply travel times and losses to flows as they travel downstream. Table H.1.10 above shows the travel times and losses applied in the Accounting Plan. The REACH tables also show diversions of BRA flows, and other flows that are not tracked (natural

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flows and Return Flows of Others). At selected USGS stream gage locations, the BRA flows are compared to the actual historical flows. If the calculated flows are greater than the historical measured flows, the BRA flows are reduced.

The routing of BRA flows and diversions is done on a daily or sub-daily (tenth of a day) basis. Sub-daily calculations are done to facilitate the application of travel times that are less than one day. These calculations occur in the REACH tables.

Because of the lags associated with the travel times, data must be imported from the previous year's Accounting Plan. The reach tables each have 10 days from the previous year at the beginning of the daily data that are imported by BRA staff in each REACH table.

The reconciliation with historical gage flows is done on a monthly basis. The travel times and losses are based on averages, so the historical timing and losses may be somewhat different, resulting in day-to-day discrepancies in flow volume. These small errors should cancel out on a monthly basis. If the monthly volume of BRA flows is greater than the monthly historical volume at the gage, the daily releases and return flows are multiplied by scaling factors so that the volume of the BRA flow is equal to the historical measured flow. BRA staff can select whether upstream releases, BRA Return Flows or both are reduced. These calculations occur in the READJ tables.

In all the REACH tables, row 23 of the spreadsheet contains the lag or travel time associated with the reach. Row 24 contains the delivery factor used to apply losses within the reach. This value is multiplied by 10 and used to apply time delays in the sub-daily calculations in rows 412 to 4172. Row 25 contains logical flags that, if TRUE, signal if the default for the diversion within the reach is from BRA Return Flows and/or the System Operation Permit. These flags are associated with aggregated run-of-river diversions within the reaches. If the flag associated with return flows is set to TRUE, then the default for each day is to have this demand met from BRA Return Flows. This can be overridden on specific days. If FALSE, then BRA staff manually assigns the diversion to return flows

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for each day if needed. A similar flag is associated with diversion of run-of-the-river flows under the System Operation Permit. A TRUE value automatically assigns this diversion to these flows. This default can be overridden on any day by BRA staff in the "override" columns. In both cases, instream flow criteria must be met in order to assign diversions to the System Operations Permit. The flags in Row 25 are designed to facilitate entry of data by BRA staff in reaches where return flows or run-of-the-river flows are used frequently. BRA staff will determine which reaches this applies based on the water available to the diversions in the reach and the frequency with which overrides occur. Row 26 contains the units for data that are imported from other tables in the Accounting Plan. Row 27 contains the conversion factor used to convert the imported data to day-second-feet (dsf).

H.5.1 Table INTRO2 - Introduction

This table contains year information from the Reference File and a table of contents for the Reach File.

H.5.2 Table REACH1 – Possum Kingdom to Palo Pinto

Table REACH1 tracks flows from Possum Kingdom Dam to the Palo Pinto gage. BRA flow reconciliation occurs at the downstream gage.

The following is a description of the columns in REACH1:

Column	Daily Label	Units	Description
L1	Index	none	Month number
L2	Month	none	Month name
L3	Flows > IF Criteria?	none	TRUE when flows at the Palo Pinto gage are greater than the instream flow criteria. Daily values imported from Table IF2 in the Instream Flow File.
U1	Total Outflows	dsf	Total Outflows from Lake Possum Kingdom. Daily values imported from Table BASIC1 of reference file. Not used for subsequent calculations.
U2	BRA Water Supply Releases	dsf	BRA Water Supply releases from Possum Kingdom less return flows in column [U4]. Daily values imported from Table BASIC1 of reference file. Daily values are divided by 10 for use in the sub-daily calculations.

Column	Daily Label	Units	Description
U3	Other Outflows	dsf	Total Outflows [U1] less BRA Water Supply Releases [U2] and Passed BRA Return Flows [U4]. Other Outflows are releases from reservoirs that are not specifically dedicated to water supply. Examples include leakage, flows released during maintenance, hydropower, and inflows released for downstream senior water rights. These flows are not tracked downstream because the Accounting Plan only tracks water that has been released by BRA for downstream use. Not used for subsequent calculations.
U4	Passed BRA Return Flows	dsf	Return flows passed through Lake Possum Kingdom and not stored. Daily values imported from Table RES1 of the Reservoir File. Daily values are divided by 10 for use in sub-daily calculations.
R-A1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily data imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [U2]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U2] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-A4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U4] and applies delivery factor (row 24), then adds column [R-A1]. Daily and monthly values are sums of the sub-daily data.
R-A5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-A2] less diverted BRA Return Flows [R-A6] and local run-of-river flow [R-A8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-A6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-A2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-A2] and the lagged return flows in column [R-A4]. Calculation may be overridden by a non-negative entry in column [R-A7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-A6]). Calculated as the Reach Diversion in column [R-A2] less the return flow diversion in column [R-A6]. Calculation may be overridden by a non-negative entry in column [R-A9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.

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Column	Daily Label	Units	Description
R-A10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-A3] - [R-A5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-A4] - [R-A6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-A10] + [R-A11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
G-A1	PLOT2 - Brazos River nr Palo Pinto	dsf	Historical daily average flows measured at gage. Imported from Table DATA1 of the reference file.
G-A2	Water Supply Adjustment	dsf	Adjustment factor applied to BRA releases for conditions when gage flows are less than calculated BRA flows. Imported from column [A12] of Table READJ1.
G-A3	Adjusted Water Supply Releases at PLOT2	dsf	BRA Water Supply Releases from upstream reach (column [R-A10]) multiplied by adjustment factor (column [G-A2]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows. Calculations performed on a daily basis.
G-A4	Return Flow Adjustment	dsf	Adjustment factor applied to BRA Return Flows for conditions when gage flows are less than calculated BRA flows. Imported from column [A13] of Table READJ1.
G-A5	Adjusted Return Flow at PLOT2	dsf	BRA Return Flows from upstream reach (column [R-A11]) multiplied by adjustment factor (column [G-A4]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows.
G-A6	Comments	none	Column for recording details of any manual overrides added in this sheet or other descriptive text.

H.5.3 Table READJ1 to READJ21

The READJ tables perform the adjustment calculations for situations when the monthly flow volume measured at the gage is less than the calculated BRA water supply releases and return flow. Calculations are performed on a monthly basis. The table calculates scale factors that are multiplied by the daily flow values in each month (a scale factor of 1.0 or 100% means no adjustment). The default is to reduce the return flows first. This default can be overridden by BRA staff in column [A14].

The following describes the columns in the READJ tables:

Column	Units	Label	Description
A1	none	Days	Number of days per month
A2	none	Month Number	Sequence number of month

Column	Units	Label	Description
A3	none	Month	Month of year
A4	acft	BRA Water Supply Releases	Monthly BRA Water Supply Releases at gage. From column [R-A10] of the monthly REACH table.
A5	acft	BRA Return Flows	Monthly BRA Return Flows at gage. From monthly REACH table.
A6	acft	BRA Total	Monthly Total BRA water at gage. From monthly REACH table.
A7	acft	[Gage Name]	Monthly historical gage flows. From monthly REACH table.
A8	acft	Discrepancy	Amount that total BRA water exceeds measured monthly flow. Maximum of [A6] - [A7] or zero. If positive, then BRA water is more than measured flow and will be adjusted. If zero no adjustment is needed.
A9	none	% Water Supply Releases	% of the total BRA water that is BRA Water Supply Releases. Column [A4] divided by [A6]. Not used for subsequent calculations.
A10	acft	Monthly Water Supply Adjustment	Monthly volume reduction needed so that the BRA Water Supply Releases match measured flows. Calculated as the difference between the Discrepancy (column [A8]) and the Monthly Return Flow Adjustment (column [A11]).
A11	acft	Monthly Return Flow Adjustment	Monthly volume reduction needed so that the BRA Return Flows match the measured flows. Calculated as the minimum of the BRA Return Flows (column [A5]) and the Discrepancy (column [A8]). Calculation will be overridden if column [A14] has a value in that column.
A12	none	% Remaining Water Supply	Percent of water supply remaining after accounting for discrepancy. If [A4] is not zero, equal to 1 - [A10] / [A4]. Otherwise zero. This number is multiplied by the daily flows.
A13	none	% Remaining Return Flows	Percent of return flow remaining after accounting for discrepancy. If [A4] is not zero, equal to 1 - [A10] / [A5]. Otherwise zero. This number is multiplied by the daily return flows.
A14	acft	Return Flow Adjustment Override	An entry in this column overrides the Monthly Return Flow Adjustment in column [A11]. Should be a non-negative value less than or equal to the BRA Return Flows in column [A4].
A15	none	Adjustment Check	Checks to see if the value in [A14] is less than or equal to [A5]. Also checks for an entry when no adjustment is needed. "ok" means entry in [A14] is valid. "problem" means [A14] is not valid.
A16	Comments	none	Column for recording details of any manual overrides added in this sheet or other descriptive text.

H.5.4 Table REACH2 – Palo Pinto to Lk Granbury Headwaters

Table REACH2 tracks flows from the Palo Pinto gage to the headwaters of Lake Granbury. BRA flow reconciliation occurs at the Dennis gage.

The following is a description of the columns in REACH2:

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Column	Daily Label	Units	Description
L1	Index	none	Month number
L2	Month	none	Month name
L3	Flow at Gage > IF Criteria?	none	If TRUE then flows at the Palo Pinto gage are greater than the instream flow criteria plus downstream diversions. Daily values imported from Table IF2 of the Instream Flow File.
U1	Total Outflows	dsf	Total flow at Palo Pinto gage. Daily values imported from Table REACH1. Not used for subsequent calculations.
U2	BRA Water Supply Releases	dsf	BRA Water Supply flows at Palo Pinto gage. Daily values imported from Table REACH1. Daily values are divided by 10 for use in the sub-daily calculations.
U3	Other Outflows	dsf	Total Outflows [U1] less BRA Water Supply Releases [U2] and Passed BRA Return Flows [U4]. Other Outflows are releases from reservoirs that are not specifically dedicated to water supply. Examples include leakage, flows released during maintenance, hydropower, and inflows released for downstream senior water rights. These flows are not tracked downstream because the Accounting Plan only tracks water that has been released by BRA for downstream use. Not used for subsequent calculations.
U4	Passed BRA Return Flows	dsf	Return flows at Palo Pinto gage. Daily values imported from Table REACH1. Daily values are divided by 10 for use in sub-daily calculations.
R-A1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily data imported from table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [U2]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U2] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-A4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U4] and applies delivery factor (row 24), then adds column [R-A1]. Daily and monthly values are sums of the sub-daily data.
R-A5	Diversion of Upstream Water Supply Release	dsf	Diversion (R-A2) less diverted BRA Return Flows [R-A6] and local run-of-river flow [R-A8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-A6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-A2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-A2] and the lagged return flows in column [R-A4]. Calculation may be overridden by a non-negative entry in column [R-A7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.

Column	Daily Label	Units	Description
R-A7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-A6]). Calculated as the Reach Diversion in column [R-A2] less the return flow diversion in column [R-A6]. Calculation may be overridden by a non-negative entry in column [R-A9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-A3] - [R-A5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-A4] - [R-A6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-A10] + [R-A11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
G-A1	DNNT2 - Brazos River nr Dennis	dsf	Historical daily average flows measured at gage. Imported from Table DATA1 of the reference file.
G-A2	Water Supply Adjustment	dsf	Adjustment factor applied to BRA releases for conditions when gage flows are less than calculated BRA flows. Imported from column [A12] of Table READJ2.
G-A3	Adjusted Water Supply Releases at DNNT2	dsf	BRA Water Supply Releases from upstream reach (column [R-A10]) multiplied by adjustment factor (column [G-A2]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows. Calculations performed on a daily basis.
G-A4	Return Flow Adjustment	dsf	Adjustment applied to BRA Return Flows for conditions when gage flows are less than calculated BRA flows. Imported from column [A13] of Table READJ2.
G-A5	Adjusted Return Flow at DNNT2	dsf	BRA Return Flows from upstream reach (column [R-A11]) multiplied by adjustment factor (column [G-A4]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows.
R-B1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Imported from Table BASIC12 in the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-B2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-B3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [G-A3]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A3] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.

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Column	Daily Label	Units	Description
R-B4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A5] and applies delivery factor (row 24), then adds column [R-B1]. Daily and monthly values are sums of the sub-daily data.
R-B5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-B2] less diverted BRA Return Flows [R-B6] and local run-of-river flow [R-B8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-B6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-B2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-B2] and the lagged return flows in column [R-B4]. Calculation may be overridden by a non-negative entry in column [R-B7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-B6]). Calculated as the Reach Diversion in column [R-B2] less the return flow diversion in column [R-B6]. Calculation may be overridden by a non-negative entry in column [R-B9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-B3] - [R-B5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-B4] - [R-B6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-B10] + [R-B11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B13	Comments	none	Column for recording details of any manual overrides added in this sheet or other descriptive text.

H.5.5 Table REACH3 – Lake Granbury to Lake Whitney Headwaters

Table REACH3 tracks flows from the Lake Granbury dam to the headwaters of Lake Whitney. BRA flow reconciliation occurs at the Glen Rose gage.

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The following is a description of the columns in REACH3:

Column	Daily Label	Units	Description
L1	Index	none	Month number
L2	Month	none	Month name
L3	Flows > IF Criteria?	none	If TRUE then flows at the Glen Rose gage are greater than the instream flow criteria. Daily values imported from Table IF3 of Instream Flow File.
U1	Total Outflows	dsf	Total Outflows from Lake Granbury. Daily values imported from Table BASIC2 of reference file. Not used for subsequent calculations.
U2	BRA Water Supply Releases	dsf	BRA Water Supply releases from Lake Granbury less return flows in column [U4]. Daily values imported from Table BASIC2 of reference file. Daily values are divided by 10 for use in the sub-daily calculations.
U3	Other Outflows	dsf	Total Outflows [U1] less BRA Water Supply Releases [U2] and Passed BRA Return Flows [U4]. Other Outflows are releases from reservoirs that are not specifically dedicated to water supply. Examples include leakage, flows released during maintenance, hydropower, and inflows released for downstream senior water rights. These flows are not tracked downstream because the Accounting Plan only tracks water that has been released by BRA for downstream use. Not used for subsequent calculations.
U4	Passed BRA Return Flows	dsf	Return flows passed through Lake Granbury and not stored. Daily values imported from Table RES2 of the Reservoir File. Daily values are divided by 10 for use in sub-daily calculations.
R-A1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [U2]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U2] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-A4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U4] and applies delivery factor (row 24), then adds column [R-A1]. Daily and monthly values are sums of the sub-daily data.
R-A5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-A2] less diverted BRA Return Flows [R-A6] and local run-of-river flow [R-A8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.

Column	Daily Label	Units	Description
R-A6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-A2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-A2] and the lagged return flows in column [R-A4]. Calculation may be overridden by a non-negative entry in column [R-A7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-A6]). Calculated as the Reach Diversion in column [R-A2] less the return flow diversion in column [R-A6]. Calculation may be overridden by a non-negative entry in column [R-A9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-A3] - [R-A5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-A4] - [R-A6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-A10] + [R-A11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
G-A1	GLRT2 - Brazos River at Glen Rose	dsf	Historical daily average flows measured at gage. Imported from Table DATA1 of the reference file.
G-A2	Water Supply Adjustment	dsf	Adjustment factor applied to BRA releases for conditions when gage flows are less than calculated BRA flows. Imported from column [A12] of Table READJ3.
G-A3	Adjusted Water Supply Releases at GLRT2	dsf	BRA Water Supply Releases from upstream reach (column [R-A10]) multiplied by adjustment factor (column [G-A2]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows. Calculations performed on a daily basis.
G-A4	Return Flow Adjustment	dsf	Adjustment applied to BRA Return Flows for conditions when gage flows are less than calculated BRA flows. Imported from column [A13] of Table READJ3.
G-A5	Adjusted Return Flow at GLRT2	dsf	BRA Return Flows from upstream reach (column [R-A11]) multiplied by adjustment factor (column [G-A4]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows.
G-A6	Flows > IF Criteria?	none	If TRUE then flows at the Glen Rose gage are greater than the instream flow criteria plus downstream diversions. Daily values imported from Table IF3 of Instream Flow File.

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Column	Daily Label	Units	Description
R-B1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily data imported from table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-B2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-B3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [G-A3]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A3] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-B4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A5] and applies delivery factor (row 24), then adds column [R-B1]. Daily and monthly values are sums of the sub-daily data.
R-B5	Diversion of Upstream Water Supply Release	dsf	Diversion (R-B2) less diverted BRA Return Flows [R-B6] and local run-of-river flow [R-B8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-B6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [G-A6] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-B2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-B2] and the lagged return flows in column [R-B4]. Calculation may be overridden by a non-negative entry in column [R-B7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [G-A6] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-B6]). Calculated as the Reach Diversion in column [R-B2] less the return flow diversion in column [R-B6]. Calculation may be overridden by a non-negative entry in column [R-B9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-B3] - [R-B5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-B4] - [R-B6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.

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Column	Daily Label	Units	Description
R-B12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-B10] + [R-B11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B13	Comments	none	Column for recording details of any manual overrides added in this sheet or other descriptive text.

H.5.6 Table REACH4 – Lake Aquilla to Aquilla/Brazos Confluence

Table REACH4 tracks flows from the Lake Aquilla dam to the confluence of Aquilla Creek and the Brazos River. BRA flow reconciliation occurs at the Aquilla Creek above Aquilla gage.

The following is a description of the columns in REACH4:

Column	Daily Label	Units	Description
L1	Index	none	Month number
L2	Month	none	Month name
L3	Flow at Gage > IF Criteria?	none	If TRUE then flows at the Waco gage are greater than the instream flow criteria. If FALSE, then criteria not met. Daily values imported from Table IF4 of the Instream Flow File.
U1	Total Outflows	dsf	Total Outflows from Lake Aquilla. Daily values imported from Table BASIC4 of reference file. Not used for subsequent calculations.
U2	BRA Water Supply Releases	dsf	BRA Water Supply releases from Lake Aquilla. Daily values imported from Table BASIC4 of reference file. Daily values are divided by 10 for use in the sub-daily calculations.
U3	Other Outflows	dsf	Total Outflows [U1] less BRA Water Supply Releases [U2] and Passed BRA Return Flows [U4]. Other Outflows are releases from reservoirs that are not specifically dedicated to water supply. Examples include leakage, flows released during maintenance, hydropower, and inflows released for downstream senior water rights. These flows are not tracked downstream because the Accounting Plan only tracks water that has been released by BRA for downstream use. Not used for subsequent calculations.
U4	Passed BRA Return Flows	dsf	Return flows passed through Lake Aquilla and not stored. Daily values imported from Table RES4 of the Reservoir File. Daily values are divided by 10 for use in sub-daily calculations.
R-A1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Set to zero for this reach. Daily data imported from table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.

Column	Daily Label	Units	Description
R-A2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [U2]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U2] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-A4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U4] and applies delivery factor (row 24), then adds column [R-A1]. Daily and monthly values are sums of the sub-daily data.
R-A5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-A2] less diverted BRA Return Flows [R-A6] and local run-of-river flow [R-A8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-A6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-A2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-A2] and the lagged return flows in column [R-A4]. Calculation may be overridden by a non-negative entry in column [R-A7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-A6]). Calculated as the Reach Diversion in column [R-A2] less the return flow diversion in column [R-A6]. Calculation may be overridden by a non-negative entry in column [R-A9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-A3] - [R-A5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-A4] - [R-A6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-A10] + [R-A11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
G-A1	AQIT2 – Aquilla Creek above Aquilla	dsf	Historical daily average flows measured at gage. Imported from Table DATA1 of the reference file.

Column	Daily Label	Units	Description
G-A2	Water Supply Adjustment	dsf	Adjustment factor applied to BRA releases for conditions when gage flows are less than calculated BRA flows. Imported from column [A12] of Table READJ4.
G-A3	Adjusted Water Supply Releases at AQIT2	dsf	BRA Water Supply Releases from upstream reach (column [R-A10]) multiplied by adjustment factor (column [G-A2]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows. Calculations performed on a daily basis.
G-A4	Return Flow Adjustment	dsf	Adjustment factor applied to BRA Return Flows for conditions when gage flows are less than calculated BRA flows. Imported from column [A13] of Table READJ4.
G-A5	Adjusted Return Flow at AQIT2	dsf	BRA Return Flows from upstream reach (column [R-A11]) multiplied by adjustment factor (column [G-A4]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows.
R-B1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily data imported from table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-B2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-B3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [G-A3]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A3] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-B4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A5] and applies delivery factor (row 24), then adds column [R-B1]. Daily and monthly values are sums of the sub-daily data.
R-B5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-B2] less diverted BRA Return Flows [R-B6] and local run-of-river flow [R-B8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-B6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-B2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-A2] and the lagged return flows in column [R-B4]. Calculation may be overridden by a non-negative entry in column [R-B7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.

Column	Daily Label	Units	Description
R-B8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-B6]). Calculated as the Reach Diversion in column [R-A2] less the return flow diversion in column [R-B6]. Calculation may be overridden by a non-negative entry in column [R-B9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-B3] - [R-B5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-B4] - [R-B6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-B10] + [R-B11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B13	Comments	none	Column for recording details of any manual overrides added in this sheet or other descriptive text.

H.5.7 Table REACH5 – Lake Whitney to Aquilla/Brazos Confluence

Table REACH5 tracks BRA flows from the Lake Whitney dam to the confluence of Aquilla Creek and the Brazos River. BRA flow reconciliation occurs at the Brazos River near Aquilla gage.

The following is a description of the columns in REACH5:

Column	Daily Label	Units	Description
L1	Index	none	Month number
L2	Month	none	Month name
L3	Flow at Gage > IF Criteria?	none	If TRUE then flows at the Waco gage are greater than the instream flow criteria. If FALSE, then criteria not met. Daily values imported from Table IF4 of the Instream Flow File.
U1	Total Outflows	dsf	Total Outflows from Lake Whitney. Daily values imported from Table BASIC3 of reference file. Not used for subsequent calculations.

Column	Daily Label	Units	Description
U2	BRA Water Supply Releases	dsf	BRA Water Supply releases from Lake Whitney less return flows in column [U4]. Daily values imported from Table BASIC3 of reference file. Daily values are divided by 10 for use in the sub-daily calculations.
U3	Other Outflows	dsf	Total Outflows [U1] less BRA Water Supply Releases [U2] and Passed BRA Return Flows [U4]. Other Outflows are releases from reservoirs that are not specifically dedicated to water supply. Examples include leakage, flows released during maintenance, hydropower, and inflows released for downstream senior water rights. These flows are not tracked downstream because the Accounting Plan only tracks water that has been released by BRA for downstream use. Not used for subsequent calculations.
U4	Passed BRA Return Flows	dsf	Return flows passed through Lake Whitney and not stored. Daily values imported from Table RES3 of the Reservoir File. Daily values are divided by 10 for use in sub-daily calculations.
R-A1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [U2]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U2] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-A4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U4] and applies delivery factor (row 24), then adds column [R-A1]. Daily and monthly values are sums of the sub-daily data.
R-A5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-A2] less diverted BRA Return Flows [R-A6] and local run-of-river flow [R-A8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-A6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-A2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-A2] and the lagged return flows in column [R-A4]. Calculation may be overridden by a non-negative entry in column [R-A7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.

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Column	Daily Label	Units	Description
R-A8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-A6]). Calculated as the Reach Diversion in column [R-A2] less the return flow diversion in column [R-A6]. Calculation may be overridden by a non-negative entry in column [R-A9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-A3] - [R-A5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-A4] - [R-A6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-A10] + [R-A11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
G-A1	AQLT2 – Brazos River nr Aquilla	dsf	Historical daily average flows measured at gage. Imported from Table DATA1 of the reference file.
G-A2	Water Supply Adjustment	dsf	Adjustment factor applied to BRA releases for conditions when gage flows are less than calculated BRA flows. Imported from column [A12] of Table READJ5.
G-A3	Adjusted Water Supply Releases at AQLT2	dsf	BRA Water Supply Releases from upstream reach (column [R-A10]) multiplied by adjustment factor (column [G-A2]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows. Calculations performed on a daily basis.
G-A4	Return Flow Adjustment	dsf	Adjustment factor applied to BRA Return Flows for conditions when gage flows are less than calculated BRA flows. Imported from column [A13] of Table READJ5.
G-A5	Adjusted Return Flow at AQLT2	dsf	BRA Return Flows from upstream reach (column [R-A11]) multiplied by adjustment factor (column [G-A4]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows.
R-B1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily data imported from table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-B2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-B3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [G-A3]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A3] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.

Column	Daily Label	Units	Description
R-B4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A5] and applies delivery factor (row 24), then adds column [R-B1]. Daily and monthly values are sums of the sub-daily data.
R-B5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-B2] less diverted BRA Return Flows [R-B6] and local run-of-river flow [R-B8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-B6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-B2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-B2] and the lagged return flows in column [R-B4]. Calculation may be overridden by a non-negative entry in column [R-B7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-B6]). Calculated as the Reach Diversion in column [R-B2] less the return flow diversion in column [R-B6]. Calculation may be overridden by a non-negative entry in column [R-B9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-B3] - [R-B5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-B4] - [R-B6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-B10] + [R-B11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B13	Comments	none	Column for recording details of any manual overrides added in this sheet or other descriptive text.

H.5.8 Table REACH6 – Aquilla/Brazos Confluence to Little/Brazos Confluence

Table REACH6 tracks BRA flows from the confluence of Aquilla Creek and the Brazos River to the confluence of the Brazos River and the Little River. BRA flow reconciliation occurs at the Brazos River near Highbank gage.

The following is a description of the columns in REACH6:

Column	Daily Label	Units	Description
L1	Index	none	Month number
L2	Month	none	Month name
L3	Flows > IF Criteria?	none	If TRUE then flows at the Waco gage are greater than the instream flow criteria. If FALSE, then criteria not met. Daily values imported from Table IF4 of the Instream Flow File.
U1	Total Outflows	dsf	Total flow at confluence. Not calculated so set to #NA
U2	BRA Water Supply Releases	dsf	BRA Water Supply releases at confluence. Sum of sub-daily values imported from Tables REACH4 and REACH5. Daily values and monthly values calculated by summing the sub-daily values.
U3	Other Outflows	dsf	Total Outflows [U1] less BRA Water Supply Releases [U2] and Passed BRA Return Flows [U4]. Not used for subsequent calculations. Evaluates to #NA because [U1] is not calculated.
U4	Passed BRA Return Flows	dsf	BRA Return Flows at confluence. Sum of sub-daily values imported from Tables REACH4 and REACH5. Daily values and monthly values calculated by summing the sub-daily values.
R-A1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [U2]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U2] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-A4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U4] and applies delivery factor (row 24), then adds column [R-A1]. Daily and monthly values are sums of the sub-daily data.
R-A5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-A2] less diverted BRA Return Flows [R-A6] and local run-of-river flow [R-A8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.

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Column	Daily Label	Units	Description
R-A6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-A2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-A2] and the lagged return flows in column [R-A4]. Calculation may be overridden by a non-negative entry in column [R-A7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-A6]). Calculated as the Reach Diversion in column [R-A2] less the return flow diversion in column [R-A6]. Calculation may be overridden by a non-negative entry in column [R-A9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-A3] - [R-A5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-A4] - [R-A6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-A10] + [R-A11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B0	Flows > Upstream IF Criteria?	none	TRUE if flows at the Waco gage are greater than the instream flow criteria plus diversions in the downstream reach. Imported from Table IF4 in the Instream Flow File.
R-B1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-B2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-B3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [R-A10]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [R-A10] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-B4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [R-A11] and applies delivery factor (row 24), then adds column [R-B1]. Daily and monthly values are sums of the sub-daily data.

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Column	Daily Label	Units	Description
R-B5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-B2] less diverted BRA Return Flows [R-B6] and local run-of-river flow [R-B8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-B6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [R-B0] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-B2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-B2] and the lagged return flows in column [R-B4]. Calculation may be overridden by a non-negative entry in column [R-B7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [R-B0] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-B6]). Calculated as the Reach Diversion in column [R-B2] less the return flow diversion in column [R-B6]. Calculation may be overridden by a non-negative entry in column [R-B9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-B3] - [R-B5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-B4] - [R-B6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-B10] + [R-B11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
G-A1	HIBT2 – Brazos River nr Highbank	dsf	Historical daily average flows measured at gage. Imported from Table DATA1 of the reference file.
G-A2	Water Supply Adjustment	dsf	Adjustment factor applied to BRA releases for conditions when gage flows are less than calculated BRA flows. Imported from column [A12] of Table READJ6.
G-A3	Adjusted Water Supply Releases at HIBT2	dsf	BRA Water Supply Releases from upstream reach (column [R-B10]) multiplied by adjustment factor (column [G-A2]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows. Calculations performed on a daily basis.
G-A4	Return Flow Adjustment	dsf	Adjustment factor applied to BRA Return Flows for conditions when gage flows are less than calculated BRA flows. Imported from column [A13] of Table READJ6.
G-A5	Adjusted Return Flow at HIBT2	dsf	BRA Return Flows from upstream reach (column [R-B11]) multiplied by adjustment factor (column [G-A4]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows.

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Column	Daily Label	Units	Description
G-A6	Flows > Downstream IF Criteria	None	TRUE if flows at the Bryan gage are greater than the instream flow criteria. Imported from Table IF8 of the Instream Flow File.
R-C1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily data imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-C2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-C3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [G-A3]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A3] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-C4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A5] and applies delivery factor (row 24), then adds column [R-C1]. Daily and monthly values are sums of the sub-daily data.
R-C5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-C2] less diverted BRA Return Flows [R-C6] and local run-of-river flow [R-C8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-C6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [G-A6] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-C2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-C2] and the lagged return flows in column [R-C4]. Calculation may be overridden by a non-negative entry in column [R-C7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-C7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-C8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [G-A6] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-C6]). Calculated as the Reach Diversion in column [R-C2] less the return flow diversion in column [R-C6]. Calculation may be overridden by a non-negative entry in column [R-C9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-C9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-C10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-C3] - [R-C5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.

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Column	Daily Label	Units	Description
R-C11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-C4] - [R-C6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-C12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-C10] + [R-C11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-C13	Comments	none	Column for recording details of any manual overrides added in this sheet or other descriptive text.

H.5.9 Table REACH7 – Lake Proctor to Hasse Gage

Table REACH7 tracks BRA flows from the Lake Proctor dam to the Leon River near Hasse gage. BRA flow reconciliation occurs at the Hasse gage.

The following is a description of the columns in REACH7:

Column	Daily Label	Units	Description
L1	Index	none	Month number
L2	Month	none	Month name
L3	Flow at Gage > IF Criteria?	none	If TRUE then flow at the Gatesville gage is greater than the instream flow criteria. If FALSE, then criteria not met. Daily values imported from Table IF5 of the Instream Flow File.
U1	Total Outflows	dsf	Total Outflows from Lake Proctor. Daily values imported from Table BASIC5 of reference file. Not used for subsequent calculations.
U2	BRA Water Supply Releases	dsf	BRA Water Supply releases from Lake Proctor less return flows in column [U4]. Daily values imported from Table BASIC5 of reference file. Daily values are divided by 10 for use in the sub-daily calculations.
U3	Other Outflows	dsf	Total Outflows [U1] less BRA Water Supply Releases [U2] and Passed BRA Return Flows [U4]. Other Outflows are releases from reservoirs that are not specifically dedicated to water supply. Examples include leakage, flows released during maintenance, hydropower, and inflows released for downstream senior water rights. These flows are not tracked downstream because the Accounting Plan only tracks water that has been released by BRA for downstream use. Not used for subsequent calculations.
U4	Passed BRA Return Flows	dsf	Return flows passed through Lake Proctor and not stored. Daily values imported from Table RES5 of the Reservoir File. Daily values are divided by 10 for use in sub-daily calculations.

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Column	Daily Label	Units	Description
R-A1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [U2]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U2] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-A4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U4] and applies delivery factor (row 24), then adds column [R-A1]. Daily and monthly values are sums of the sub-daily data.
R-A5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-A2] less diverted BRA Return Flows [R-A6] and local run-of-river flow [R-A8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-A6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-A2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-A2] and the lagged return flows in column [R-A4]. Calculation may be overridden by a non-negative entry in column [R-A7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-A6]). Calculated as the Reach Diversion in column [R-A2] less the return flow diversion in column [R-A6]. Calculation may be overridden by a non-negative entry in column [R-A9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-A3] - [R-A5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-A4] - [R-A6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-A10] + [R-A11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.

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Column	Daily Label	Units	Description
G-A1	Leon R nr Hasse	dsf	Historical daily average flows measured at gage. Imported from Table DATA1 of the reference file.
G-A2	Water Supply Adjustment	dsf	Adjustment factor applied to BRA releases for conditions when gage flows are less than calculated BRA flows. Imported from column [A12] of Table READJ7.
G-A3	Adjusted Water Supply Releases at Hasse	dsf	BRA Water Supply Releases from upstream reach (column [R-A10]) multiplied by adjustment factor (column [G-A2]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows. Calculations performed on a daily basis.
G-A4	Return Flow Adjustment	dsf	Adjustment factor applied to BRA Return Flows for conditions when gage flows are less than calculated BRA flows. Imported from column [A13] of Table READJ7.
G-A5	Adjusted Return Flow at Hasse	dsf	BRA Return Flows from upstream reach (column [R-A11]) multiplied by adjustment factor (column [G-A4]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows.
G-A6	Comments	none	Column for recording details of any manual overrides added in this sheet or other descriptive text.

H.5.10 Table REACH8 – Hasse Gage to Belton Headwaters

Table REACH8 tracks BRA flows from the Leon River near Hasse gage to the headwaters of Lake Belton. BRA flow reconciliation occurs at the Leon River near Gatesville gage.

The following is a description of the columns in REACH8:

Column	Daily Label	Units	Description
L1	Index	none	Month number
L2	Month	none	Month name
L3	Flow at Gage > IF Criteria?	none	If TRUE then flow at the Gatesville gage is greater than the instream flow criteria. If FALSE, then criteria not met. Daily values imported from Table IF5 of Instream Flow File.
U1	Total Outflows	dsf	Total flow at Hasse gage. Daily values imported from Table REACH7. Not used for subsequent calculations.
U2	BRA Water Supply Releases	dsf	BRA Water Supply flows at Hasse gage. Daily values imported from Table REACH7. Daily values are divided by 10 for use in the sub-daily calculations.

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Column	Daily Label	Units	Description
U3	Other Outflows	dsf	Total Outflows [U1] less BRA Water Supply Releases [U2] and Passed BRA Return Flows [U4]. Other Outflows are releases from reservoirs that are not specifically dedicated to water supply. Examples include leakage, flows released during maintenance, hydropower, and inflows released for downstream senior water rights. These flows are not tracked downstream because the Accounting Plan only tracks water that has been released by BRA for downstream use. Not used for subsequent calculations.
U4	Passed BRA Return Flows	dsf	Return flows at Hasse gage. Daily values imported from Table REACH7. Daily values are divided by 10 for use in sub-daily calculations.
R-A1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [U2]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U2] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-A4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U4] and applies delivery factor (row 24), then adds column [R-A1]. Daily and monthly values are sums of the sub-daily data.
R-A5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-A2] less diverted BRA Return Flows [R-A6] and local run-of-river flow [R-A8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-A6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-A2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-A2] and the lagged return flows in column [R-A4]. Calculation may be overridden by a non-negative entry in column [R-A7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-A6]). Calculated as the Reach Diversion in column [R-A2] less the return flow diversion in column [R-A6]. Calculation may be overridden by a non-negative entry in column [R-A9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.

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Column	Daily Label	Units	Description
R-A9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-A3] - [R-A5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-A4] - [R-A6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-A10] + [R-A11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
G-A1	Leon R nr Gatesville	dsf	Historical daily average flows measured at gage. Imported from Table DATA1 of the reference file.
G-A2	Water Supply Adjustment	dsf	Adjustment factor applied to BRA releases for conditions when gage flows are less than calculated BRA flows. Imported from column [A12] of Table READJ8.
G-A3	Adjusted Water Supply Releases at Gatesville	dsf	BRA Water Supply Releases from upstream reach (column [R-A10]) multiplied by adjustment factor (column [G-A2]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows. Calculations performed on a daily basis.
G-A4	Return Flow Adjustment	dsf	Adjustment factor applied to BRA Return Flows for conditions when gage flows are less than calculated BRA flows. Imported from column [A13] of Table READJ8.
G-A5	Adjusted Return Flow at Gatesville	dsf	BRA Return Flows from upstream reach (column [R-A11]) multiplied by adjustment factor (column [G-A4]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows.
G-A6	Flows > Downstream IF Criteria	none	TRUE if flows at the Gatesville gage, plus downstream reach diversions, are greater than the instream flow criteria. Imported from Table IF5 of the Instream Flow File.
R-B1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-B2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-B3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [G-A3]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A3] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-B4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A5] and applies d factor (row 24), then adds column [R-B1]. Daily and monthly values are sums of the sub-daily data.

Column	Daily Label	Units	Description
R-B5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-B2] less diverted BRA Return Flows [R-B6] and local run-of-river flow [R-B8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-B6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [G-A6] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-B2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-B2] and the lagged return flows in column [R-B4]. Calculation may be overridden by a non-negative entry in column [R-B7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [G-A6] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-B6]). Calculated as the Reach Diversion in column [R-B2] less the return flow diversion in column [R-B6]. Calculation may be overridden by a non-negative entry in column [R-B9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-B3] - [R-B5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-B4] - [R-B6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-B10] + [R-B11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B13	Comments	none	Column for recording details of any manual overrides added in this sheet or other descriptive text.

H.5.11 Table REACH9 – Lake Belton to Little River Gage

Table REACH9 tracks BRA flows from the Lake Belton dam to just upstream of the Little River near Little River gage. The Little River gage is just downstream of the confluence of the Leon and Lampasas Rivers. BRA flow reconciliation occurs at the Leon River near Belton gage.

The following is a description of the columns in REACH9:

Column	Daily Label	Units	Description
L1	Index	none	Month number
L2	Month	none	Month name
L3	Flow at Gage > IF Criteria?	none	If TRUE then flow at the Little River nr Little River gage is greater than the instream flow criteria. If FALSE, then criteria not met. Daily values imported from Table IF6 of the Instream Flow File.
U1	Total Outflows	dsf	Total Outflows from Lake Belton. Daily values imported from Table BASIC6 of reference file. Not used for subsequent calculations.
U2	BRA Water Supply Releases	dsf	BRA Water Supply releases from Lake Belton less return flows in column [U4]. Daily values imported from Table BASIC6 of reference file. Daily values are divided by 10 for use in the sub-daily calculations.
U3	Other Outflows	dsf	Total Outflows [U1] less BRA Water Supply Releases [U2] and Passed BRA Return Flows [U4]. Other Outflows are releases from reservoirs that are not specifically dedicated to water supply. Examples include leakage, flows released during maintenance, hydropower, and inflows released for downstream senior water rights. These flows are not tracked downstream because the Accounting Plan only tracks water that has been released by BRA for downstream use. Not used for subsequent calculations.
U4	Passed BRA Return Flows	dsf	Return flows passed through Lake Belton and not stored. Daily values imported from Table RES6 of the Reservoir File. Daily values are divided by 10 for use in sub-daily calculations.
R-A1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily data imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [U2]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U2] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-A4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U4] and applies delivery factor (row 24), then adds column [R-A1]. Daily and monthly values are sums of the sub-daily data.
R-A5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-A2] less diverted BRA Return Flows [R-A6] and local run-of-river flow [R-A8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.

Column	Daily Label	Units	Description
R-A6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-A2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-A2] and the lagged return flows in column [R-A4]. Calculation may be overridden by a non-negative entry in column [R-A7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-A6]). Calculated as the Reach Diversion in column [R-A2] less the return flow diversion in column [R-A6]. Calculation may be overridden by a non-negative entry in column [R-A9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-A3] - [R-A5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-A4] - [R-A6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-A10] + [R-A11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
G-A1	BLET2 – Leon nr Belton Gage	dsf	Historical daily average flows measured at gage. Imported from Table DATA1 of the reference file.
G-A2	Water Supply Adjustment	dsf	Adjustment factor applied to BRA releases for conditions when gage flows are less than calculated BRA flows. Imported from column [A12] of Table READJ9.
G-A3	Adjusted Water Supply Releases at BLET2	dsf	BRA Water Supply Releases from upstream reach (column [R-A10]) multiplied by adjustment factor (column [G-A2]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows. Calculations performed on a daily basis.
G-A4	Return Flow Adjustment	dsf	Adjustment factor applied to BRA Return Flows for conditions when gage flows are less than calculated BRA flows. Imported from column [A13] of Table READJ9.
G-A5	Adjusted Return Flow at BLET2	dsf	BRA Return Flows from upstream reach (column [R-A11]) multiplied by adjustment factor (column [G-A4]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows.
R-B1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.

Column	Daily Label	Units	Description
R-B2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-B3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [G-A3]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A3] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-B4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A5] and applies delivery factor (row 24), then adds column [R-B1]. Daily and monthly values are sums of the sub-daily data.
R-B5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-B2] less diverted BRA Return Flows [R-B6] and local run-of-river flow [R-B8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-B6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-B2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-B2] and the lagged return flows in column [R-B4]. Calculation may be overridden by a non-negative entry in column [R-B7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-B6]). Calculated as the Reach Diversion in column [R-B2] less the return flow diversion in column [R-B6]. Calculation may be overridden by a non-negative entry in column [R-B9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-B3] - [R-B5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-B4] - [R-B6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-B10] + [R-B11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.

Column	Daily Label	Units	Description
R-B13	Comments	none	Column for recording details of any manual overrides added in this sheet or other descriptive text.

H.5.12 Table REACH10 – Lake Stillhouse Hollow to Little River Gage

Table REACH10 tracks BRA flows from the Lake Stillhouse Hollow dam to just upstream of the Little River near Little River gage. The Little River gage is just downstream of the confluence of the Leon and Lampasas Rivers. BRA flow reconciliation occurs at the Lampasas River near Belton gage.

The following is a description of the columns in REACH10:

Column	Daily Label	Units	Description
L1	Index	none	Month number
L2	Month	none	Month name
L3	Flow at Gage > IF Criteria?	none	If TRUE then flow at the Little River nr Little River gage is greater than the instream flow criteria. If FALSE, then criteria not met. Daily values imported from Table IF6 of the Instream Flow File.
U1	Total Outflows	dsf	Total Outflows from Lake Stillhouse Hollow. Daily values imported from Table BASIC7 of reference file. Not used for subsequent calculations.
U2	BRA Water Supply Releases	dsf	BRA Water Supply releases from Lake Stillhouse Hollow less return flows in column [U4]. Daily values imported from Table BASIC7 of reference file. Daily values are divided by 10 for use in the sub-daily calculations.
U3	Other Outflows	dsf	Total Outflows [U1] less BRA Water Supply Releases [U2] and Passed BRA Return Flows [U4]. Other Outflows are releases from reservoirs that are not specifically dedicated to water supply. Examples include leakage, flows released during maintenance, hydropower, and inflows released for downstream senior water rights. These flows are not tracked downstream because the Accounting Plan only tracks water that has been released by BRA for downstream use. Not used for subsequent calculations.
U4	Passed BRA Return Flows	dsf	Return flows passed through Lake Stillhouse Hollow and not stored. Daily values imported from Table RES7 of the Reservoir File. Daily values are divided by 10 for use in sub-daily calculations.
R-A1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily data imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.

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Column	Daily Label	Units	Description
R-A2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [U2]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U2] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-A4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U4] and applies delivery factor (row 24), then adds column [R-A1]. Daily and monthly values are sums of the sub-daily data.
R-A5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-A2] less diverted BRA Return Flows [R-A6] and local run-of-river flow [R-A8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-A6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-A2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-A2] and the lagged return flows in column [R-A4]. Calculation may be overridden by a non-negative entry in column [R-A7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-A6]). Calculated as the Reach Diversion in column [R-A2] less the return flow diversion in column [R-A6]. Calculation may be overridden by a non-negative entry in column [R-A9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-A3] - [R-A5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-A4] - [R-A6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-A10] + [R-A11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
G-A1	Lampasas River nr Belton	dsf	Historical daily average flows measured at gage. Imported from Table DATA1 of the reference file.
G-A2	Water Supply Adjustment	dsf	Adjustment factor applied to BRA releases for conditions when gage flows are less than calculated BRA flows. Imported from column [A12] of Table READJ10.

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Column	Daily Label	Units	Description
G-A3	Adjusted Water Supply Releases at Lampasas Gage	dsf	BRA Water Supply Releases from upstream reach (column [R-A10]) multiplied by adjustment factor (column [G-A2]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows. Calculations performed on a daily basis.
G-A4	Return Flow Adjustment	dsf	Adjustment factor applied to BRA Return Flows for conditions when gage flows are less than calculated BRA flows. Imported from column [A13] of Table READJ10.
G-A5	Adjusted Return Flow at Lampasas Gage	dsf	BRA Return Flows from upstream reach (column [R-A11]) multiplied by adjustment factor (column [G-A4]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows.
R-B1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily data imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-B2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-B3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [G-A3]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A3] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-B4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A5] and applies delivery factor (row 24), then adds column [R-B1]. Daily and monthly values are sums of the sub-daily data.
R-B5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-B2] less diverted BRA Return Flows [R-B6] and local run-of-river flow [R-B8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-B6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-B2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-B2] and the lagged return flows in column [R-B4]. Calculation may be overridden by a non-negative entry in column [R-B7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-B6]). Calculated as the Reach Diversion in column [R-B2] less the return flow diversion in column [R-B6]. Calculation may be overridden by a non-negative entry in column [R-B9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.

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Column	Daily Label	Units	Description
R-B9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-B3] - [R-B5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-B4] - [R-B6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-B10] + [R-B11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B13	Comments	none	Column for recording details of any manual overrides added in this sheet or other descriptive text.

H.5.13 Table REACH11 – Little River Gage to Little/San Gabriel Confluence

Table REACH11 tracks BRA flows from just above the Little River near Little River gage to the confluence of the Little and San Gabriel Rivers. The Little River near Little River gage is just downstream of the confluence of the Leon and Lampasas Rivers, which then become the Little River. BRA flow reconciliation occurs at the Little River near Little River gage.

The following is a description of the columns in REACH11:

Column	Daily Label	Units	Description
L1	Index	none	Month number
L2	Month	none	Month name
L3	Flow at Gage > IF Criteria?	none	If TRUE then flow at the Cameron gage is greater than the instream flow criteria. If FALSE, then criteria not met. Daily values imported from Table IF7 of Instream Flow File.
U1	Total Outflows	dsf	Not calculated. Set to #NA.
U2	BRA Water Supply Releases	dsf	BRA Water Supply releases just above gage. Sum of sub-daily values imported from Tables REACH9 and REACH10. Daily values and monthly values calculated by summing the sub-daily values.
U3	Other Outflows	dsf	Not calculated. Set to #NA.

Column	Daily Label	Units	Description
U4	Passed BRA Return Flows	dsf	BRA Return Flows just above gage. Sum of sub-daily values imported from Tables REACH9 and REACH10. Daily values and monthly values calculated by summing the sub-daily values.
U5	BRA total at LRIT	dsf	Total BRA flow just above gage. Sum of columns [U2] and [U4].
G-A1	LRIT2 – Little River at Little River	dsf	Historical daily average flows measured at gage. Imported from Table DATA1 of the reference file.
G-A2	Water Supply Adjustment	dsf	Adjustment factor applied to BRA releases for conditions when gage flows are less than calculated BRA flows. Imported from column [A12] of Table READJ11.
G-A3	Adjusted Water Supply Releases at LRIT	dsf	BRA Water Supply Releases from upstream reach (column [U2]) multiplied by adjustment factor (column [G-A2]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows. Calculations performed on a daily basis.
G-A4	Return Flow Adjustment	dsf	Adjustment factor applied to BRA Return Flows for conditions when gage flows are less than calculated BRA flows. Imported from column [A13] of Table READJ11.
G-A5	Adjusted Return Flow at LRIT	dsf	BRA Return Flows from upstream reach (column [U-4]) multiplied by adjustment factor (column [G-A4]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows.
R-A1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [G-A3]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A3] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-A4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A5] and applies delivery factor (row 24), then adds column [R-A1]. Daily and monthly values are sums of the sub-daily data.
R-A5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-A2] less diverted BRA Return Flows [R-A6] and local run-of-river flow [R-A8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.

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Column	Daily Label	Units	Description
R-A6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-A2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-A2] and the lagged return flows in column [R-A4]. Calculation may be overridden by a non-negative entry in column [R-A7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-A6]). Calculated as the Reach Diversion in column [R-A2] less the return flow diversion in column [R-A6]. Calculation may be overridden by a non-negative entry in column [R-A9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-A3] - [R-A5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-A4] - [R-A6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-A10] + [R-A11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A13	Comments	none	Column for recording details of any manual overrides added in this sheet or other descriptive text.

H.5.14 Table REACH12 – Lake Georgetown to Granger Headwaters

Table REACH12 tracks BRA flows from the Lake Georgetown dam to the Lake Granger headwaters. BRA flow reconciliation occurs at the North Fork of the San Gabriel River near Georgetown gage.

The following is a description of the columns in REACH12:

Column	Daily Label	Units	Description
L1	Index	none	Month number
L2	Month	none	Month name
L3	Flow at Gage > IF Criteria?	none	If TRUE then flow at the Cameron gage is greater than the instream flow criteria. If FALSE, then criteria not met. Daily values imported from Table IF7 of the Instream Flow File.
U1	Total Outflows	dsf	Total Outflows from Lake Georgetown. Daily values imported from Table BASIC8 of reference file. Not used for subsequent calculations.
U2	BRA Water Supply Releases	dsf	BRA Water Supply releases from Lake Georgetown less return flows in column [U4]. Daily values imported from Table BASIC8 of reference file. Daily values are divided by 10 for use in the sub-daily calculations.
U3	Other Outflows	dsf	Total Outflows [U1] less BRA Water Supply Releases [U2] and Passed BRA Return Flows [U4]. Other Outflows are releases from reservoirs that are not specifically dedicated to water supply. Examples include leakage, flows released during maintenance, hydropower, and inflows released for downstream senior water rights. These flows are not tracked downstream because the Accounting Plan only tracks water that has been released by BRA for downstream use. Not used for subsequent calculations.
U4	Passed BRA Return Flows	dsf	Return flows passed through Lake Georgetown and not stored. Daily values imported from Table RES8 of the Reservoir File. Daily values are divided by 10 for use in sub-daily calculations.
R-A1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily data imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [U2]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U2] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-A4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U4] and applies delivery factor (row 24), then adds column [R-A1]. Daily and monthly values are sums of the sub-daily data.
R-A5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-A2] less diverted BRA Return Flows [R-A6] and local run-of-river flow [R-A8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-A6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-A2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-A2] and the lagged return flows in column [R-A4]. Calculation may be overridden by a non-negative entry in column [R-A7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.

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Column	Daily Label	Units	Description
R-A7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-A6]). Calculated as the Reach Diversion in column [R-A2] less the return flow diversion in column [R-A6]. Calculation may be overridden by a non-negative entry in column [R-A9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-A3] - [R-A5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-A4] - [R-A6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-A10] + [R-A11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
G-A1	GERT2 – N Fk San Gabriel nr Georgetown	dsf	Historical daily average flows measured at gage. Imported from Table DATA1 of the reference file.
G-A2	Water Supply Adjustment	dsf	Adjustment factor applied to BRA releases for conditions when gage flows are less than calculated BRA flows. Imported from column [A12] of Table READJ12.
G-A3	Adjusted Water Supply Releases at N Fork	dsf	BRA Water Supply Releases from upstream reach (column [R-A10]) multiplied by adjustment factor (column [G-A2]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows. Calculations performed on a daily basis.
G-A4	Return Flow Adjustment	dsf	Adjustment factor applied to BRA Return Flows for conditions when gage flows are less than calculated BRA flows. Imported from column [A13] of Table READJ12.
G-A5	Adjusted Return Flow at N Fork	dsf	BRA Return Flows from upstream reach (column [R-A11]) multiplied by adjustment factor (column [G-A4]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows.
R-B1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily values imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-B2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-B3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [G-A3]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A3] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.

Column	Daily Label	Units	Description
R-B4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A5] and applies delivery factor (row 24), then adds column [R-B1]. Daily and monthly values are sums of the sub-daily data.
R-B5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-B2] less diverted BRA Return Flows [R-B6] and local run-of-river flow [R-B8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-B6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-B2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-B2] and the lagged return flows in column [R-B4]. Calculation may be overridden by a non-negative entry in column [R-B7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-B6]). Calculated as the Reach Diversion in column [R-B2] less the return flow diversion in column [R-B6]. Calculation may be overridden by a non-negative entry in column [R-B9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-B3] - [R-B5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-B4] - [R-B6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-B10] + [R-B11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B13	Comments	none	Column for recording details of any manual overrides added in this sheet or other descriptive text.

H.5.15Table REACH13 – Lake Granger to San Gabriel/Little Confluence

Table REACH13 tracks BRA flows from the Lake Granger dam to the confluence of the San Gabriel and Little Rivers. BRA flow reconciliation occurs at the San Gabriel River at Laneport gage.

The following is a description of the columns in REACH13:

Column	Daily Label	Units	Description
L1	Index	none	Month number
L2	Month	none	Month name
L3	Flow at Gage > IF Criteria?	none	If TRUE then flow at the Cameron gage is greater than the instream flow criteria. If FALSE, then criteria not met. Daily values imported from Table IF7 of the Instream Flow File.
U1	Total Outflows	dsf	Total Outflows from Lake Granger. Daily values imported from Table BASIC9 of reference file. Not used for subsequent calculations.
U2	BRA Water Supply Releases	dsf	BRA Water Supply releases from Lake Granger less return flows in column [U4]. Daily values imported from Table BASIC9 of reference file. Daily values are divided by 10 for use in the sub-daily calculations.
U3	Other Outflows	dsf	Total Outflows [U1] less BRA Water Supply Releases [U2] and Passed BRA Return Flows [U4]. Other Outflows are releases from reservoirs that are not specifically dedicated to water supply. Examples include leakage, flows released during maintenance, hydropower, and inflows released for downstream senior water rights. These flows are not tracked downstream because the Accounting Plan only tracks water that has been released by BRA for downstream use. Not used for subsequent calculations.
U4	Passed BRA Return Flows	dsf	Return flows passed through Lake Granger and not stored. Daily values imported from Table RES9 of the Reservoir File. Daily values are divided by 10 for use in sub-daily calculations.
R-A1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily data imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [U2]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U2] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-A4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U4] and applies delivery factor (row 24), then adds column [R-A1]. Daily and monthly values are sums of the sub-daily data.

Column	Daily Label	Units	Description
R-A5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-A2] less diverted BRA Return Flows [R-A6] and local run-of-river flow [R-A8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-A6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-A2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-A2] and the lagged return flows in column [R-A4]. Calculation may be overridden by a non-negative entry in column [R-A7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-A6]). Calculated as the Reach Diversion in column [R-A2] less the return flow diversion in column [R-A6]. Calculation may be overridden by a non-negative entry in column [R-A9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-A3] - [R-A5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-A4] - [R-A6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-A10] + [R-A11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
G-A1	GERT2 –San Gabriel at Laneport	dsf	Historical daily average flows measured at gage. Imported from Table DATA1 of the reference file.
G-A2	Water Supply Adjustment	dsf	Adjustment factor applied to BRA releases for conditions when gage flows are less than calculated BRA flows. Imported from column [A12] of Table READJ13.
G-A3	Adjusted Water Supply Releases at Laneport	dsf	BRA Water Supply Releases from upstream reach (column [R-A10]) multiplied by adjustment factor (column [G-A2]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows. Calculations performed on a daily basis.
G-A4	Return Flow Adjustment	dsf	Adjustment factor applied to BRA Return Flows for conditions when gage flows are less than calculated BRA flows. Imported from column [A13] of Table READJ13.
G-A5	Adjusted Return Flow at Laneport	dsf	BRA Return Flows from upstream reach (column [R-A11]) multiplied by adjustment factor (column [G-A4]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows.

Column	Daily Label	Units	Description
R-B1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily values imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-B2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-B3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [G-A3]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A3] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-B4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A5] and applies delivery factor (row 24), then adds column [R-B1]. Daily and monthly values are sums of the sub-daily data.
R-B5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-B2] less diverted BRA Return Flows [R-B6] and local run-of-river flow [R-B8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-B6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-B2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-B2] and the lagged return flows in column [R-B4]. Calculation may be overridden by a non-negative entry in column [R-B7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-B6]). Calculated as the Reach Diversion in column [R-B2] less the return flow diversion in column [R-B6]. Calculation may be overridden by a non-negative entry in column [R-B9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-B3] - [R-B5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-B4] - [R-B6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.

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Column	Daily Label	Units	Description
R-B12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-B10] + [R-B11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B13	Comments	none	Column for recording details of any manual overrides added in this sheet or other descriptive text.

H.5.16 Table REACH14 – San Gabriel/Little Confluence to Little/Brazos Confluence

Table REACH14 tracks BRA flows from the confluence of the San Gabriel and Little Rivers to the confluence of the Little River and the Brazos River. BRA flow reconciliation occurs at the Little River near Cameron gage. The Alcoa diversion is included in column [R-A2].

The following is a description of the columns in REACH14:

Column	Daily Label	Units	Description
L1	Index	none	Month number
L2	Month	none	Month name
L3	Flow at Gage > IF Criteria?	none	If TRUE then flow at the Cameron gage is greater than the instream flow criteria. If FALSE, then criteria not met. Daily values imported from Table IF7 of the Instream Flow File.
U1	Total Outflows	dsf	Total flow at confluence. Not calculated so set to #NA.
U2	BRA Water Supply Releases	dsf	BRA Water Supply releases at confluence. Sum of sub-daily values imported from Tables REACH11 and REACH13. Daily values and monthly values calculated by summing the sub-daily values.
U3	Other Outflows	dsf	Not calculated so set to #NA.
U4	Passed BRA Return Flows	dsf	BRA Return Flows at confluence. Sum of sub-daily values imported from Tables REACH11 and REACH13. Daily values and monthly values calculated by summing the sub-daily values.
R-A1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily data imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Includes diversions for Alcoa. Daily values are divided by 10 for use in sub-daily calculations.

Column	Daily Label	Units	Description
R-A3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [U2]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U2] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-A4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U4] and applies delivery factor (row 24), then adds column [R-A1]. Daily and monthly values are sums of the sub-daily data.
R-A5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-A2] less diverted BRA Return Flows [R-A6] and local run-of-river flow [R-A8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-A6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-A2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-A2] and the lagged return flows in column [R-A4]. Calculation may be overridden by a non-negative entry in column [R-A7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-A6]). Calculated as the Reach Diversion in column [R-A2] less the return flow diversion in column [R-A6]. Calculation may be overridden by a non-negative entry in column [R-A9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-A3] - [R-A5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-A4] - [R-A6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-A10] + [R-A11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B1	Alcoa to Cameron Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily data imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.

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Column	Daily Label	Units	Description
R-B2	Alcoa to Cameron Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-B3	Alcoa Water Supply Release at Cameron	dsf	Upstream BRA Water Supply releases (column [R-A10]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [R-A10] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-B4	Passed BRA Return Flows at Cameron	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [R-A11] and applies delivery factor (row 24), then adds column [R-B1]. Daily and monthly values are sums of the sub-daily data.
R-B5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-B2] less diverted BRA Return Flows [R-B6] and local run-of-river flow [R-B8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-B6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-B2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-B2] and the lagged return flows in column [R-B4]. Calculation may be overridden by a non-negative entry in column [R-B7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-B6]). Calculated as the Reach Diversion in column [R-B2] less the return flow diversion in column [R-B6]. Calculation may be overridden by a non-negative entry in column [R-B9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B10	Remaining Water Supply Releases at Cameron	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-B3] - [R-B5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B11	Remaining Return Flows at Cameron	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-B4] - [R-B6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B12	BRA Total at Cameron	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-B10] + [R-B11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
G-A1	CMNT2 – Little River nr Cameron	dsf	Historical daily average flows measured at gage. Imported from Table DATA1 of the reference file.

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Column	Daily Label	Units	Description
G-A2	Water Supply Adjustment	dsf	Adjustment factor applied to BRA releases for conditions when gage flows are less than calculated BRA flows. Imported from column [A12] of Table READJ14.
G-A3	Adjusted Water Supply Releases at Cameron	dsf	BRA Water Supply Releases from upstream reach (column [R-B10]) multiplied by adjustment factor (column [G-A2]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows. Calculations performed on a daily basis.
G-A4	Return Flow Adjustment	dsf	Adjustment factor applied to BRA Return Flows for conditions when gage flows are less than calculated BRA flows. Imported from column [A13] of Table READJ14.
G-A5	Adjusted Return Flow at Cameron	dsf	BRA Return Flows from upstream reach (column [R-B11]) multiplied by adjustment factor (column [G-A4]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows.
G-A6	Flows > Downstream IF Criteria	none	TRUE if flows at the Cameron gage, plus downstream reach diversions, are greater than the instream flow criteria. Imported from Table IF7 of the Instream Flow File.
R-C1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily data imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-C2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-C3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [G-A3]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A3] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-C4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A5] and applies delivery factor (row 24), then adds column [R-C1]. Daily and monthly values are sums of the sub-daily data.
R-C5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-C2] less diverted BRA Return Flows [R-C6] and local run-of-river flow [R-C8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-C6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [G-A6] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-C2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-C2] and the lagged return flows in column [R-C4]. Calculation may be overridden by a non-negative entry in column [R-C7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-C7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.

Column	Daily Label	Units	Description
R-C8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [G-A6] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-C6]). Calculated as the Reach Diversion in column [R-C2] less the return flow diversion in column [R-C6]. Calculation may be overridden by a non-negative entry in column [R-C9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-C9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-C10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-C3] - [R-C5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-C11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-C4] - [R-C6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-C12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-C10] + [R-C11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-C13	Comments	none	Column for recording details of any manual overrides added in this sheet or other descriptive data.

H.5.17 Table REACH15 – Little/Brazos Confluence to Brazos/Yegua Confluence

Table REACH15 tracks BRA flows from the confluence of the Little River and the Brazos River to the confluence of the Brazos River and Yegua Creek. BRA flow reconciliation occurs at the Brazos River at State Highway 21 near Bryan gage. This gage is very near the former Brazos River near Bryan gage.

The following is a description of the columns in REACH15:

Column	Daily Label	Units	Description
L1	Index	none	Month number
L2	Month	none	Month name
L3	Flow at Gage > IF Criteria? (SH 21)	none	If TRUE then flow at the Bryan gage is greater than the instream flow criteria. If FALSE, then criteria not met. Daily values imported from Table IF8 of the Instream Flow File.
U1	Total Outflows	dsf	Total flow at confluence. Not calculated so set to #NA

Column	Daily Label	Units	Description
U2	BRA Water Supply Releases	dsf	BRA Water Supply releases at confluence. Sum of sub-daily values imported from Tables REACH6 and REACH14. Daily values and monthly values calculated by summing the sub-daily values.
U3	Other Outflows	dsf	Total Outflows [U1] less BRA Water Supply Releases [U2] and Passed BRA Return Flows [U4]. Evaluates to #NA because column [U1] is #NA. Not used for subsequent calculations.
U4	Passed BRA Return Flows	dsf	BRA Return Flows at confluence. Sum of sub-daily values imported from Tables REACH6 and REACH14. Daily values and monthly values calculated by summing the sub-daily values.
R-A1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [U2]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U2] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-A4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U4] and applies delivery factor (row 24), then adds column [R-A1]. Daily and monthly values are sums of the sub-daily data.
R-A5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-A2] less diverted BRA Return Flows [R-A6] and local run-of-river flow [R-A8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-A6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-A2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-A2] and the lagged return flows in column [R-A4]. Calculation may be overridden by a non-negative entry in column [R-A7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-A6]). Calculated as the Reach Diversion in column [R-A2] less the return flow diversion in column [R-A6]. Calculation may be overridden by a non-negative entry in column [R-A9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.

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Column	Daily Label	Units	Description
R-A10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-A3] - [R-A5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-A4] - [R-A6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-A10] + [R-A11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
G-A1	BBZT2 – Brazos River at SH 21 nr Bryan	dsf	Historical daily average flows measured at gage. Imported from Table DATA1 of the reference file.
G-A2	Water Supply Adjustment	dsf	Adjustment factor applied to BRA releases for conditions when gage flows are less than calculated BRA flows. Imported from column [A12] of Table READJ15.
G-A3	Adjusted Water Supply Releases at BBZT	dsf	BRA Water Supply Releases from upstream reach (column [R-A10]) multiplied by adjustment factor (column [G-A2]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows. Calculations performed on a daily basis.
G-A4	Return Flow Adjustment	dsf	Adjustment factor applied to BRA Return Flows for conditions when gage flows are less than calculated BRA flows. Imported from column [A13] of Table READJ15.
G-A5	Adjusted Return Flow at BBZT	dsf	BRA Return Flows from upstream reach (column [R-A11]) multiplied by adjustment factor (column [G-A4]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows.
G-A6	Flows > IF Criteria? (Hempstead)	none	TRUE if flows at the Hempstead gage, are greater than the instream flow criteria. Imported from Table IF10 of the Instream Flow File.
R-B1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily data imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-B2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-B3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [G-A3]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A3] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-B4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A5] and applies delivery factor (row 24), then adds column [R-B1]. Daily and monthly values are sums of the sub-daily data.

Column	Daily Label	Units	Description
R-B5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-B2] less diverted BRA Return Flows [R-B6] and local run-of-river flow [R-B8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-B6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [G-A6] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-B2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-B2] and the lagged return flows in column [R-B4]. Calculation may be overridden by a non-negative entry in column [R-B7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [G-A6] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-B6]). Calculated as the Reach Diversion in column [R-B2] less the return flow diversion in column [R-B6]. Calculation may be overridden by a non-negative entry in column [R-B9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-B3] - [R-B5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-B4] - [R-B6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-B10] + [R-B11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B13	Comments	none	Column for recording details of any manual overrides added in this sheet or other descriptive text.

H.5.18 Table REACH16 – Lake Somerville to Yegua/Brazos Confluence

Table REACH16 tracks BRA flows from the Lake Somerville dam to the confluence of the Yegua Creek and the Brazos River. BRA flow reconciliation occurs at the Yegua Creek near Somerville gage.

The following is a description of the columns in REACH16:

Column	Daily Label	Units	Description
L1	Index	none	Month number
L2	Month	none	Month name
L3	Flow at Gage > IF Criteria?	none	If TRUE then flow at the Hempstead gage is greater than the instream flow criteria. If FALSE, then criteria not met. Daily values imported from Table IF10 of the Instream Flow File.
U1	Total Outflows	dsf	Total Outflows from Lake Somerville. Daily values imported from Table BASIC10 of reference file. Not used for subsequent calculations.
U2	BRA Water Supply Releases	dsf	BRA Water Supply releases from Lake Somerville less return flows in column [U4]. Daily values imported from Table BASIC10 of reference file. Daily values are divided by 10 for use in the sub-daily calculations.
U3	Other Outflows	dsf	Total Outflows [U1] less BRA Water Supply Releases [U2] and Passed BRA Return Flows [U4]. Other Outflows are releases from reservoirs that are not specifically dedicated to water supply. Examples include leakage, flows released during maintenance, hydropower, and inflows released for downstream senior water rights. These flows are not tracked downstream because the Accounting Plan only tracks water that has been released by BRA for downstream use. Not used for subsequent calculations.
U4	Passed BRA Return Flows	dsf	Return flows passed through Lake Somerville and not stored. Daily values imported from Table RES10 of the Reservoir File. Daily values are divided by 10 for use in sub-daily calculations.
R-A1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily data imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [U2]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U2] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-A4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U4] and applies delivery factor (row 24), then adds column [R-A1]. Daily and monthly values are sums of the sub-daily data.
R-A5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-A2] less diverted BRA Return Flows [R-A6] and local run-of-river flow [R-A8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.

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Column	Daily Label	Units	Description
R-A6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-A2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-A2] and the lagged return flows in column [R-A4]. Calculation may be overridden by a non-negative entry in column [R-A7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-A6]). Calculated as the Reach Diversion in column [R-A2] less the return flow diversion in column [R-A6]. Calculation may be overridden by a non-negative entry in column [R-A9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-A3] - [R-A5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-A4] - [R-A6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-A10] + [R-A11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
G-A1	Yegua Creek nr Somerville	dsf	Historical daily average flows measured at gage. Imported from Table DATA1 of the reference file.
G-A2	Water Supply Adjustment	dsf	Adjustment factor applied to BRA releases for conditions when gage flows are less than calculated BRA flows. Imported from column [A12] of Table READJ16.
G-A3	Adjusted Water Supply Releases at YCSO	dsf	BRA Water Supply Releases from upstream reach (column [R-A10]) multiplied by adjustment factor (column [G-A2]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows. Calculations performed on a daily basis.
G-A4	Return Flow Adjustment	dsf	Adjustment factor applied to BRA Return Flows for conditions when gage flows are less than calculated BRA flows. Imported from column [A13] of Table READJ16.
G-A5	Adjusted Return Flow at YCSO	dsf	BRA Return Flows from upstream reach (column [R-A11]) multiplied by adjustment factor (column [G-A4]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows.
R-B1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily data imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.

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Column	Daily Label	Units	Description
R-B2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-B3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [G-A3]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A3] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-B4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A5] and applies delivery factor (row 24), then adds column [R-B1]. Daily and monthly values are sums of the sub-daily data.
R-B5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-B2] less diverted BRA Return Flows [R-B6] and local run-of-river flow [R-B8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-B6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-B2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-B2] and the lagged return flows in column [R-B4]. Calculation may be overridden by a non-negative entry in column [R-B7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-B6]). Calculated as the Reach Diversion in column [R-B2] less the return flow diversion in column [R-B6]. Calculation may be overridden by a non-negative entry in column [R-B9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-B3] - [R-B5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-B4] - [R-B6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-B10] + [R-B11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.

Column	Daily Label	Units	Description
R-B13	Comments	none	Column for recording details of any manual overrides added in this sheet or other descriptive data.

H.5.19 Table REACH17 – Yegua/Brazos Confluence to Navasota/Brazos Confluence

Table REACH17 tracks BRA flows from the confluence of the Yegua Creek and the Brazos River to the confluence of the Navasota and Brazos Rivers. There is no gage in the reach.

The following is a description of the columns in REACH17:

Column	Daily Label	Units	Description
L1	Index	none	Month number
L2	Month	none	Month name
L3	Flow at Gage > IF Criteria?	none	If TRUE then flow at the Hempstead gage is greater than the instream flow criteria. If FALSE, then criteria not met. Daily values imported from Table IF10 of the Instream Flow File.
U1	Total Outflows	dsf	Total flow at confluence. Not calculated so set to #NA
U2	BRA Water Supply Releases	dsf	BRA Water Supply releases at confluence. Sum of sub-daily values imported from Tables REACH15 and REACH16. Daily values and monthly values calculated by summing the sub-daily values.
U3	Other Outflows	dsf	Total Outflows [U1] less BRA Water Supply Releases [U2] and Passed BRA Return Flows [U4]. Evaluates to #NA because column [U1] is #NA. Not used for subsequent calculations.
U4	Passed BRA Return Flows	dsf	BRA Return Flows at confluence. Sum of sub-daily values imported from Tables REACH15 and REACH16. Daily values and monthly values calculated by summing the sub-daily values.
R-A1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily data imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [U2]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U2] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.

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Column	Daily Label	Units	Description
R-A4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U4] and applies delivery factor (row 24), then adds column [R-A1]. Daily and monthly values are sums of the sub-daily data.
R-A5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-A2] less diverted BRA Return Flows [R-A6] and local run-of-river flow [R-A8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-A6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-A2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-A2] and the lagged return flows in column [R-A4]. Calculation may be overridden by a non-negative entry in column [R-A7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-A6]). Calculated as the Reach Diversion in column [R-A2] less the return flow diversion in column [R-A6]. Calculation may be overridden by a non-negative entry in column [R-A9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-A3] - [R-A5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-A4] - [R-A6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-A10] + [R-A11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A13	Comments	none	Column for recording details of any manual overrides added in this sheet or other descriptive text.

H.5.20 Table REACH18 – Lake Limestone to Navasota/Brazos Confluence

Table REACH18 tracks BRA flows from the Lake Limestone dam to the confluence of the Navasota and Brazos Rivers. BRA flow reconciliation occurs at the Navasota River near Easterly gage. Column [R-B2] includes diversions for TMPA.

The following is a description of the columns in REACH18:

Column	Daily Label	Units	Description
L1	Index	none	Month number
L2	Month	none	Month name
L3	Flow at Gage > IF Criteria?	none	If TRUE then flow at the Easterly gage is greater than the instream flow criteria. If FALSE, then criteria not met. Daily values imported from Table IF9 of the Instream Flow File.
U1	Total Outflows	dsf	Total Outflows from Lake Limestone. Daily values imported from Table BASIC11 of reference file. Not used for subsequent calculations.
U2	BRA Water Supply Releases	dsf	BRA Water Supply releases from Lake Limestone less return flows in column [U4]. Daily values imported from Table BASIC11 of reference file. Daily values are divided by 10 for use in the sub-daily calculations.
U3	Other Outflows	dsf	Total Outflows [U1] less BRA Water Supply Releases [U2] and Passed BRA Return Flows [U4]. Other Outflows are releases from reservoirs that are not specifically dedicated to water supply. Examples include leakage, flows released during maintenance, hydropower, and inflows released for downstream senior water rights. These flows are not tracked downstream because the Accounting Plan only tracks water that has been released by BRA for downstream use. Not used for subsequent calculations.
U4	Passed BRA Return Flows	dsf	Return flows passed through Lake Limestone and not stored. Daily values imported from Table RES11 of the Reservoir File. Daily values are divided by 10 for use in sub-daily calculations.
R-A1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily data imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [U2]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U2] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-A4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U4] and applies delivery factor (row 24), then adds column [R-A1]. Daily and monthly values are sums of the sub-daily data.

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Column	Daily Label	Units	Description
R-A5	Diversion of Upstream Water Supply Release	dsf	Diversion less [R-A2] diverted BRA Return Flows [R-A6] and local run-of-river flow [R-A8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-A6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-A2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-A2] and the lagged return flows in column [R-A4]. Calculation may be overridden by a non-negative entry in column [R-A7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-A6]). Calculated as the Reach Diversion in column [R-A2] less the return flow diversion in column [R-A6]. Calculation may be overridden by a non-negative entry in column [R-A9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-A3] - [R-A5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-A4] - [R-A6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-A10] + [R-A11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
G-A1	EAST2 – Navasota R nr Easterly	dsf	Historical daily average flows measured at gage. Imported from Table DATA1 of the reference file.
G-A2	Water Supply Adjustment	dsf	Adjustment factor applied to BRA releases for conditions when gage flows are less than calculated BRA flows. Imported from column [A12] of Table READJ18.
G-A3	Adjusted Water Supply Releases at EAST	dsf	BRA Water Supply Releases from upstream reach (column [R-A10]) multiplied by adjustment factor (column [G-A2]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows. Calculations performed on a daily basis.
G-A4	Return Flow Adjustment	dsf	Adjustment factor applied to BRA Return Flows for conditions when gage flows are less than calculated BRA flows. Imported from column [A13] of Table READJ18.
G-A5	Adjusted Return Flow at EAST	dsf	BRA Return Flows from upstream reach (column [R-A11]) multiplied by adjustment factor (column [G-A4]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows.

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Column	Daily Label	Units	Description
G-A6	Flows > Downstream IF Criteria	none	If TRUE then flows at the Easterly gage are greater than the instream flow criteria plus downstream reach diversions. Imported from Table IF9 of the instream flow file.
R-B1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily data imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-B2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Includes diversions for TMPA. Daily values are divided by 10 for use in sub-daily calculations.
R-B3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [G-A3]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A3] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-B4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A5] and applies delivery factor (row 24), then adds column [R-B1]. Daily and monthly values are sums of the sub-daily data.
R-B5	Diversion of Upstream Water Supply Release	dsf	Diversion less [R-B2] diverted BRA Return Flows [R-B6] and local run-of-river flow [R-B8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-B6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [G-A6] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-B2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-B2] and the lagged return flows in column [R-B4]. Calculation may be overridden by a non-negative entry in column [R-B7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [G-A6] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-B6]). Calculated as the Reach Diversion in column [R-B2] less the return flow diversion in column [R-B6]. Calculation may be overridden by a non-negative entry in column [R-B9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-B3] - [R-B5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.

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Column	Daily Label	Units	Description
R-B11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-B4] - [R-B6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-B10] + [R-B11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B13	Comments	none	Column for recording details of any manual overrides added in this sheet or other descriptive text.

H.5.21 Table REACH19 – Navasota/Brazos Confluence to Hempstead

Table REACH19 tracks BRA flows from the confluence of the Navasota River and the Brazos River to the Hempstead gage. BRA flow reconciliation occurs at the Brazos River near Hempstead gage.

The following is a description of the columns in REACH19:

Column	Daily Label	Units	Description
L1	Index	none	Month number
L2	Month	none	Month name
L3	Flow at Gage > IF Criteria?	none	If TRUE then flow at the Hempstead gage is greater than the instream flow criteria. If FALSE, then criteria not met. Daily values imported from Table IF10 of the Instream Flow File.
U1	Total Outflows	dsf	Total flow at confluence. Not calculated so set to #NA
U2	BRA Water Supply Releases	dsf	BRA Water Supply releases at confluence. Sum of sub-daily values imported from Tables REACH17 and REACH18. Daily values and monthly values calculated by summing the sub-daily values.
U3	Other Outflows	dsf	Total Outflows [U1] less BRA Water Supply Releases [U2] and Passed BRA Return Flows [U4]. Evaluates to #NA because column [U1] is @NA. Not used for subsequent calculations.
U4	Passed BRA Return Flows	dsf	BRA Return Flows at confluence. Sum of sub-daily values imported from Tables REACH17 and REACH18. Daily values and monthly values calculated by summing the sub-daily values.
R-A1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.

Column	Daily Label	Units	Description
R-A2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [U2]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U2] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-A4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U4] and applies delivery factor (row 24), then adds column [R-A1]. Daily and monthly values are sums of the sub-daily data.
R-A5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-A2] less diverted BRA Return Flows [R-A6] and local run-of-river flow [R-A8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-A6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-A2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-A2] and the lagged return flows in column [R-A4]. Calculation may be overridden by a non-negative entry in column [R-A7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-A6]). Calculated as the Reach Diversion in column [R-A2] less the return flow diversion in column [R-A6]. Calculation may be overridden by a non-negative entry in column [R-A9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-A3] - [R-A5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-A4] - [R-A6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-A10] + [R-A11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
G-A1	HPDT2 – Brazos River nr Hempstead	dsf	Historical daily average flows measured at gage. Imported from Table DATA1 of the reference file.

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Column	Daily Label	Units	Description
G-A2	Water Supply Adjustment	dsf	Adjustment factor applied to BRA releases for conditions when gage flows are less than calculated BRA flows. Imported from column [A12] of Table READJ19.
G-A3	Adjusted Water Supply Releases at HPDT	dsf	BRA Water Supply Releases from upstream reach (column [R-A10]) multiplied by adjustment factor (column [G-A2]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows. Calculations performed on a daily basis.
G-A4	Return Flow Adjustment	dsf	Adjustment applied to BRA releases for conditions when gage flows are less than calculated BRA flows. Imported from column [A13] of Table READJ19.
G-A5	Adjusted Return Flow at HPDT	dsf	BRA Return Flows from upstream reach (column [R-A11]) multiplied by adjustment factor (column [G-A4]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows.
R-A6	Comments	none	Column for recording details of any manual overrides added in this sheet while or other descriptive text.

H.5.22 Table REACH20 – Hempstead to Richmond

Table REACH20 tracks BRA flows from just below the Hempstead gage to the Richmond gage. BRA flow reconciliation occurs at the Richmond gage. This reach includes diversions for GCWA Canal A and NRG Smithers Lake. Since these diversions can be large they are individually assigned water, separate from the aggregated diversions.

The following is a description of the columns in REACH20:

Column	Daily Label	Units	Description
L1	Index	none	Month number
L2	Month	none	Month name
L3	Flow at Gage > IF Criteria?	none	If TRUE then flow at the Richmond gage is greater than the instream flow criteria. If FALSE, then criteria not met. Daily values imported from Table IF11 of Instream Flow File.
U1	Total Outflows	dsf	Total flow at Hempstead gage. Daily values imported from Table REACH19. Not used for subsequent calculations.
U2	BRA Water Supply Releases	dsf	BRA Water Supply flows at Hempstead gage. Daily values imported from Table REACH19. Daily values are divided by 10 for use in the sub-daily calculations.

Column	Daily Label	Units	Description
U3	Other Outflows	dsf	Total Outflows [U1] less BRA Water Supply Releases [U2] and Passed BRA Return Flows [U4]. Other Outflows are releases from reservoirs that are not specifically dedicated to water supply. Examples include leakage, flows released during maintenance, hydropower, and inflows released for downstream senior water rights. These flows are not tracked downstream because the Accounting Plan only tracks water that has been released by BRA for downstream use. Not used for subsequent calculations.
U4	Passed BRA Return Flows	dsf	Return flows at Hempstead gage. Daily values imported from Table REACH19. Daily values are divided by 10 for use in sub-daily calculations.
R-A1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily data imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [U2]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U2] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-A4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U4] and applies delivery factor (row 24), then adds column [R-A1]. Daily and monthly values are sums of the sub-daily data.
R-A5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-A2] less diverted BRA Return Flows [R-A6] and local run-of-river flow [R-A8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-A6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-A2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-A2] and the lagged return flows in column [R-A4]. Calculation may be overridden by a non-negative entry in column [R-A7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-A6]). Calculated as the Reach Diversion in column [R-A2] less the return flow diversion in column [R-A6]. Calculation may be overridden by a non-negative entry in column [R-A9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.

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Column	Daily Label	Units	Description
R-A10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-A3] - [R-A5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-A4] - [R-A6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-A10] + [R-A11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B1	Canal A Diversions	dsf	Diversions at GCWA Canal A. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-B2	Diversion of Upstream Water Supply Release	dsf	Diversion [R-B1] less diverted BRA Return Flows [R-B3] and local run-of-river flow [R-B5]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-B3	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the Canal A demand (column [R-B1]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Canal A Diversion in column [R-B1] and the lagged return flows in column [R-A11]. Calculation may be overridden by a non-negative entry in column [R-B4]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B4	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B5	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-B3]). Calculated as the Canal A Diversion in column [R-B1] less the return flow diversion in column [R-B3]. Calculation may be overridden by a non-negative entry in column [R-B6]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B6	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B7	Remaining Water Supply Releases after Diversions	dsf	Remaining BRA Water Supply Release after diversion ([R-A10] - [R-B2]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B8	Remaining Return Flows after Diversions	dsf	Remaining BRA Return Flows after diversion ([R-A11] - [R-B3]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B9	BRA Total after Diversions	dsf	Total BRA water at end of reach after diversion ([R-B7] + [R-B8]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.

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Column	Daily Label	Units	Description
R-C1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily data imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-C2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-C3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [R-B7]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [R-B7] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-C4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [R-B8] and applies delivery factor (row 24), then adds column [R-C1]. Daily and monthly values are sums of the sub-daily data.
R-C5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-C2] less diverted BRA Return Flows [R-C6] and local run-of-river flow [R-C8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-C6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-C2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-C2] and the lagged return flows in column [R-C4]. Calculation may be overridden by a non-negative entry in column [R-C7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-C7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-C8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-C6]). Calculated as the Reach Diversion in column [R-C2] less the return flow diversion in column [R-C6]. Calculation may be overridden by a non-negative entry in column [R-C9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-C9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-C10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-C3] - [R-C5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-C11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-C4] - [R-C6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.

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Column	Daily Label	Units	Description
R-C12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-C10] + [R-C11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-D1	Other NRG Diversions	dsf	Diversions at NRG/Richmond Irrigation diversion point. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations. Does not include the Excess Flows diversions recorded in column [R-D2].
R-D2	Diversion under Excess Flows	dsf	NRG diversions using the Excess Flows Permit (COA 12-5166). Imported from Table REF5. Excess flow diversions must be made from local inflow.
R-D3	Diversion of Upstream Water Supply Release	dsf	NRG Diversion [R-D1] less diverted BRA Return Flows [R-D4] and local run-of-river flow [R-D6]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-D4	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-D1]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the NRG Diversion in column [R-D1] and the lagged return flows in column [R-C11]. Calculation may be overridden by a non-negative entry in column [R-D5]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-D5	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-D6	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-D4]). Calculated as the NRG Diversion in column [R-D1] less the return flow diversion in column [R-D4]. Calculation may be overridden by a non-negative entry in column [R-D7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-D7	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-D8	Remaining Water Supply Releases after Diversions	dsf	Remaining BRA Water Supply Release after diversion ([R-C10] - [R-D3]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-D9	Remaining Return Flows after Diversions	dsf	Remaining BRA Return Flows after diversion ([R-C11] - [R-D4]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-D10	BRA Total after Diversions	dsf	Total BRA water at end of reach after diversion ([R-D8] + [R-D9]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
G-A1	RMOT2 – Brazos River at Richmond	dsf	Historical daily average flows measured at gage. Imported from Table DATA1 of the reference file.
G-A2	Water Supply Adjustment	dsf	Adjustment factor applied to BRA releases for conditions when gage flows are less than calculated BRA flows. Imported from column [A12] of Table READJ20.

Column	Daily Label	Units	Description
G-A3	Adjusted Water Supply Releases at RMOT	dsf	BRA Water Supply Releases from upstream reach (column [R-D8]) multiplied by adjustment factor (column [G-A2]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows. Calculations performed on a daily basis.
G-A4	Return Flow Adjustment	dsf	Adjustment factor applied to BRA Return Flows for conditions when gage flows are less than calculated BRA flows. Imported from column [A13] of Table READJ20.
G-A5	Adjusted Return Flow at RMOT	dsf	BRA Return Flows from upstream reach (column [R-D9]) multiplied by adjustment factor (column [G-A4]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows.
G-A6	Comments	none	Column for recording details of any manual overrides added in this sheet or other explanatory text.

H.5.23 Table REACH21 – Richmond to Dow

Table REACH21 tracks BRA flows from just below the Richmond gage to Dow Chemical's diversion for Brazoria Reservoir, the lowest BRA delivery point. BRA flow reconciliation occurs at the Rosharon gage. REACH21 includes diversions for GCWA Briscoe, GCWA Juliff, Dow Harris and Dow Brazoria. Since these diversions can be large they are individually assigned water, separate from the aggregated diversions.

The following is a description of the columns in REACH21:

Column	Daily Label	Units	Description
L1	Index	none	Month number
L2	Month	none	Month name
L3	Flow at Gage > IF Criteria?	none	If TRUE then flow at the Rosharon gage is greater than the instream flow criteria. If FALSE, then criteria not met. Daily values imported from Table IF12 of Instream Flow File.
U1	Total Outflows	dsf	Total flow at Richmond gage. Daily values imported from Table REACH20. Not used for subsequent calculations.
U2	BRA Water Supply Releases	dsf	BRA Water Supply flows at Richmond gage. Daily values imported from Table REACH20. Daily values are divided by 10 for use in the sub-daily calculations.

Column	Daily Label	Units	Description
U3	Other Outflows	dsf	Total Outflows [U1] less BRA Water Supply Releases [U2] and Passed BRA Return Flows [U4]. Other Outflows are releases from reservoirs that are not specifically dedicated to water supply. Examples include leakage, flows released during maintenance, hydropower, and inflows released for downstream senior water rights. These flows are not tracked downstream because the Accounting Plan only tracks water that has been released by BRA for downstream use. Not used for subsequent calculations.
U4	Passed BRA Return Flows	dsf	Return flows at Richmond gage. Daily values imported from Table REACH20. Daily values are divided by 10 for use in sub-daily calculations.
R-A1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily data imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-A3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [U2]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U2] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-A4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [U4] and applies delivery factor (row 24), then adds column [R-A1]. Daily and monthly values are sums of the sub-daily data.
R-A5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-A2] less diverted BRA Return Flows [R-A6] and local run-of-river flow [R-A8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-A6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-A2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-A2] and the lagged return flows in column [R-A4]. Calculation may be overridden by a non-negative entry in column [R-A7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-A8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-A6]). Calculated as the Reach Diversion in column [R-A2] less the return flow diversion in column [R-A6]. Calculation may be overridden by a non-negative entry in column [R-A9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-A9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.

Column	Daily Label	Units	Description
R-A10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-A3] - [R-A5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-A4] - [R-A6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-A12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-A10] + [R-A11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B1	GCWA Briscoe Diversions	dsf	Diversions at GCWA's Briscoe diversion point. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-B2	Diversion of Upstream Water Supply Release	dsf	Diversion [R-B1] less diverted BRA Return Flows [R-B3] and local run-of-river flow [R-B5]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-B3	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-B1]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Briscoe diversion in column [R-B1] and the lagged return flows in column [R-A11]. Calculation may be overridden by a non-negative entry in column [R-B4]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B4	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B5	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-B3]). Calculated as the Briscoe diversion in column [R-B1] less the return flow diversion in column [R-B3]. Calculation may be overridden by a non-negative entry in column [R-B6]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-B6	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-B7	Remaining Water Supply Releases after Diversions	dsf	Remaining BRA Water Supply Release after diversion ([R-A10] - [R-B2]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B8	Remaining Return Flows after Diversions	dsf	Remaining BRA Return Flows after diversion ([R-A11] - [R-B3]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-B9	BRA Total after Diversions	dsf	Total BRA water at end of reach after diversion ([R-B7] + [R-B8]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-C1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily data imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.

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Column	Daily Label	Units	Description
R-C2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-C3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [R-B7]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [R-B7] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-C4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [R-B8] and applies delivery factor (row 24), then adds column [R-C1]. Daily and monthly values are sums of the sub-daily data.
R-C5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-C2] less diverted BRA Return Flows [R-C6] and local run-of-river flow [R-C8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-C6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-C2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-C2] and the lagged return flows in column [R-C4]. Calculation may be overridden by a non-negative entry in column [R-C7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-C7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-C8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-C6]). Calculated as the Reach Diversion in column [R-C2] less the return flow diversion in column [R-C6]. Calculation may be overridden by a non-negative entry in column [R-C9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-C9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-C10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-C3] - [R-C5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-C11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-C4] - [R-C6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-C12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-C10] + [R-C11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-D1	GCWA Juliff Diversions	dsf	Diversions at GCWA's Juliff diversion point. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.

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Column	Daily Label	Units	Description
R-D2	Diversion of Upstream Water Supply Release	dsf	Diversion [R-D1] less diverted BRA Return Flows [R-D3] and local run-of-river flow [R-D5]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-D3	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-D1]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Juliff Diversion in column [R-D1] and the lagged return flows in column [R-C11]. Calculation may be overridden by a non-negative entry in column [R-D4]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-D4	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-D5	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [L3] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-D3]). Calculated as the Juliff Diversion in column [R-D1] less the return flow diversion in column [R-D3]. Calculation may be overridden by a non-negative entry in column [R-D6]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-D6	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-D7	Remaining Water Supply Releases after Diversions	dsf	Remaining BRA Water Supply Release after diversion ([R-C10] - [R-D2]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-D8	Remaining Return Flows after Diversions	dsf	Remaining BRA Return Flows after diversion ([R-C11] - [R-D3]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-D9	BRA Total after Diversions	dsf	Total BRA water at end of reach after diversion ([R-D7] + [R-D8]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
G-A1	ROST2 – Brazos River nr Rosharon	dsf	Historical daily average flows measured at gage. Imported from Table DATA1 of the reference file.
G-A2	Water Supply Adjustment	dsf	Adjustment factor applied to BRA releases for conditions when gage flows are less than calculated BRA flows. Imported from column [A12] of Table READJ21.
G-A3	Adjusted Water Supply Releases at ROST	dsf	BRA Water Supply Releases from upstream reach (column [R-D7]) multiplied by adjustment factor (column [G-A2]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows. Calculations performed on a daily basis.
G-A4	Return Flow Adjustment	dsf	Adjustment factor applied to BRA Return Flows for conditions when gage flows are less than calculated BRA flows. Imported from column [A13] of Table READJ20.
G-A5	Adjusted Return Flow at ROST	dsf	BRA Return Flows from upstream reach (column [R-D8]) multiplied by adjustment factor (column [G-A4]). Adjustments are applied when the monthly total flow is less than the monthly BRA flows.

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Column	Daily Label	Units	Description
G-A6	Flows > downstream IF Criteria	none	If TRUE then flow at the Rosharon gage plus downstream diversions is greater than the instream flow criteria. Imported from Table IF12 of the Instream Flow File.
R-E1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily data imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-E2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-E3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [G-A3]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A3] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-E4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [G-A5] and applies delivery factor (row 24), then adds column [R-E1]. Daily and monthly values are sums of the sub-daily data.
R-E5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-E2] less diverted BRA Return Flows [R-E6] and local run-of-river flow [R-E8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-E6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [G-A6] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-E2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-E2] and the lagged return flows in column [R-E4]. Calculation may be overridden by a non-negative entry in column [R-E7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-E7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-E8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [G-A6] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-E6]). Calculated as the Reach Diversion in column [R-E2] less the return flow diversion in column [R-E6]. Calculation may be overridden by a non-negative entry in column [R-E9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-E9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-E10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-E3] - [R-E5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-E11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-E4] - [R-E6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.

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Column	Daily Label	Units	Description
R-E12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-E10] + [R-E11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-F1	Harris Diversions	dsf	Diversions at Dow's diversion for Harris Reservoir. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-F2	Diversion of Upstream Water Supply Release	dsf	Diversion [R-F1] less diverted BRA Return Flows [R-F3] and local run-of-river flow [R-F5]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-F3	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [G-A6] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-F1]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Harris Diversion in column [R-F1] and the lagged return flows in column [R-E11]. Calculation may be overridden by a non-negative entry in column [R-F4]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-F4	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-F5	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [G-A6] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-F3]). Calculated as the Harris Diversion in column [R-F1] less the return flow diversion in column [R-F3]. Calculation may be overridden by a non-negative entry in column [R-F6]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-F6	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-F7	Remaining Water Supply Releases after Diversions	dsf	Remaining BRA Water Supply Release after diversion ([R-E10] - [R-F2]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-F8	Remaining Return Flows after Diversions	dsf	Remaining BRA Return Flows after diversion ([R-E11] - [R-F3]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-F9	BRA Total after Diversions	dsf	Total BRA water at end of reach after diversion ([R-F7] + [R-F8]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-G1	Reach Return Flows	dsf	Return flows entering the reach. Already adjusted for percentage belonging to BRA, losses and travel times to reach. Daily data imported from Table BASIC12 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-G2	Reach Diversions	dsf	Aggregated diversions within the reach. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.

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Column	Daily Label	Units	Description
R-G3	Lagged BRA Water Supply Releases	dsf	Upstream BRA Water Supply releases (column [R-F7]) routed to downstream end of reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [R-F7] and applies delivery factor (row 24). Daily and monthly values are sums of the sub-daily data.
R-G4	Lagged BRA Return Flows	dsf	Upstream BRA Return Flows routed to downstream end of reach (losses and lag applied) plus BRA Return Flows within reach. Calculation done on a sub-daily basis. In the sub-daily calculations, looks back LAG (row 410) number of timesteps in column [R-F8] and applies delivery factor (row 24), then adds column [R-G1]. Daily and monthly values are sums of the sub-daily data.
R-G5	Diversion of Upstream Water Supply Release	dsf	Diversion [R-G2] less diverted BRA Return Flows [R-G6] and local run-of-river flow [R-G8]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.
R-G6	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [G-A6] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-G2]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Reach Diversion in column [R-G2] and the lagged return flows in column [R-G4]. Calculation may be overridden by a non-negative entry in column [R-G7]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-G7	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-G8	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [G-A6] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-G6]). Calculated as the Reach Diversion in column [R-G2] less the return flow diversion in column [R-G6]. Calculation may be overridden by a non-negative entry in column [R-G9]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-G9	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-G10	Remaining Water Supply Releases at End of Reach	dsf	Remaining BRA Water Supply Release after diversions, lag and losses ([R-G3] - [R-G5]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-G11	Remaining Return Flows at End of Reach	dsf	Remaining BRA Return Flows after diversions, lag and losses ([R-G4] - [R-G6]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-G12	BRA Total at End of Reach	dsf	Total BRA water at end of reach after diversions, lag and losses ([R-G10] + [R-G11]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-H1	Brazoria Diversions	dsf	Diversions at Dow's diversion for Brazoria Reservoir. Daily values imported from Table REF5 of the reference file. Daily values are divided by 10 for use in sub-daily calculations.
R-H2	Diversion of Upstream Water Supply Release	dsf	Diversion [R-H1] less diverted BRA Return Flows [R-H3] and local run-of-river flow [R-H5]. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily values.

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Column	Daily Label	Units	Description
R-H3	Return Flow Diversion under SysOps	dsf	If instream flows are met (column [G-A6] is TRUE) and return flows diversion flag is TRUE (row 25) then BRA Return Flows are used to meet the demand (column [R-H1]). Diversion of return flows occurs FIRST before use of natural flows or reservoir releases. Calculated as the minimum of the Brazoria Diversion in column [R-H1] and the lagged return flows in column [R-G11]. Calculation may be overridden by a non-negative entry in column [R-H4]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-H4	Return Flow Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-H5	Local Inflow Diverted Under SysOps	dsf	If instream flows are met (column [G-A6] is TRUE) and local flow diversion flag is TRUE (row 25) then local flows are used to meet the demand. Diversion of local flows occurs SECOND after use of return flows (column [R-H3]). Calculated as the Reach Diversion in column [R-H1] less the return flow diversion in column [R-H3]. Calculation may be overridden by a non-negative entry in column [R-H6]. These diversions must be made under SysOps Permit. Calculation performed on a daily basis. Daily values are divided by 10 for sub-daily use.
R-H6	Local Diversion Override	none	A non-negative entry overrides the previous column. Entered by BRA staff.
R-H7	Remaining Water Supply Releases after Diversions	dsf	Remaining BRA Water Supply Release after diversion ([R-G10] - [R-H2]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-H8	Remaining Return Flows after Diversions	dsf	Remaining BRA Return Flows after diversion ([R-G11] - [R-H3]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-H9	BRA Total after Diversions	dsf	Total BRA water at end of reach after diversion ([R-H7] + [R-H8]). Calculations performed on a sub-daily basis. Daily and monthly values summed from sub-daily values.
R-H10	Comments	none	Column for recording details of any manual overrides added in this sheet or other descriptive text.

H.6   Instream Flow File Tables

The Instream Flow File compares historical gage flows to the environmental flow criteria in the Water Management Plan. The file determines climatic conditions (Wet, Average and Dry), identifies base flow and pulse flow days, compares base flows to the interim base flow conditions, and identifies and counts qualifying high flow pulses (HFPs). The instream flow calculations output a series of daily flows that represent the minimum environmental flow criteria on any given day. Diversions under the System Operation Permit should not affect these minimum flows. Based on these criteria, the instream flow

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calculations create logical flags for each instream flow measurement point that show whether or not flows are above the criteria. These flags are passed on to the Reach File and the Reservoir File through the Reference File. Table SUM16 in the Summary File summarizes compliance with the environmental flow criteria.

H.6.1 Table INTRO3 Introduction

This table contains year information from the Reference File and a table of contents for the Instream Flow File.

H.6.2 Table CARRY1 Carry-Over Data

Table CARRY1 contains data that has been copied over from the previous year's Accounting Plan. These data set initial conditions for instream flow calculations. CARRY1 also has a table of data that can be copied to next year's Accounting Plan. The column numbers and labels reference the columns in the IF tables of the Instream Flow File. Data at the top is from the previous year's plan and is directly linked to the appropriate IF table. Data at the bottom is from this year's plan, imported from the December 31 row of each IF table. (The December 31 row varies depending on whether it is a leap year.)

H.6.3 Table COND1 Climatic Conditions Calculations

Table COND1 calculates the climatic condition based on the Palmer Hydrological Drought Indices (PHDI) at the beginning of each season. PHDI values are imported from the Reference File and are weighted in accordance with TCEQ rules to determine the current climatic condition for the Upper, Middle and Lower Brazos Basins. Daily flags identifying climatic condition are assigned to each day of the year for use in other calculations.

Since seasons do not follow a calendar year, the climatic condition for the months of January and February must be imported from the previous year's Accounting Plan.

Columns [PD1] through [PD10] contain the seasonal climatic condition calculations. Columns [C1] through [C8] distribute the seasonal calculations by month and by day of the year.

The following is a description of the columns in Table COND1:

Column	Units	Column Label	Description
PD1		Season	Winter (from previous year), Spring, Summer, or Winter (current year).
PD2	none	Upper Basin PHDI	Calculated seasonal PHDI for the Upper Basin. Product of PHDI regional data from Reference file table DATA2 and regional weighting factors from Table DATA2_IF Data, which is in the IFCalcs file.
PD3	none	Middle Basin PHDI	Calculated seasonal PHDI for the Middle Basin. Product of PHDI regional data from Reference file table DATA2 and regional weighting factors from Table DATA2_IF Data.
PD4	none	Lower Basin PHDI	Calculated seasonal PHDI for the Lower Basin. Product of PHDI regional data from Reference file table DATA2 and regional weighting factors from Table DATA2_IF Data.
PD5	none	Upper Basin Climatic Condition	Code for current Upper Basin climatic condition, based on data in Table DATA2_IF Data.
PD6	none	Middle Basin Climatic Condition	Code for current Middle Basin climatic condition, based on data in Table DATA2_IF Data.
PD7	none	Lower Basin Climatic Condition	Code for current Lower Basin climatic condition, based on data in Table DATA2_IF Data.
PD8	none	Upper Basin Climatic Condition	Current Upper Basin climatic condition (Wet, Average, or Dry), based on data in Table DATA2_IF Data.
PD9	none	Middle Basin Climatic Condition	Current Middle Basin climatic condition (Wet, Average, or Dry), based on data in Table DATA2_IF Data.
PD10	none	Lower Basin Climatic Condition	Current Lower Basin climatic condition (Wet, Average, or Dry), based on data in Table DATA2_IF Data.

The following table distributes the seasonal codes calculated above to the individual month or day for later reference.

Column	Units	Column Label	Description
C1	none	Month Number	Month sequence number
C2	none	Start of Month or Data	First day of month (monthly data) or date (daily data)

Column	Units	Column Label	Description
C3	none	Upper Basin Climatic Condition Code	Code for current climatic condition (1 = Dry, 2 = Average, 3 = Wet) from previous table
C4	none	Upper Basin Climatic Condition	Current climatic condition (Dry, Average, or Wet) from previous table
C5	none	Middle Basin Climatic Condition Code	Code for current climatic condition (1 = Dry, 2 = Average, 3 = Wet) from previous table
C6	none	Middle Basin Climatic Condition	Current climatic condition (Dry, Average, or Wet) from previous table
C7	none	Lower Basin Climatic Condition Code	Code for current climatic condition (1 = Dry, 2 = Average, 3 = Wet) from previous table
C8	none	Lower Basin Climatic Condition	Current climatic condition (Dry, Average, or Wet) from previous table

H.6.4 Charts FLOWC1 through FLOWC12

These charts show the historical flow for the year at the twelve measurement points. There are two charts of the same data, one with a decimal scale for the flow axis and one with a logarithmic scale for the flow axis. BRA staff may adjust the minima and maxima of these axes as appropriate. Flow data are imported from column [M7] of the IF files. For measurement points with only one type of pulse, red dots indicate days that are classified as HFPs (based on column [M20] of the IF files being TRUE) and green dots indicate base flows (based on column [M20] of the IF files being false). Measurement points with large and small pulses have an x for each large pulse day, based on column [M44] being TRUE. The seasonal subsistence flow criteria (column [M8]), base flow criteria (column [M9]), small or single pulse flow trigger level (column [M12]) and, if applicable, large pulse flow trigger level (column [M36]) are shown on the charts for reference.

H.6.5 Tables IF1 through IF12 – Instream Flow Calculations

Tables IF1 through IF12 take historical flow data at the twelve measurement points and classify each day as either a base flow day or a HFP day. The spreadsheet groups HFP days into pulse events and identifies events that meet either the duration or volume

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criteria. The spreadsheet counts the number of these events in a season. The IF tables generate flags which are TRUE when streamflows are greater than the instream flow criteria, as well as flags that identify when instream flow criteria have been fully met.

The calculations in the IF table occur on a daily basis. Monthly summaries are provided at the top of the table. These summaries are primarily for the convenience of BRA staff.

BRA staff will monitor these calculations closely. Because of the wide variation found in flow data, all automated methods used to separate flows into base flows and pulse flows occasionally produce undesirable results. For example, reservoir releases often do not mimic natural pulse events, and are sometimes cyclical (for example hydropower releases or releases made for weekend recreation). For gages that are dominated by releases from reservoirs, the criteria used to identify a HFP do not always result in a reasonable flow classification. To deal with these occasions, the Accounting Plan allows BRA staff to override the classification of a day as a HFP or a base flow in column [M21] for single pulses or small pulses or [M45] for large pulses (if applicable). It is also difficult to automate the separation of HFP events that do not have a full day below the pulse flow trigger level between the events. To simplify the calculations, columns [M22] and [M46] (if applicable) of the spreadsheet allows BRA staff to manually separate longer pulse flow events. The separation should occur when a new HFP occurs in response to a new rainfall event.

In some reaches, the measurement point for diversions under the System Operation Permit is located upstream of the actual diversion point. For these locations, the downstream diversions are added to the instream flow targets. The reaches where this applies are listed in Table 4.4 of the Water Management Plan.

The following describes the monthly columns in the IF tables for measurement points with one pulse (South Bend, Waco, Gatesville, Little River, Cameron, Bryan, Easterly, Hempstead, Richmond and Rosharon):

Column	Units	Monthly Column Label	Description
M1	none	Month	Month sequence number.
M2	none	Days/Month	Number of days during the current month.
M3	none	Season	Name of season (Winter, Spring, or Summer). Winter months for the season beginning the previous year are labeled "Winter (previous)". Uses the month in column [M1] to find the corresponding row in column [S3] of Table DATA2_IF DATA.
M4	none	Season Code 2	Winter = 1, Spring = 2, Summer = 3. Uses the month in column [M1] to find the corresponding row in column [S5] of Table DATA2_IF DATA.
M5	none	Climatic Condition Code – (Upper or Lower) Basin	Dry = 1, Average = 2, Wet = 3. Imported from column [C3] or [C7] of Table COND1, depending on whether the gage is in the Upper or Lower Basin, respectively.
M6	none	Climatic Condition – (Upper or Lower) Basin	Dry, Average or Wet. Imported from column [C4] or [C8] of Table COND1, depending on whether the gage is in the Upper or Lower Basin, respectively. Measurement points in the Middle Basin all have two pulses and are addressed below.
M7	cfs	Average Flow	Monthly average of the historical flow from the daily portion of column [M7]. Averages the flows where column [M1] of the daily data matches the current month.
M8	cfs	Subsistence Flow Criteria	Subsistence Flow Criteria. Imported from row 7 of [I2], [I3] or [I4] of the associated CRI table.
M9	cfs	Base Flow Criteria	Base flow criteria for the current season and climatic condition. Imported from columns [I2], [I3] or [I4] of the associated CRI table.
M10	cfs	Base Criteria Series (Average)	Monthly average of the daily Base Criteria Series in daily column [M10] of this table. Averages the flows where column [M1] of the daily data matches the current month.
M11	none	Number of Days Meeting Base Series Criteria	Number of days in each month where base flow criteria met. Counts the number of days with a value of TRUE that occurs during the given month.
M12	cfs	Pulse Flow Trigger Criteria	This month's pulse flow trigger level for the current season and climatic condition. Imported from columns [K2], [K3] or [K4] of the associated CRI table. If there are no pulse flow criteria for the season, set to #N/A.
M13	days	Pulse Flow Duration Criteria	This month's pulse flow duration criteria for the current season and climatic condition. Imported from columns [D2], [D3] or [D4] of the associated CRI table. If there are no pulse flow duration criteria for the season, set to #N/A.
M14	ac-ft	Pulse Flow Volume Criteria	This month's pulse flow volume criteria for the current season and climatic condition. Imported from columns [P2], [P3] or [P4] of the associated CRI table. If there are no pulse volume criteria for the season, set to #N/A.
M15	none	Number of Pulses Criteria	The number of pulses for the current season and climatic condition. Imported from columns [C2], [C3] or [C4] of the associated CRI table. If there are no pulse criteria for the season, set to #N/A.
M16	days	Number of Days Flow > Pulse Trigger	Number of days that flows are above the pulse flow trigger criteria in column [M12]. Counts the number of days with a value of TRUE that occurs during the given month.

Column	Units	Monthly Column Label	Description
M17	days	Number of Initiate Pulse Days	Number of times in the current month that a new pulse was initiated. Counts the number of days with a value of TRUE that occurs during the given month.
M18	days	Number of Stop Pulse Days	Number of times in the current month that a pulse event met either the volume or duration criteria. Counts the number of days with a value of TRUE that occurs during the given month.
M19	days	Number of Calculated Pulse Days	Counts the number of days that with a qualifying pulse event in the current month. Does not consider manual overrides. Counts the number of days with a value of TRUE that occurs during the given month.
M20	days	Total Number of Pulse Days	Counts the total number of pulse days in the current month after applying manual overrides from column [M21]. Counts the number of days with a value of TRUE that occurs during the given month.
M21	none	Count of B or P Override	Count of the number of times classification has been modified each month in daily column [M21].
M22	none	Count of Manual Counter Adjustment	Count of the number of times a manual adjustment has occurred during the current month in the daily column [M22].
M23	days	End of Month Pulse Counter	Shows how many pulses have occurred so far this year. Based on the end-of-month value in daily column [M23].
M24	days	Cumulative Days in Pulse	Count of the number of days that are identified as a pulse, based on the daily values in column [M24].
M25	days	Pulse Duration	Sum of the maximum number of days in a pulse event in the current month. Based on the end-of-event duration in daily column [M25] and having the end-of-pulse flag in daily column [M29] set to TRUE.
M26	dsf	Cumulative Volume	Total pulse volume in the current month in day-second-feet (dsf). Based on the end-of-pulse cumulative volume as defined in daily columns [M26] and [M29].
M27	acft	Cumulative Volume	Same as column [M26] but converted to acre-feet.
M28	acft	Event Volume	Total pulse volume in the current month based on the daily event volume in daily column [M28] and the end-of-event flag in daily column [M29].
M29	none	Count of End of Pulse	Number of times the end-of-pulse flag has been set in the current month.
M30	dsf	Average Flow	Average monthly gage flow. Repeat of column [M7].
M31	none	Count of Pulse Days	Count of the number of days the P flag is set in each month.
M32	none	Count of Qualifying Volume	Count of the number of times a pulse meets the volume criteria in the current month.
M33	none	Count of Meets Duration	Count of the number of times a pulse meets the duration criteria in the current month, denoted by the "Q" flag.
M34	none	Count of Qualifying Pulses	Count of the number of qualifying pulse events (meets either duration or volume criteria)
M35	none	Number of Pulses Current Season	Number of seasonal pulses as of the current month.
M36	none	Number of Pulses Criteria	Number of required pulses. Repeat of column [M15].

Column	Units	Monthly Column Label	Description
M37	days	Number of Days Base Criteria Met	Number of days the base flow criteria series is met or exceeded in the current month.
M38	days	Number of Days Pulse Target Met	Number of days that the number of pulse flow events has been met or exceeded in the current month.
M39	days	Number of Days IF Criteria Met	Number of days both the base flow and number of pulse flow events have been met in the current month.
M40	cfs	Average Base and Pulse Criteria Series	Monthly average of the daily base and pulse flow criteria series in daily column [M40].
M41	cfs	Average Base Only Criteria Series	Monthly average of the base flow criteria only, based on the daily flows in column [M41].
M42	cfs	20% of Pulse Trigger Criteria	20% of the pulse flow trigger level, based on current season and climatic conditions.
M43	cfs	Average Upstream Reach Diversion Rate	Average monthly diversion rate for BRA contract diversions in the reach upstream of the current measurement point.
M44	cfs	Average Downstream Reach Diversion Rates	Average monthly diversion rate for BRA contract diversions in the reach downstream of the current measurement point. Applicable only if the current measurement point is applied to downstream diversions.
M45	none	Flow > Criteria Series in Month	TRUE if the flow is greater than the instream flow criteria series at any time during the current month.
M46	none	Flow > Criteria Series + Downstream Reach Diversions in Month	TRUE if the flow is greater than the instream flow criteria series, plus the applicable downstream downstream diversions, during the current month.
M47	none	Flow > Base & Pulse Criteria Series in Month	TRUE if the flow is greater than the base and pulse criteria series at any time during the month.
M48	None	Comments	Field to record rationale for overrides or other explanatory text.

The South Bend gage applies to diversions in Possum Kingdom. Thus Table IF1 includes the following:

Column	Units	Monthly Column Label	Description
M48	cfs	Average PK SysOps Diversion Rates	Average monthly diversion rate for lakeside diversions and downstream water supply releases made from Possum Kingdom under the System Operation Permit.
M49	none	Flow > Base & Pulse Criteria + PK Diversions in Month	TRUE if the flow is greater than the base and pulse criteria, plus the PK diversions, at any time during the current month.

The following describes the daily columns at the measurement points with one pulse level:

Column	Units	Daily Column Label	Description
M1	none	Month	Month sequence number.
M2	none	Date	Current date.

Column	Units	Daily Column Label	Description
M3	none	Season	Name of season (Winter, Spring, or Summer). Winter months for the season beginning the previous year are labeled "Winter (previous)". Uses the month in column [M1] to find the corresponding row in column [S3] of Table DATA2_IF DATA.
M4	none	Season Code 2	Winter = 1, Spring = 2, Summer = 3. Uses the month in column [M1] to find the corresponding row in column [S5] of Table DATA2_IF DATA.
M5	none	Climatic Condition Code – (Upper or Lower) Basin	Dry = 1, Average = 2, Wet = 3. Imported from column [C3] or [C7] of daily Table COND1, depending on whether the gage is in the Upper or Lower Basin, respectively.
M6	none	Climatic Condition – (Upper or Lower) Basin	Dry, Average or Wet. Imported from column [C4] or [C8] of daily Table COND1, depending on whether the gage is in the Upper or Lower Basin, respectively. Measurement points in the Middle Basin all have two pulses and are addressed below.
M7	cfs	[Gage Name]	Daily average gage flows for the current year. Read from Table DATA1 in the Reference spreadsheet.
M8	cfs	Subsistence Flow Criteria	Subsistence Flow Criteria. Imported from row 7 of [I2], [I3] or [I4] of the associated CRI table.
M9	cfs	Base Flow Criteria	Base flow criteria for the current season and climatic condition. Imported from columns [I2], [I3] or [I4] of the associated CRI table.
M10	cfs	Base Criteria Series	Series of flows that define the minimum base flow environmental flow criteria, which vary by season, climatic condition and in some cases measured flow. If in Dry conditions and flows are below the Subsistence criteria, then the Subsistence criteria apply. If in Dry conditions and flows are between Subsistence and the Dry Base criteria, then the criteria are the Subsistence criteria plus 50% of the difference between the current measured streamflow and the Subsistence criteria. If in Dry conditions and flows are above the Dry criteria, then the Dry criteria apply. If in Average or Wet conditions, then the appropriate Average or Wet criteria apply.
M11	none	Meets Base Criteria?	TRUE if the flow in daily column [M7] is greater than the Base Criteria Series in column [M10]. FALSE otherwise.
M12	cfs	Pulse Flow Trigger Criteria	Current pulse flow trigger level for the current season and climatic condition. Imported from columns [K2], [K3] or [K4] of the associated CRI table. If there are no pulse flow criteria for the season, set to #N/A.
M13	days	Pulse Flow Duration Criteria	Current pulse flow duration criteria for the current season and climatic condition. Imported from columns [D2], [D3] or [D4] of the associated CRI table. If there are no pulse flow duration criteria for the season, set to #N/A.
M14	ac-ft	Pulse Flow Volume Criteria	Current pulse flow volume criteria for the current season and climatic condition. Imported from columns [P2], [P3] or [P4] of the associated CRI table. If there are no pulse volume criteria for the season, set to #N/A.
M15	none	Number of Pulses Criteria	The number of pulses for the current season and climatic condition. Imported from columns [C2], [C3] or [C4] of the associated CRI table. If there are no pulse criteria for the season, set to #N/A.

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Column	Units	Daily Column Label	Description
M16	none	Flow > Pulse Trigger?	TRUE if flows in column [M7] are above the Pulse Flow Trigger criteria in column [M12]. FALSE otherwise. If there are no pulse criteria for the season (column [M12] is #N/A), set to FALSE.
M17	none	Initiate Pulse?	TRUE if today the flow is above the pulse flow trigger level (today's value for column [M16] is TRUE) and yesterday the flow was below the pulse flow trigger level (yesterday's value for column [M16] is FALSE). Otherwise FALSE.
M18	none	Stop Pulse?	TRUE if a pulse has qualified (met either volume or duration criteria) on the previous day. Checks if the cumulative days in pulse (column [M24]) are greater than or equal to the duration criteria (column [M13]) or the cumulative volume (column [M27]) is greater than or equal to the volume criteria (column [M14]). If there are no pulse criteria for the current season (column [M12] is #N/A) then set to FALSE. Otherwise FALSE.
M19	none	Is Pulse?	TRUE for every day that the calculations define as a qualifying pulse. TRUE if today is the first day above the pulse flow trigger level (column [M17] is TRUE), or yesterday this column was TRUE and the pulse flow criteria have not been met previously (column [M18] is FALSE). Otherwise FALSE.
M20	none	Is Pulse Day	TRUE if the calculations have identified today as a pulse day (column [M19] is TRUE) or the manual override in the next column has been set to a pulse (column [M21] is equal to "P") Set to FALSE if the manual override in the next column is set to base (column [M21] is equal to "B"), or if there are no pulse criteria for the season (column [M12] is #N/A). Otherwise FALSE.
M21	none	B or P Override	Manual override of Base or Pulse calculation. Entering a "B" forces the day to be a base flow day. Entering a "P" forces today to be a pulse flow day. If initiating a new pulse, the Manual Counter Adjustment in column [M22] may need to be set to 1 to increment the Pulse Counter in column [M23].
M22	none	Manual Counter Adjustment	A numerical entry in this column is added to the Pulse Counter in column [M23]. Used with B or P override in column [M21], or when a new distinct pulse is initiated the day after a preceding pulse qualifies.
M23	days	Pulse Counter	Assigns a number to each pulse, beginning with 1 for the first pulse of the year. TRUE if today is the first day of a pulse ([M19] is TRUE today and FALSE yesterday). Can be manually incremented or decremented in column [M22].
M24	days	Cumulative Days in Pulse	Increments by 1 for each day in a pulse. Set to 1 if [M22] is greater than zero. Set to zero during base flow days.
M25	days	Pulse Duration	Finds the maximum number of days in the current pulse event. Uses an Excel array formula that multiplies logical values (which are actually 0 or 1) that are TRUE for the current event by the Cumulative Days in the pulse in column [M24] and then finds the maximum.
M26	dsf	Cumulative Volume	Cumulative volume to date in current pulse event in dsf. Adds the flow in column [M7] to yesterday's volume during a pulse event.
M27	acft	Cumulative Volume	Same as column [M26] but converted to acre-feet.

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Column	Units	Daily Column Label	Description
M28	acft	Event Volume	Finds the maximum volume in the pulse event. Uses an Excel array formula that multiplies logical values (which are actually 0 or 1) that are TRUE for the current event by the Cumulative Volume in the pulse (column [M27]) and then finds the maximum.
M29	none	End of Pulse?	Last day of a qualifying pulse event. TRUE if cumulative number of days (column [M24]) is equal to the duration of the event (column [M25]). Takes into account both calculated and manual override to define the last day of a qualifying pulse event.
M30	cfs	Gage Name	Repeat of historical flows from column [M7].
M31	none	Base Flow or Pulse	If today is a pulse day (column [M20] is TRUE), set to "P". If today is a base flow or subsistence day, set to "B" (column [M20] is FALSE).
M32	none	Qualifying Volume	Set to "Q" if the volume to date in a pulse is greater than or equal to the volume criteria (column [M20] is TRUE and column [M27] is greater than or equal to column [M14]). Otherwise set to "P" if today is a pulse day (only column [M20] is TRUE) or "B" if today is a base flow day (column [M20] is FALSE).
M33	none	Meets Duration?	Set to "Q" if the number of days to date in a pulse is greater than or equal to the duration criteria (column [M20] is TRUE and column [M24] is greater than or equal to column [M13]). Otherwise set to "P" if today is a pulse day (only column [M20] is TRUE) or "B" if today is a base flow day (column [M20] is FALSE).
M34	none	Qualifying Pulse?	TRUE if either the duration or volume criteria have been met for a pulse event (columns [M32] or [M33] is equal to "Q").
M35	none	Number of Pulses Current Season	Increments by 1 for each qualifying pulse in each season. On the first day of a season (column [M4] today is not equal to yesterday), sets the initial condition to column [M22]. If there is no entry in [M22] this column will be zero. Otherwise, the initial condition is the number of pulses so far in the season from the previous day. Incremented by 1 if today is the first day of a qualifying pulse (column [M34] is TRUE today and FALSE yesterday). Otherwise value is not incremented.
M36	none	Number of Pulses Criteria	Number of required pulses. Identical to column [M15], except that if there are no pulse criteria for the season it is set to 0.
M37	none	Base Criteria Met?	TRUE if base or subsistence flow criteria met. Repeat of column [M11].
M38	none	Pulse Target Met?	TRUE if number of pulses per season has been met (column [M35] is greater than or equal to [M36]. Also TRUE if there are no pulse criteria for the season. Otherwise FALSE.
M39	none	IF Criteria Met?	TRUE if base flow criteria are met for the day and there has been the required number of pulse flows in the season (both [M37] and [M38] are TRUE). Otherwise FALSE.

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Column	Units	Daily Column Label	Description
M40	cfs	Base and Pulse Criteria Series	Defines an average daily flow series based on the currently applicable base and pulse criteria. Uses a user-defined function *setcriteria* to select the applicable flow level. This sets the value based on the following: • If today is a base flow day (column [M20] is FALSE), then the value is set to the current base flow criteria in column [M10]. • If today is a pulse day (column [M20] is TRUE) and the pulse flow frequency has not been met for the season (column [M38] is FALSE), then the value is set to the current pulse flow trigger level (column [M12]). • If today is a pulse day (column [M20] is TRUE), and either today is the first day that the seasonal pulse frequency has been met, or today is the beginning of a new season, then the value is set to the current pulse flow trigger level (column [M12]). • If today is a pulse day (column [M20] is TRUE) and either the seasonal pulse frequency has not been met or today is the first day of a new season, then the value is set to the current pulse flow trigger level (column [M12]. • If today is a pulse day (column [M20] is TRUE) and either the seasonal criteria have been met on the previous day or today is the first day of a new season (this can occur when there are no seasonal pulse criteria), the value is set to the base flow criteria. • Other combinations are unsupported and return an error message.
M41	cfs	Base Only Criteria Series	Repeat of column [M10].
M42	cfs	20% of Pulse Trigger Criteria	20% of the pulse flow trigger level, based on current season and climatic conditions.
M43	cfs	Upstream Reach Diversion Rates	Total daily diversion rates for BRA contract diversions in the reach upstream of the current measurement point. Set to zero in Table IF1 since there is no WMP reach above Possum Kingdom.
M44	cfs	Downstream Reach Diversion Rates	Total daily diversion rates for BRA contract diversions in the reach downstream of the current measurement point. Applicable only if the current measurement point is applied to downstream diversions as defined in the WMP. If not applicable set to zero.
M45	cfs	Flow > Criteria Series	TRUE if the flow (column [M30]) is greater than the applicable instream flow criteria series. The applicable instream flow series depends on the diversion rate. If the diversion rate is greater than 20% of the pulse criteria (column [M42]) then the base only criteria in column [M41] apply. Otherwise, the base and pulse criteria in column [M40] apply. Used for run-of-the-river diversions in the applicable reach above the measurement point.

Column	Units	Daily Column Label	Description
M46	cfs	Flow > Criteria Series + Downstream Reach Diversions	TRUE if the flow (column [M30]) is greater than the applicable instream flow criteria series, plus the applicable downstream downstream diversions in column [M44]. The applicable instream flow series depends on the diversion rate. If the diversion rate is greater than 20% of the pulse criteria (column [M42]) then the base only criteria in column [M41] apply. Otherwise, the base and pulse criteria in column [M40] apply. Used for run-of-the-river diversions in the applicable reach below the measurement point (if any).
M47	cfs	Flow > Base & Pulse Criteria Series	TRUE if the flow (column [M30]) is greater than the base and pulse criteria series in column [M40]. Used for reservoir diversion and storage under the System Operation Permit.
M48	none	Comments	Place to record comments about base or pulse overrides, or any other observations about this year's calculations.

The South Bend gage applies to diversions in Possum Kingdom. Thus Table IF1 includes the following:

Column	Units	Daily Column Label	Description
M48	cfs	PK SysOps Diversions	Daily lakeside System Operation Permit diversions from Possum Kingdom. Imported from columns [I3] and [I5} of Table RES1 in the reservoir file.
M49	none	Flow > Base & Pulse Criteria + PK Diversions	TRUE if todays flow in column [M30] is greater than the base and pulse criteria in column [M40] plus the PK diversions in column [M48].

In the event that a small or large pulse ends on the last day of a season and a new pulse begins on the first day of the new season the logic counting pulses in that season may not account for this pulse. BRA staff would add a manual override with the counter set to "1".

The Palo Pinto and Glen Rose gages have small and large pulses. The monthly table for these two gages includes the following columns:

Column	Units	Monthly Column Label	Description
M1	none	Month	Month sequence number.
M2	none	Days/Month	Number of days during the current month.
M3	none	Season	Name of season (Winter, Spring, or Summer). Winter months for the season beginning the previous year are labeled "Winter (previous)". Uses the month in column [M1] to find the corresponding row in column [S3] of Table DATA2_IF DATA.

Column	Units	Monthly Column Label	Description
M4	none	Season Code 2	Winter = 1, Spring = 2, Summer = 3. Uses the month in column [M1] to find the corresponding row in column [S5] of Table DATA2_IF DATA.
M5	none	Climatic Condition Code - Middle Basin	Dry = 1, Average = 2, Wet = 3. Imported from column [C5] of daily Table COND1. Both Palo Pinto and Glen Rose are in the Middle Basin.
M6	none	Climatic Condition - Middle Basin	Dry, Average or Wet. Imported from column [C6] of daily Table COND1.
M7	cfs	Average Flow	Monthly average of the historical flow from the daily portion of column [M7]. Averages the flows where column [M1] of the daily data matches the current month.
M8	cfs	Subsistence Flow Criteria	Subsistence Flow Criteria. Imported from row 7 of [I2], [I3] or [I4] of the associated CRI table.
M9	cfs	Base Flow Criteria	Base flow criteria for the current season and climatic condition. Imported from columns [I2], [I3] or [I4] of the associated CRI table.
M10	cfs	Base Criteria Series (Average)	Monthly average of the daily Base Criteria Series in daily column [M8] of this table. Averages the flows where column [M1] of the daily data matches the current month.
M11	none	Number of Days Meeting Base Series Criteria	Number of days in each month where base flow criteria met. Counts the number of days with a value of TRUE that also has the same month number found in column [M1].
M12	cfs	Small Pulse Flow Trigger Criteria	Current small pulse flow trigger level for the current season and climatic condition. Imported from columns [K2], [K3] or [K4] of the associated CRI table. If there are no pulse flow criteria for the season, set to #N/A.
M13	days	Small Pulse Flow Duration Criteria	Current small pulse flow duration criteria for the current season and climatic condition. Imported from columns [D2], [D3] or [D4] of the associated CRI table. If there are no pulse flow duration criteria for the season, set to #N/A.
M14	ac-ft	Small Pulse Flow Volume Criteria	Current small pulse flow volume criteria for the current season and climatic condition. Imported from columns [P2], [P3] or [P4] of the associated CRI table. If there are no pulse volume criteria for the season, set to #N/A.
M15	none	Number of Small Pulses Criteria	The number of small pulses for the current season and climatic condition. Imported from columns [C2], [C3] or [C4] of the associated CRI table. If there are no pulse criteria for the season, set to #N/A.
M16	none	Number of Days Flow > Pulse Trigger	Number of days that flows are above the small pulse flow trigger criteria in column [M12]. Counts the number of days with a value of TRUE that also has the same month number found in column [M1].
M17	none	Number of Initiate Pulse Days	Number of times in the current month that a new small pulse was initiated. Counts the number of days with a value of TRUE that also has the same month number found in column [M1].
M18	none	Number of Stop Pulse Days	Number of times in the current month that a small pulse event met either the volume or duration criteria. Counts the number of days with a value of TRUE that also has the same month number found in column [M1].

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Column	Units	Monthly Column Label	Description
M19	none	Number of Calculated Small Pulse Days	Counts the number of days that with a qualifying small pulse event in the current month. Does not consider manual overrides. Counts the number of days with a value of TRUE that also has the same month number found in column [M1].
M20	none	Total Number of Small Pulse Days	Counts the total number of pulse days in the current month after applying manual overrides from column [M21]. Counts the number of days with a value of TRUE that also has the same month number found in column [M1].
M21	none	Count of B or P Override	Count of the number of times small pulse classification has been modified each month in daily column [M21].
M22	none	Count of Manual Counter Adjustment	Count of the number of times a manual adjustment to small pulses has occurred during the current month in the daily column [M22].
M23	days	End of Month Small Pulse Counter	Shows how many small pulses have occurred so far this year. Based on the end-of-month value in daily column [M23]
M24	days	Cumulative Days in Small Pulse	Count of the number of days that are identified as a pulse, based on the daily values in column [M24].
M25	days	Small Pulse Duration	Sum of the maximum number of days in a small pulse event in the current month. Based on the end-of-event duration in daily column [M25] and having the end-of-pulse flag in daily column [M29] set to TRUE.
M26	dsf	Cumulative Small Pulse Volume	Total pulse volume in the current month in day-second-feet (dsf). Based on the end-of-pulse cumulative volume as defined in daily columns [M26] and [M29].
M27	acft	Cumulative Small Pulse Volume	Same as column [M26] but converted to acre-feet.
M28	acft	Small Pulse Event Volume	Total small pulse volume in the current month based on the daily event volume in daily column [M28] and the end-of-event flag in daily column [M29].
M29	none	End of Small Pulse?	Number of times the end-of-pulse flag has been set in the current month.
M30	cfs	Average Flow	Average monthly gage flow. Repeat of column [M7].
M31	none	Count of Pulse Days	Count of the number of days the P flag is set in each month.
M32	none	Count of Qualifying Volume	Count of the number of times a pulse meets the volume criteria in the current month.
M33	none	Count of Meets Duration	Count of the number of times a pulse meets the duration criteria in the current month.
M34	none	Count of Qualifying Pulses	Count of the number of qualifying pulse events (meets either duration or volume criteria)
M35	none	Number of Small Pulses Current Season	Number of seasonal small pulses as of the current month.
M36	cfs	Large Pulse Flow Trigger Criteria	This month's large pulse flow trigger level for the current season and climatic condition. Imported from columns [K6], [K7] or [K8] of the associated CRI table. If there are no pulse criteria for the season, set to #N/A.

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Column	Units	Monthly Column Label	Description
M37	days	Large Pulse Flow Duration Criteria	This month's large pulse flow duration criteria for the current season and climatic condition. Imported from columns [D6], [D7] or [D8] of the associated CRI table. If there are no pulse criteria for the season, set to #N/A.
M38	ac-ft	Large Pulse Flow Volume Criteria	This month's large pulse flow volume criteria for the current season and climatic condition. Imported from columns [P6], [P7] or [P8] of the associated CRI table. If there are no pulse criteria for the season, set to #N/A.
M39	none	Number of Large Pulses Criteria	The number of large pulses for the current season and climatic condition. Imported from columns [C6], [C7] or [C8] of the associated CRI table. If there are no pulse criteria for the season, set to #N/A.
M40	none	Number of Days Flow > Pulse Trigger	Number of days that flows are above the large pulse flow trigger criteria in column [M36]. Counts the number of days with a value of TRUE that also has the same month number found in column [M1].
M41	none	Number of Initiate Pulse Days	Number of times in the current month that a new large pulse was initiated. Counts the number of days with a value of TRUE that also has the same month number found in column [M1].
M42	none	Number of Stop Pulse Days	Number of times in the current month that a pulse event met either the volume or duration criteria. Counts the number of days with a value of TRUE that also has the same month number found in column [M1]
M43	none	Number of Calculated Large Pulse Days	Counts the number of days with a qualifying large pulse event in the current month. Does not consider manual overrides. Counts the number of days with a value of TRUE that also has the same month number found in column [M1].
M44	none	Total Number of Large Pulse Days	Counts the total number of large pulse days in the current month after applying manual overrides from column [M45]. Counts the number of days with a value of TRUE that also has the same month number found in column [M1].
M45	none	Count of B or P Override	Count of the number of times classification has been modified each month in daily column [M45].
M46	none	Count of Manual Counter Adjustment	Count of the number of times a manual adjustment has occurred during the current month in the daily column [M22].
M47	days	Previous Small Pulse Days	Monthly sum of the number of small pulse days that has occurred immediately before initiation of the current large pulse.
M48	dsf	Previous Small Pulse Volume	Monthly sum of the small pulse volume that has occurred immediately before initiation of the current large pulse.
M49	none	Count of Use Small Pulse Buildup	Counts the number of times in a month that the values in columns [M47] and [M48] have been added to a large pulse.
M50	days	End of Month Large Pulse Counter	Shows how many large pulses have occurred so far in the current year. Based on the end-of-month value in daily column [M50].
M51	days	Cumulative Days in Large Pulse	Count of the number of days that are identified as a pulse, based on the daily values in column [M51].

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Column	Units	Monthly Column Label	Description
M52	days	Large Pulse Duration	Sum of the maximum number of days in a large pulse event in the current month. Based on the end-of-event duration in daily column [M52] and having the end-of-pulse flag in daily column [M56] set to TRUE.
M53	dsf	Cumulative Large Pulse Volume	Total large pulse volume in the current month in day-second-feet (dsf). Based on the end-of-pulse cumulative volume as defined in daily columns [M53] and [M56].
M54	acft	Cumulative Large Pulse Volume	Same as column [M53] but converted to acre-feet.
M55	acft	Large Pulse Event Volume	Total large pulse volume in the current month based on the daily event volume in daily column [M55] and the end-of-event flag in daily column [M56].
M56	none	End of Large Pulse?	Number of times the end-of-pulse flag has been set in the current month.
M57	cfs	Average Flow	Average monthly gage flow. Repeat of column [M7].
M58	none	Count of Pulse Days	Count of the number of days the P flag is set in each month for a large pulse.
M59	none	Count of Qualifying Volume	Count of the number of times a large pulse meets the volume criteria in the current month.
M60	none	Count of Meets Duration	Count of the number of times a large pulse meets the duration criteria in the current month
M61	none	Count of Qualifying Pulses	Count of the number of qualifying large pulse events (meets either duration or volume criteria)
M62	none	Number of Large Pulses Current Season	Number of seasonal large pulses as of the current month.
M63	none	Number of Small Pulses Current Season	Repeat of column [M35]
M64	none	Count of Pulse Days	Count of the number of days that were either a large or small pulse in the current month.
M65	none	Number of Small Pulses Criteria	Number of required small pulses. Identical to column [M15], except that if there are no pulse criteria for the season it is set to 0.
M66	none	Number of Large Pulses Criteria	Number of required large pulses. Identical to column [M39], except that if there are no pulse criteria for the season it is set to 0.
M67	none	Number of Days Base Criteria Met	Number of days the base flow criteria series is exceeded in the current month.
M68	none	Number of Days Small Pulse Target Met	Number of days that the number of small pulse flow events has been met/exceeded in the current month.
M69	none	Number of Days Large Pulse Target Met	Number of days that the number of large pulse flow events has been met/exceeded in the current month.
M70	none	Number of Days IF Criteria Met	Number of days both the base flow and number of large and small pulse flow events have both been met in the current month.
M71	cfs	Average Based and Pulse Criteria Series	Monthly average of the daily base and pulse flow criteria series in daily column [M71].
M72	cfs	Average Base Only Criteria Series	Monthly average of the base flow criteria only, based on the daily flows in column [M72].

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Column	Units	Monthly Column Label	Description
M73	cfs	20% of Pulse Trigger Criteria	Monthly average of 20% of the daily pulse flow trigger level, based on current season, climatic conditions, and achievement of large pulse frequency.
M74	cfs	Average Upstream Reach Diversion Rate	Average monthly diversion rate for BRA contract diversions in the reach upstream of the current measurement point.
M75	cfs	Average Downstream Reach Diversion Rates	Average monthly diversion rate for BRA contract diversions in the reach downstream of the current measurement point. Applicable only if the current measurement point is applied to downstream diversions.
M76	cfs	Flow > Criteria Series in Month	TRUE if the flow is greater than the instream flow criteria series at any time during the current month.
M77	cfs	Flow > Criteria Series + Downstream Reach Diversions in Month	TRUE if the flow is greater than the instream flow criteria series, plus the applicable downstream downstream diversions, during the current month.
M78	cfs	Flow > Base & Pulse Criteria Series in Month	TRUE if the flow is greater than the base and pulse criteria series at any time during the month.
M79	None	Comments	Field to record rationale for overrides or other explanatory text.

The Glen Rose Gage measurement point includes two additional columns to account for downstream diversions at Lake Whitney:

Column	Units	Monthly Column Label	Description
M79	cfs	Average Lake Whitney SysOp Diversion Rates	Average monthly diversion rate for System Operation Permit lakeside diversions made from Lake Whitney.
M80	none	Flow > Base & Pulse Criteria + Reservoir Diversions in Month	TRUE if the flow is greater than the base and pulse criteria, plus the Lake Whitney diversions, at any time during the current month.

The daily columns for Palo Pinto and Glen Rose are:

Column	Units	Daily Column Label	Description
M1	none	Month	Month sequence number.
M2	none	Date	Current date.
M3	none	Season	Name of season (Winter, Spring, or Summer). Winter months for the season beginning the previous year are labeled "Winter (previous)". Uses the month in column [M1] to find the corresponding row in column [S3] of Table DATA2_IF DATA.
M4	none	Season Code 2	Winter = 1, Spring = 2, Summer = 3. Uses the month in column [M1] to find the corresponding row in column [S5] of Table DATA2_IF DATA.
M5	none	Climatic Condition Code –Middle Basin	Dry = 1, Average = 2, Wet = 3. Imported from column [C5] of daily Table COND1. The Palo Pinto and Glen Rose measurement points are both in the Middle Basin.
M6	none	Climatic Condition - Middle Basin	Dry, Average or Wet. Imported from column [C6] of daily Table COND1.

Column	Units	Daily Column Label	Description
M7	cfs	[Gage name]	Daily average gage flows for the current year. Read from Table DATA1 in the Reference spreadsheet.
M8	cfs	Subsistence Flow Criteria	Subsistence Flow Criteria. Imported from row 7 of [I2], [I3] or [I4] of the associated CRI table.
M9	cfs	Base Flow Criteria	Base flow criteria for the current season and climatic condition. Imported from columns [I2], [I3] or [I4] of the associated CRI table.
M10	cfs	Base Criteria Series	Series of flows that define the minimum base flow environmental flow criteria, which vary by season, climatic condition and in some cases measured flow. If in Dry conditions and flows are below the Subsistence criteria, then the Subsistence criteria apply. If in Dry conditions and flows are between Subsistence and the Dry Base criteria, then the criteria are the Subsistence criteria plus 50% of the difference between the current measured streamflow and the Subsistence criteria. If in Dry conditions and flows are above the Dry criteria, then the Dry criteria apply. If in Average or Wet conditions, then the appropriate Average or Wet criteria apply.
M11	none	Meets Base Criteria?	TRUE if the flow in daily column [M7] is greater than the Base Criteria Series in column [M10]. FALSE otherwise.
M12	cfs	Small Pulse Flow Trigger Criteria	Current small pulse flow trigger level for the current season and climatic condition. Imported from columns [K2], [K3] or [K4] of the associated CRI table. If there are no pulse criteria for the season, set to #N/A.
M13	days	Small Pulse Flow Duration Criteria	Current small pulse flow duration criteria for the current season and climatic condition. Imported from columns [D2], [D3] or [D4] of the associated CRI table. If there are no pulse flow duration criteria for the season, set to #N/A.
M14	ac-ft	Small Pulse Flow Volume Criteria	Current small pulse flow volume criteria for the current season and climatic condition. Imported from columns [P2], [P3] or [P4] of the associated CRI table. If there are no pulse volume criteria for the season, set to #N/A.
M15	none	Number of Small Pulses Criteria	The number of small pulses for the current season and climatic condition. Imported from columns [C2], [C3] or [C4] of the associated CRI table. If there are no pulse criteria for the season, set to #N/A.
M16	none	Flow > Small Pulse Trigger?	TRUE if flows in column [M7] are above the Small Pulse Flow Trigger criteria in column [M12]. FALSE otherwise. If there are no pulse criteria for the season (column [M12] is #N/A), set to FALSE.
M17	none	Initiate Small Pulse?	TRUE if today the flow is above the small pulse flow trigger level (today's value for column [M16] is TRUE) and yesterday the flow was below the small pulse flow trigger level (yesterday's value for column [M16] is FALSE). Otherwise FALSE.

Column	Units	Daily Column Label	Description
M18	none	Stop Small Pulse?	TRUE if a small pulse has qualified (met either volume or duration criteria) on the previous day. Checks if the cumulative days in pulse (column [M24]) are greater than or equal to the duration criteria (column [M13]) or the cumulative volume (column [M27]) is greater than or equal to the volume criteria (column [M14]). If there are no small pulse criteria for the current season (column [M12] is #N/A) then set to FALSE. Otherwise FALSE.
M19	none	Is Small Pulse?	TRUE for every day that the calculations define as a qualifying small pulse. TRUE if today is the first day above the small pulse flow trigger level (column [M17} is TRUE), or yesterday's this column was TRUE and the small pulse flow criteria have not been met previously (column [M18] is FALSE). Otherwise FALSE.
M20	none	Is Small Pulse Day?	TRUE if the calculations have identified today as a small pulse day (column [M19] is TRUE) or the manual override in the next column has been set to a pulse (column [M21] is equal to "P") Set to FALSE if the manual override in the next column is set to base (column [M21] is equal to "B"), or if there are no small pulse criteria for the season (column [M12] is #N/A). Otherwise FALSE.
M21	none	B or P Override	Manual override of Base or Pulse calculation. Entering a "B" forces the day to be a base flow day. Entering a "P" forces today to be a small pulse flow day. If initiating a new small pulse, the Manual Counter Adjustment in column [M22] may need to be set to 1 to increment the Small Pulse Counter in column [M23].
M22	none	Manual Counter Adjustment	A numerical entry in this column is added to the Small Pulse Counter in column [M23]. Used with B or P override in column [M21], when a new distinct pulse is initiated the day after a preceding pulse qualifies, or when there are conflicts between small and large pulse calculations.
M23	days	Small Pulse Counter	Assigns a number to each small pulse, beginning with 1 for the first pulse of the year. TRUE if today is the first day of a small pulse ([M19] is TRUE today and FALSE yesterday). Can be manually incremented or decremented in column [M22].
M24	days	Cumulative Days in Small Pulse	Increments by 1 for each day in a small pulse. Set to 1 if [M22] is greater than zero. Set to zero during base flow days.
M25	days	Small Pulse Duration	Finds the maximum number of days in the current small pulse event. Uses an Excel array formula that multiplies logical values (which are actually 0 or 1) that are TRUE for the current event by the Cumulative Days in the pulse in column [M24] and then finds the maximum.
M26	dsf	Cumulative Small Pulse Volume	Cumulative volume to date in current small pulse event in dsf. Adds the flow in column [M7] to yesterday's volume during a pulse event.
M27	acft	Cumulative Small Pulse Volume	Same as column [M26] but converted to acre-feet.
M28	acft	Small Pulse Event Volume	Finds the maximum volume in the small pulse event. Uses an Excel array formula that multiplies logical values (which are actually 0 or 1) that are TRUE for the current event by the Cumulative Volume in the pulse (column [M27]) and then finds the maximum.

Column	Units	Daily Column Label	Description
M29	none	End of Small Pulse?	Last day of a qualifying small pulse event. TRUE if cumulative number of days (column [M24]) is equal to the duration of the event (column [M25]). Takes into account both calculated and manual override to define the last day of a qualifying pulse event.
M30	cfs	[Gage name]	Repeat of historical flows from column [M7].
M31	none	Base Flow or Pulse	If today is a small pulse day (column [M20] is TRUE), set to "P". If today is a base flow or subsistence day, set to "B" (column [M20] is FALSE).
M32	none	Qualifying Volume	Set to "Q" if the volume to date in a small pulse is greater than or equal to the small pulse volume criteria (column [M20] is TRUE and column [M27] is greater than or equal to column [M14]). Otherwise set to "P" if today is a pulse day (only column [M20] is TRUE) or "B" if today is a base flow day (column [M20] is FALSE).
M33	none	Meets Duration?	Set to "Q" if the number of days to date in a small pulse is greater than or equal to the small pulse duration criteria (column [M20] is TRUE and column [M24] is greater than or equal to column [M13]). Otherwise set to "P" if today is a small pulse day (only column [M20] is TRUE) or "B" if today is a base flow day (column [M20] is FALSE).
M34	none	Qualifying Pulse?	TRUE if either the duration or volume criteria have been met for a small pulse event (columns [M32] or [M33] is equal to "Q").
M35	none	Number of Small Pulses Current Season	Increments by 1 for each qualifying small pulse in each season. On the first day of a season (column [M4] today is not equal to yesterday), sets the initial condition to zero. Otherwise, the initial condition is the number of small pulses so far in the season from the previous day. Incremented by 1 if today is the first day of a qualifying pulse (column [M34] is TRUE today and FALSE yesterday). Otherwise value is not incremented.
M36	cfs	Large Pulse Flow Trigger Criteria	Current large pulse flow trigger level for the current season and climatic condition. Imported from columns [K6], [K7] or [K8] of the associated CRI table. If there are no pulse criteria for the season, set to #N/A.
M37	days	Large Pulse Flow Duration Criteria	Current large pulse flow duration criteria for the current season and climatic condition. Imported from columns [D6], [D7] or [D8] of the associated CRI table. If there are no pulse criteria for the season, set to #N/A.
M38	ac-ft	Large Pulse Flow Volume Criteria	Current large pulse flow volume criteria for the current season and climatic condition. Imported from columns [P6], [P7] or [P8] of the associated CRI table. If there are no pulse criteria for the season, set to #N/A.
M39	none	Number of Large Pulses Criteria	The number of large pulses for the current season and climatic condition. Imported from columns [C6], [C7] or [C8] of the associated CRI table. If there are no pulse criteria for the season, set to #N/A.
M40	none	Flow > Large Pulse Trigger?	TRUE if flows in column [M7] are above the Large Pulse Flow Trigger criteria in column [M36]. FALSE otherwise. If there are no pulse criteria for the season (column [M36] is #N/A), set to FALSE.

Column	Units	Daily Column Label	Description
M41	none	Initiate Large Pulse?	TRUE if today the flow is above the large pulse flow trigger level (today's value for column [M40] is TRUE) and yesterday the flow was below the large pulse flow trigger level (yesterday's value for column [M40] is FALSE). Otherwise FALSE.
M42	none	Stop Large Pulse?	TRUE if a large pulse has qualified (met either volume or duration criteria) on the previous day. Checks if the cumulative days in pulse (column [M51]) are greater than or equal to the duration criteria (column [M37]) or the cumulative volume (column [M54]) is greater than or equal to the volume criteria (column [M38]). If there are no large pulse criteria for the current season (column [M36] is #N/A) then set to FALSE. Otherwise FALSE.
M43	none	Is Large Pulse?	TRUE for every day that the calculations define as a qualifying large pulse. TRUE if today is the first day above the large pulse flow trigger level (column [M40] is TRUE), or yesterday this column was TRUE and the large pulse flow criteria have not been met previously (column [M42] is FALSE). Otherwise FALSE.
M44	none	Is Large Pulse Day	TRUE if the calculations have identified today as a large pulse day (column [M43] is TRUE) or the manual override in the next column has been set to a pulse (column [M45] is equal to "P") Set to FALSE if the manual override in the next column is set to base (column [M45] is equal to "B"), or if there are no large pulse criteria for the season (column [M36] is #N/A). Otherwise FALSE.
M45	none	B or P Override	Manual override of Base or Pulse calculation. Entering a "B" forces the day to be a base flow day. Entering a "P" forces today to be a large pulse flow day. If initiating a new large pulse, the Manual Counter Adjustment in column [M46] may need to be set to 1 to increment the Large Pulse Counter in column [M50].
M46	none	Manual Counter Adjustment	A numerical entry in this column is added to the Large Pulse Counter in column [M50]. Used with B or P override in column [M45], when a new distinct pulse is initiated the day after a preceding pulse qualifies, or when there are conflicts between small and large pulse calculations.
M47	days	Previous Small Pulse Days	If today is the first day of a large pulse (column [M41] is TRUE), the value is the cumulative number of small pulse days on the previous day (column [M24]). Otherwise set to zero. Used to account for any previous days in a small pulse that may count toward the duration of a large pulse.
M48	dsf	Previous Small Pulse Volume	If today is the first day of a large pulse (column [M41] is TRUE), the value is the cumulative small pulse volume on the previous day (column [M26]). Otherwise set to zero. Used to account for any previous volume in a small pulse that may count toward the duration of a large pulse.
M49	none	Use Small Pulse Buildup	An entry of any kind in this column indicates that the values in columns [M47] and [M48] will be used as part of the large pulse calculation. The default is not to use any previous small pulse flows as part of the large pulse calculation. Entered by BRA staff.

Column	Units	Daily Column Label	Description
M50	days	Large Pulse Counter	Assigns a number to each pulse, beginning with 1 for the first large pulse of the year. TRUE if today is the first day of a pulse ([M43] is TRUE today and FALSE yesterday). Can be manually incremented or decremented in column [M46].
M51	days	Cumulative Days in Large Pulse	Increments by 1 for each day in a large pulse. Set to 1 if M46 is greater than zero. If column [M49] has an entry of any kind, the number of previous small pulse days (column [M47] is added to this value. Set to zero during base flow days.
M52	days	Large Pulse Duration	Finds the maximum number of days in the current large pulse event (including days from a small event, if used). Uses an Excel array formula that multiplies logical values (which are actually 0 or 1) that are TRUE for the current event by the Cumulative Days in the pulse in column [M24] and then finds the maximum.
M53	dsf	Cumulative Large Pulse Volume	Cumulative volume to date in current large pulse event in dsf. Adds the flow in column [M7] to yesterday's volume during a large pulse event. If any value is entered in column [M49], the previous small pulse volume in column [M48] is added.
M54	acft	Cumulative Large Pulse Volume	Same as column [M53] but converted to acre-feet.
M55	acft	Large Pulse Event Volume	Finds the maximum volume in the large pulse event. Uses an Excel array formula that multiplies logical values (which are actually 0 or 1) that are TRUE for the current event by the Cumulative Volume in the pulse (column [M54]) and then finds the maximum. Includes any volume added from the preceding small pulse.
M56	none	End of Large Pulse?	Last day of a qualifying pulse event. TRUE if cumulative number of days (column [M51]) is equal to the duration of the event (column [M52]). Takes into account both calculated and manual override to define the last day of a qualifying pulse event.
M57	cfs	[Gage name]	Repeat of historical flows from column [M7].
M58	none	Base Flow or Pulse	If today is a large pulse day (column [M44] is TRUE), set to "P". If today is a base flow or subsistence day, set to "B" (column [M44] is FALSE).
M59	none	Qualifying Volume	Set to "Q" if the volume to date in a large pulse is greater than or equal to the large pulse volume criteria (column [M44] is TRUE and column [M54] is greater than or equal to column [M38]). Otherwise set to "P" if today is a large pulse day (only column [M44] is TRUE) or "B" if today is a base flow day (column [M44] is FALSE).
M60	none	Meets Duration?	Set to "Q" if the number of days to date in a large pulse is greater than or equal to the large pulse duration criteria (column [M44] is TRUE and column [M51] is greater than or equal to column [M37]). Otherwise set to "P" if today is a pulse day (only column [M44] is TRUE) or "B" if today is a base flow day (column [M44] is FALSE).
M61	none	Qualifying Pulse?	TRUE if either the duration or volume criteria have been met for a pulse event (columns [M59] or [M60] is equal to "Q").

Column	Units	Daily Column Label	Description
M62	none	Number of Large Pulses Current Season	Increments by 1 for each qualifying large pulse in each season. On the first day of a season (column [M4] today is not equal to yesterday), sets the initial condition to the value in column [M46]. If there is no entry in [M46] the value will be zero. Otherwise, the initial condition is the number of pulses so far in the season from the previous day. Incremented by 1 if today is the first day of a qualifying pulse (column [M61] is TRUE today and FALSE yesterday). Otherwise value is not incremented.
M63	none	Number of Small Pulses Current Season	Repeat of column [M35]
M64	none	Is a Pulse	TRUE if today is either a small pulse day ([M20] is TRUE) or a large pulse day ([M44] is TRUE).
M65	none	Number of Small Pulses Criteria	Number of required small pulses. Identical to column [M15], except that if there are no pulse criteria for the season it is set to 0.
M66	none	Number of Large Pulses Criteria	Number of required large pulses. Identical to column [M39], except that if there are no pulse criteria for the season it is set to 0.
M67	none	Base Criteria Met?	TRUE if base or subsistence flow criteria met. Repeat of column [M11].
M68	none	Small Pulse Target Met?	TRUE if number of small pulses per season has been met (column [M35] is greater than or equal to [M65]. Also TRUE if there are no small pulse criteria for the season. Otherwise FALSE.
M69	none	Large Pulse Target Met?	TRUE if number of large pulses per season has been met (column [M62] is greater than or equal to [M66]. Also TRUE if there are no large pulse criteria for the season. Otherwise FALSE.
M70	none	IF Criteria Met?	TRUE if base flow criteria are met for the day and there has been the required number of small and large pulse flows in the season ([M67], [M68] and [M69] are all TRUE). Otherwise FALSE.

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Column	Units	Daily Column Label	Description
M71	cfs	Base and Pulse Criteria Series	Defines an average daily flow series based on the currently applicable base and pulse criteria. Uses a user-defined function *setcriteria* to select the applicable flow level. If today is a large pulse day (column [M44] is TRUE), the large pulse criteria are used. Otherwise, small pulse criteria are used. The function sets the value based on the following: • If today is a base flow day (column [M20] or [M44] is FALSE), then the value is set to the current base flow criteria in column [M10]. • If today is a pulse day (column [M20] or [M44] is TRUE) and the pulse flow frequency has not been met for the season (column [M68] or [M69] is FALSE), then the value is set to the current pulse flow trigger level (column [M12] or [M36]). • If today is a pulse day (column [M20] or [M44] is TRUE, and either today is the first day that the seasonal pulse frequency has been met, or today is the beginning of a new season, then the value is set to the current pulse flow trigger level (column [M12] or [M36]). • If today is a pulse day (column [M20] or [M44] is TRUE) and either the seasonal pulse frequency has not been met or today is the first day of a new season, then the value is set to the current pulse flow trigger level (column [M12] or column [M36]). • If today is a pulse day (column [M20] or [M44] is TRUE) and either the seasonal criteria have been met on the previous day or today is the first day of a new season (this can occur when there are no seasonal pulse criteria), the value is set to the base flow criteria. Other combinations are unsupported and return an error message.
M72	cfs	Base Only Criteria Series	Repeat of column [M10].
M73	cfs	20% of Pulse Trigger Criteria	20% of the pulse flow trigger level, based on current season and climatic conditions. Uses the large pulse trigger level (column [M36]) until the large pulse frequency has been met (column [M69] is TRUE). Once the large pulse frequency has been met, the small pulse trigger level is used (column [M12]).
M74	cfs	Upstream Reach Diversion Rates	Total daily diversion rates for BRA contract diversions in the reach upstream of the current measurement point.
M75	cfs	Downstream Reach Diversion Rates	Total daily diversion rates for BRA contract diversions in the reach downstream of the current measurement point. Applicable only if the current measurement point is applied to downstream diversions.
M76	cfs	Flow > Criteria Series	TRUE if the flow (column [M57] is greater than the applicable instream flow criteria series. The applicable instream flow series depends on the diversion rate. If the diversion rate is greater than 20% of the pulse criteria (column [M73]) then the base only criteria in column [M72] apply. Otherwise, the base and pulse criteria in column [M71] apply. Used for run-of-the-river diversions in the applicable reach above the measurement point.

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Column	Units	Daily Column Label	Description
M77	cfs	Flow > Criteria Series + Downstream Reach Diversions	TRUE if the flow (column [M57]) is greater than the applicable instream flow criteria series, plus the applicable downstream downstream diversions in column [M75]. The applicable instream flow series depends on the diversion rate. If the diversion rate is greater than 20% of the pulse criteria (column [M73]) then the base only criteria in column [M72] apply. Otherwise, the base and pulse criteria in column [M71] apply. Used for run-of-the-river diversions in the applicable reach below the measurement point (if any)
M78	cfs	Flow > Base & Pulse Criteria Series	TRUE if the flow (column [M57]) is greater than the base and pulse criteria series in column [M71]. Used for reservoir diversion and storage under the System Operation Permit.
M79	none	Comments	Place to record comments about base or pulse overrides, or any other observations about this year's calculations.

The Glen Rose Gage has two additional columns to account for downstream diversions from Lake Whitney:

Column	Units	Column Label	Description
M79	cfs	Lake Whitney SysOps Diversion Rate	Daily upstream reach System Operation Permit diversions and lakeside System Operation Permit diversions of inflow from Lake Whitney. Column [M75] from this table plus columns [I3] and [I5] from Table RES3 in the reservoir file.
M80	cfs	Flow > Criteria Series + Reservoir Diversions	TRUE if todays flow in column [M57] is greater than the base and pulse criteria in column [M71] plus the Lake Whitney diversions in column [M79].

H.6.6 Tables CRI1 through CRI12

The CRI tables contain the instream flow criteria from the Water Management Plan.

The following is a description of the columns in the CRI tables:

Column	Label	Units	Description
I1	Hydrologic Condition	none	Hydrologic condition for each climatic level - subsistence, dry, average, or wet.
I2	Winter	cfs	Base and subsistence flow requirement for Winter by hydrologic condition.
I3	Spring	cfs	Base and subsistence flow requirement for Spring by hydrologic condition.
I4	Summer	cfs	Base and subsistence flow requirement for Summer by hydrologic condition.
P1	Hydrologic Condition	none	Hydrologic condition as determined by PHDI. Classified as dry, average, or wet.
P2	Winter	acft	Pulse flow volume requirement for Winter by hydrologic condition.

Column	Label	Units	Description
P3	Spring	acft	Pulse flow volume requirement for Spring by hydrologic condition.
P4	Summer	acft	Pulse flow volume requirement for Summer by hydrologic condition.
P5	Hydrologic Condition	none	Hydrologic condition as determined by PHDI. Classified as dry, average, or wet.
P6	Winter	acft	Large pulse flow volume requirement for Winter by hydrologic condition, if applicable.
P7	Spring	acft	Large pulse flow volume requirement for Spring by hydrologic condition, if applicable.
P8	Summer	acft	Large pulse flow volume requirement for Summer by hydrologic condition, if applicable.
K1	Hydrologic Condition	none	Hydrologic condition as determined by PHDI. Classified as dry, average, or wet.
K2	Winter	cfs	Pulse flow trigger level for Winter by hydrologic condition.
K3	Spring	cfs	Pulse flow trigger level for Spring by hydrologic condition.
K4	Summer	cfs	Pulse flow trigger level for Summer by hydrologic condition.
K5	Hydrologic Condition	none	Hydrologic condition as determined by PHDI. Classified as dry, average, or wet.
K6	Winter	cfs	Large pulse flow trigger level for Winter by hydrologic condition, if applicable.
K7	Spring	cfs	Large pulse flow trigger level for Spring by hydrologic condition, if applicable.
K8	Summer	cfs	Large pulse flow trigger level requirement for Summer by hydrologic condition, if applicable.
D1	Hydrologic Condition	none	Hydrologic condition as determined by PHDI. Classified as dry, average, or wet.
D2	Winter	days	Pulse duration requirement for Winter by hydrologic condition.
D3	Spring	days	Pulse duration requirement for Spring by hydrologic condition.
D4	Summer	days	Pulse duration requirement for Summer by hydrologic condition.
D5	Hydrologic Condition	none	Hydrologic condition as determined by PHDI. Classified as dry, average, or wet.
D6	Winter	days	Large pulse duration requirement for Winter by hydrologic condition, if applicable.
D7	Spring	days	Largepulse duration requirement for Spring by hydrologic condition, if applicable.
D8	Summer	days	Large pulse duration requirement for Summer by hydrologic condition, if applicable.
C1	Hydrologic Condition	none	Hydrologic condition as determined by PHDI. Classified as dry, average, or wet.
C2	Winter	none	Pulse count requirement for Winter by hydrologic condition.
C3	Spring	none	Pulse count requirement for Spring by hydrologic condition.
C4	Summer	none	Pulse count requirement for Summer by hydrologic condition.
C5	Hydrologic Condition	none	Hydrologic condition as determined by PHDI. Classified as dry, average, or wet.
C6	Winter	none	Large pulse count requirement for Winter by hydrologic condition, if applicable.

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Column	Label	Units	Description
C7	Spring	none	Large pulse count requirement for Spring by hydrologic condition, if applicable.
C8	Summer	none	Large pulse count requirement for Summer by hydrologic condition, if applicable.

H.7   Summary File Tables

The Summary File contains several reporting and data summary components. Overall water use for each reservoir is summarized, with locations for entry of water use by water right and use type by BRA staff.   Also included are System Operation diversion summaries, surface water usage reporting tables and summaries of instream flows.

H.7.1 Table INTRO4 – Introduction and Table of Contents

This table contains title information for the Accounting Plan. BRA staff will enter the year of the Accounting Plan in the Reference File. The spreadsheet will determine if the year is a leap year. The table also includes several unit conversion factors imported from the Reference File and a Table of Contents for the summary workbook.

H.7.2 Table SUM0 – Annual Diversion Summary

This table provides a quick reference for the annual amount of water diverted under the various BRA authorizations. The annual authorized amount is provided for reference. The upper part of the table summarizes the BRA reservoir and associated non-priority rights (i.e. Excess Flows and System Order diversions).

Column	Label	Units	Description
S1	Water Right	none	Certificate of Adjudication number for reservoir water right.
S2	Authorized Annual Diversion	acft	Total authorized priority diversion under the water right. Imported from Table REF9.

Column	Label	Units	Description
S3	Priority Diversion	acft	Priority diversions made under the water right (i.e. diversions made directly from the reservoir or released downstream). Imported from Tables SUM1 through SUM11.
S4	Excess Flows Diversion	acft	Total diversions made under the Excess Flows permit (COA 12-5166). These diversions must be assigned to one of the reservoir water rights. Imported from Tables SUM1 through SUM11.
S5	Authorized System Order Diversion	acft	Maximum authorized diversion under the System Order for each water right. Imported from Table REF9.
S6	System Order Diversion	acft	System Order diversions assigned to the water right. Does not indicate the location of the diversion, but rather the water right to which the diversion has been assigned. Imported from Tables SUM1 through SUM11.
S7	Total Diversion	acft	Total diversions made under the water right. The sum of the total diversions cannot exceed the total amount authorized for diversion under these water rights (661,901 acft/yr). Imported from Tables SUM1 through SUM11.

The lower table shows the diversions made under the System Operation Permit (P 5851) in each reach and the total amounts.

Column	Label	Units	Description
S8	Reach Name	none	Name of reach. These are the same reaches as in Table H.1.4 above.
S9	Current Limit	acft	The maximum annual diversion limit for the reach. Imported from Table REF9.
S10	Natural Flow and Return Flow of Others	acft	Diversions made from natural flows or the return flows of others in each reach assigned to the System Operation Permit (P 5851). Imported from Table SUM14.
S11	Bed and Banks Return Flow Diversion	acft	Diversion of BRA Return Flows in each reach assigned to the System Operation Permit. Imported from Table SUM14.
S12	Total	acft	Total use under the System Operation Permit. Imported from Table SUM14.

H.7.3 Tables SUM1 through SUM11 – Reservoir Water Use Summaries

Tables SUM1 through SUM11 summarize the water use at each BRA System reservoir by priority use under the reservoir permit, System Order use, and System Operation Permit use. Use under the reservoir permit and System Order is further categorized as municipal (mun), irrigation (irr), industrial (ind), and mining (min) use types. Additional fields are provided for entry of Storage Credit adjustments and the locations for System Order diversions. Storage Credit adjustments are the portion of water released from a BRA System reservoir that would be charged under the customer's own water right. Columns shaded in yellow indicate locations for manual entry of values by BRA staff. Other columns either reference other files in the Accounting Plan or calculate results based on the values entered into the table by BRA staff.

Row 6 of the spreadsheet includes the units for each column, while Rows 7 and 8 list the column heading and use type. Rows 9 through 20 contain monthly values, while Row 21 lists annual totals.

All eleven tables follow a standard layout. However, not all water use types are applicable for all reservoirs. Irrigation and mining uses are not applicable to Lake Whitney, and irrigation use is not applicable at Lake Aquilla. The columns at these reservoirs associated with non-applicable use types are marked with crosshatching to indicate that no data entry is needed.

The following is a description of the columns for the standardized layout of the tables:

Column	Label	Use Type	Units	Description	Tables Referenced
L1	Month		none	Month number for associated data value	INTRO4
S1	BRA Lakeside Diversions		acft	BRA lakeside diversions from reservoir	RES
S2	BRA Downstream Water Supply Release		acft	BRA downstream water supply release from reservoir	RES
S3	Storage Credit Adjustments		acft	Storage credit adjustments from reservoir. Entered by BRA staff.	
S4	Use of Upstream Releases		acft	Use of upstream releases from reservoir	RES

Column	Label	Use Type	Units	Description	Tables Referenced
S5	Total Water Use		acft	Total water use from reservoir. Sum of columns [S1] and [S2] less [S3] and [S4}	
S6	Priority Water Use Under Permit		acft	Priority water use under the permit for reservoir. Column [S5] less columns [S18], [S19] and [S20].	
S7		Mun	acft	Municipal priority water use under reservoir permit. Entered by BRA staff.	
S8	Type of Use Under Permit	Irr	acft	Irrigation priority water use under reservoir permit. Entered by BRA staff.	
S9		Ind	acft	Industrial priority water use under reservoir permit. Entered by BRA staff.	
S10		Min	acft	Mining priority water use under reservoir permit. Entered by BRA staff.	
S11		Mun	acft	Municipal System Order water use under reservoir permit. Entered by BRA staff.	
S12	System Order Water Use Under Permit	Irr	acft	Irrigation System Order water use under reservoir permit. Entered by BRA staff.	
S13		Ind	acft	Industrial System Order water use under reservoir permit. Entered by BRA staff.	
S14		Min	acft	Mining System Order water use under reservoir permit. Entered by BRA staff.	
S15	Location of System Order Diversion		acft	Location of System Order diversion. Entered by BRA staff.	
S16	Water Use Under COA5166		acft	Water Use under COA5166, the Excess Flows Permit, reported as use under this right. Entered by BRA staff.	
S17	Total Use Under Permit		acft	Total water use under reservoir permit. Sum of columns [S6] and [S11] through [S14].	
S18	System Order Use Under Another Right		acft	Amount of System Order use recorded against another water right. Entered by BRA staff.	
S19	P5851 Water Use at Reservoir		acft	P5851 (System Operation Permit) water use at reservoir	RES
S20	P5851 BRA Return Flows Use at Reservoir		acft	P5851 Bed and Banks Return Flow use at reservoir	RES
S21	Total P5851 Use at Reservoir		acft	Sum of both types of use under P5851. Columns [S19] plus [S20].	

Cell L26 has a check sum to verify that the total priority water use in column [S6] is equal to the sum of the type of use in columns [S7] through [S10].

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H.7.4 Table SUM12 – Water Use Summary for COA No. 12-5166 (Excess Flows)

Table SUM12 reports the water used under COA No. 12-5166, the Excess Flows Permit, by type of use. The columns in SUM12 are:

Column	Units	Column Label	Type of Use	Description	Tables Referenced
L1	none	Month		End-of-month date	
S1	acft	Water Used under COA5166		Total water used under COA 5166.	REACH20
S2	acft		Mun	Municipal use under COA 5166. Entered by BRA staff.	
S3	acft	Type of Use under COA5166	Irr	Irrigation use under COA 5166. Entered by BRA staff.	
S4	acft		Ind	Industrial use under COA 5166. Entered by BRA staff.	

Cell C26 has a flag that checks the sum of column [S1] against the sum of the water use assigned to Excess Flows in tables SUM1 through SUM11. Cell F26 compares the sum of the types of use in columns [S2] through [S4] to the sum of column [S1].

H.7.5 Table SUM13 – Water Use Summary for System Operation Permit

Table SUM13 shows the total use under Water Use Permit No. 5851, categorized by type of use and whether the water use is from natural flows and the Return Flows of Others, or from Bed and Banks Return Flows.

Column	Units	Column Label	Type of Use	Description	Tables Referenced
L1	none	Month		End-of-month date	
S1	acft	P5851 Total Diversions of Natural Flow and Return Flow of Others		Monthly diversion of river flows under the System Operation Permit.	SUM14
S2	acft	Type of Use for Diversion of Natural	Mun	Municipal use of river flows. Entered by BRA staff.	

Column	Units	Column Label	Type of Use	Description	Tables Referenced
S3	acft	Flow and Return Flows of Others	Irr	Irrigation use of river flows. Entered by BRA staff.	
S4	acft		Ind	Industrial use of river flows. Entered by BRA staff.	
S5	acft		Min	Mining use of river flows. Entered by BRA staff.	
S6	acft	P5851 Total Diversions of BRA Return Flows		Monthly diversion of BRA Return Flows under the System Operation Permit.	SUM14
S7	acft	Type of Use for Diversion of BRA Return Flows	Mun	Municipal use of BRA Return Flows. Entered by BRA staff.	
S8	acft		Irr	Irrigation use of BRA Return Flows. Entered by BRA staff.	
S9	acft		Ind	Industrial use of BRA Return Flows. Entered by BRA staff.	
S10	acft		Min	Mining use of BRA Return Flows. Entered by BRA staff.	

Row 23 contains the maximum diversion limits for Natural Flow and Return Flows of Others, and for BRA Return Flows imported from Table REF9 of the Reference File. Cells C26 and L26 are check sums that verify that the manual entries in columns [S2] through [S5] and columns [S7] through [S10] are equal to the totals in columns [S1] and [S6], respectively.

H.7.6 Table SUM14 – System Operation Permit Water Use by Reach

Table SUM14 summarizes water use under Water Use Permit No. 5851 by reach. Monthly diversions are listed by reach, with further categorization of values as originating from natural inflows or from return flows. All values in the table are either calculated automatically or reference data from other portions of the Accounting Plan. No columns in table SUM14 require manual entry of values by BRA staff.

Reach diversion limits from TABLE9 of the Reference File are two rows below the sum for each Total column. Conditional formatting identifies reaches where the limit is exceeded.

The following describes the columns in Table SUM14:

Column	Reach	Units	Column Label	Description	Tables Referenced
L1		none	Month	End-of-month date	INTRO4
S1		acft	SysOps	SysOps water use from local inflow	SUM1
S2	Reach 1 - Possum Kingdom	acft	BRA Return Flow	SysOps water use from BRA Return Flows	SUM1
S3		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S4		acft	SysOps	SysOps water use from local inflow	REACH1
S5	Reach 2 - Possum Kingdom to Palo Pinto Gage	acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH1
S6		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S7		acft	SysOps	SysOps water use from local inflow	REACH2
S8	Reach3 - Palo Pinto Gage to Dennis Gage	acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH2
S9		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S10	Reach 4a - Dennis Gage to Lake Granbury Headwaters	acft	SysOps	SysOps water use from local inflow	REACH2
S11		acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH2
S12	Reach 4b - Lake Granbury	acft	SysOps	SysOps water use from local inflow	SUM2
S13		acft	BRA Return Flows	SysOps water use from BRA Return Flows	SUM2
S14	Total Dennis gage to Lake Granbury	Acft	Total	Total SysOps use in reach. Sum of columns [S10] through [S13]	
S15	Reach 5 - Lake Granbury to Glen Rose Gage	acft	SysOps	SysOps water use from local inflow	REACH3
S16		acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH3

Column	Reach	Units	Column Label	Description	Tables Referenced
S17		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S18	Reach 6a - Glen Rose Gage to Lake Whitney Headwaters	acft	SysOps	SysOps water use from local inflow	REACH3
S19		acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH3
S20	Reach 6b - Lake Whitney	acft	SysOps	SysOps water use from local inflow	SUM3
S21		acft	BRA Return Flows	SysOps water use from BRA Return Flows	SUM3
S22	Total Glen Rose gage to Lake Whitney Dam	acft	Total	Total SysOps use in reach. Sum of columns [S18] through [S21]	
S23	Reach 7 - Lake Whitney to Aquilla/Brazos Confluence	acft	SysOps	SysOps water use from local inflow	REACH5
S24		acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH5
S25		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S26	Lake Aquilla	acft	SysOps	SysOps water use from local inflow	SUM4
S27		acft	BRA Return Flows	SysOps water use from BRA Return Flows	SUM4
S28		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S29	Reach 9 - Lake Aquilla to Aquilla Cr Gage	acft	SysOps	SysOps water use from local inflow	REACH4
S30		acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH4
S31		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S32	Reach 10 - Aquilla Cr Gage to Aquilla/Brazos Confluence	acft	SysOps	SysOps water use from local inflow	REACH4
S33		acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH5
S34		acft	Total	Total SysOps use in reach. Sum of two previous columns.	

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Column	Reach	Units	Column Label	Description	Tables Referenced
S35	Reach 11 - Aquilla/Brazos Confluence to Highbank Gage	acft	SysOps	SysOps water use from local inflow	REACH6
S36		acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH6
S37		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S38	Reach 12 - Lake Proctor	acft	SysOps	SysOps water use from local inflow	SUM5
S39		acft	BRA Return Flows	SysOps water use from BRA Return Flows	SUM5
S40		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S41	Reacjh 13 - Lake Proctor to Gatesville Gage	acft	SysOps	SysOps water use from local inflow	REACH7, REACH8
S42		acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH7, REACH8
S43		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S44	Reach 14a - Gatesville Gage to Lake Belton Headwaters	acft	SysOps	SysOps water use from local inflow	REACH8
S45		acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH8
S46	Reach 14b - Lake Belton	acft	SysOps	SysOps water use from local inflow	SUM6
S47		acft	BRA Return Flows	SysOps water use from BRA Return Flows	SUM6
S48	Total Leon Rv at Gatesville to Lake Belton Dam	acft	Total	Total SysOps use in reach. Sum of columns [S44] through [S47]	
S49	Reach 15 - Lake Belton to Leon nr Belton Gage	acft	SysOps	SysOps water use from local inflow	REACH9
S50		acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH9
S51		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S52	Reach 16 - Leon nr Belton Gage to Little River Gage	acft	SysOps	SysOps water use from local inflow	REACH9

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Column	Reach	Units	Column Label	Description	Tables Referenced
S53		acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH9
S54		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S55		acft	SysOps	SysOps water use from local inflow	SUM7
S56	Reach 17 - Lake Stillhouse Hollow	acft	BRA Return Flows	SysOps water use from BRA Return Flows	SUM7
S57		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S58	Reach 18 - Stillhouse to Lampasas nr Belton Gage	acft	SysOps	SysOps water use from local inflow	REACH10
S59		acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH10
S60		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S61		acft	SysOps	SysOps water use from local inflow	REACH10
S62	Reach 19 - Lampasas nr Belton Gage to Little River Gage	acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH10
S63		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S64		acft	SysOps	SysOps water use from local inflow	REACH11
S65	Reach 20 - Little River Gage to San Gabriel/Little Confluence	acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH11
S66		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S67		acft	SysOps	SysOps water use from local inflow	SUM8
S68	Reach 21 - Lake Georgetown	acft	BRA Return Flows	SysOps water use from BRA Return Flows	SUM8
S69		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S70	Reach 22 - Lake Georgetown to N San Gabriel Gage	acft	SysOps	SysOps water use from local inflow	REACH12

Column	Reach	Units	Column Label	Description	Tables Referenced
S71		acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH12
S72		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S73	Reach 23a - N San Gabriel Gage to Lake Granger Headwaters	acft	SysOps	SysOps water use from local inflow	REACH12
S74		acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH12
S75	Reach 23b - Lake Granger	acft	SysOps	SysOps water use from local inflow	SUM9
S76		acft	BRA Return Flows	SysOps water use from BRA Return Flows	SUM9
S77	Total N San Gabriel gage to Lake Granger Dam	acft	Total	Total SysOps use in reach. Sum of columns [S73] through [S76]	
S78	Reach 24 - Lake Granger Dam to Laneport Gage	acft	SysOps	SysOps water use from local inflow	REACH13
S79		acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH13
S80		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S81	Reach 25 - Laneport Gage to Little Rv/San Gabriel Confluence	acft	SysOps	SysOps water use from local inflow	REACH13
S82		acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH13
S83		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S84	Reach 26 - Little/San Gabriel Confluence to Little Rv at Cameron Gage	acft	SysOps	SysOps water use from local inflow	REACH14
S85		acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH14
S86		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S87	Reach 27 - Cameron Gage to Brazos Rv/Little Rv Confluence	acft	SysOps	SysOps water use from local inflow	REACH14
S88		acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH14

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Column	Reach	Units	Column Label	Description	Tables Referenced
S89		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S90		acft	SysOps	SysOps water use from local inflow	REACH6
S91	Reach 28 - Highbank Gage to Brazos Rv/Little Rv Confluence	acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH6
S92		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S93		acft	SysOps	SysOps water use from local inflow	REACH15
S94	Reach 29 – Brazos Rv/Little Rv Confluence to Bryan Gage	acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH15
S95		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S96		acft	SysOps	SysOps water use from local inflow	REACH15
S97	Reach 30 - Bryan Gage to Brazos Rv /Yegua Crk Confluence	acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH15
S98		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S99		acft	SysOps	SysOps water use from local inflow	SUM10
S100	Reach 31 - Lake Somerville	acft	BRA Return Flows	SysOps water use from BRA Return Flows	SUM10
S101		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S102		acft	SysOps	SysOps water use from local inflow	REACH16
S103	Reach 32 - Lake Somerville to Yegua Crk Gage	acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH16
S104		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S105	Reach 33 - Yegua Crk Gage to Brazos Rv/Yegua Crk Confluence	acft	SysOps	SysOps water use from local inflow	REACH16
S106		acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH16

Column	Reach	Units	Column Label	Description	Tables Referenced
S107		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S108		acft	SysOps	SysOps water use from local inflow	REACH17
S109	Reach 34 – Brazos Rv/Yegua Crk Confluence to Brazos Rv/Navasota Rv Confluence	acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH17
S110		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S111		acft	SysOps	SysOps water use from local inflow	SUM11
S112	Reach 35 - Lake Limestone	acft	BRA Return Flows	SysOps water use from BRA Return Flows	SUM11
S113		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S114		acft	SysOps	SysOps water use from local inflow	REACH18
S115	Reach 36 - Lake Limestone Dam to Easterly Gage	acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH18
S116		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S117		acft	SysOps	SysOps water use from local inflow	REACH18
S118	Reach 37 - Easterly Gage to Brazos/Navasota Confluence	acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH18
S119		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S120		acft	SysOps	SysOps water use from local inflow	REACH19
S121	Reach 38 – Brazos Rv/Navasota Rv Confluence to Hempstead Gage	acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH19
S122		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S123		acft	SysOps	SysOps water use from local inflow	REACH20
S124	Reach 39 - Hempstead Gage to Richmond Gage	acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH20

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Column	Reach	Units	Column Label	Description	Tables Referenced
S125		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S126		acft	SysOps	SysOps water use from local inflow	REACH21
S127	Reach 40 - Richmond Gage to Gulf of Mexico	acft	BRA Return Flows	SysOps water use from BRA Return Flows	REACH21
S128		acft	Total	Total SysOps use in reach. Sum of two previous columns.	
S129		acft	SysOps	Total SysOps use excluding use from BRA Return Flows. Sum of all previous SysOps columns.	
S130	Total P5851	acft	BRA Return Flows	Total SysOps use from BRA Return Flows. Sum of all previous BRA Return Flows columns.	
S131		acft	Total	Total SysOps use in reach. Sum of two previous columns.	

H.7.7 Table SUM15 – Reservoir Water Use by Permit

Table SUM15 summarizes water use by BRA System reservoir and permit. Monthly diversions are listed by reservoir and permit, with further categorization of values as priority diversions, System Order/Excess Flows diversions, and total diversions. Monthly diversion values are also listed for the System Operation Permit. Diversions under the System Operation Permit are further categorized as originating from natural flow and the Return Flows of Others, BRA Return Flows, and total System Operation Permit diversions. All values in the table are either calculated automatically or reference data from other portions of the Accounting Plan. No columns in Table SUM15 require manual entry of values by BRA staff.

The following describes the columns in Table SUM15:

Column	Reservoir / Permit	Units	Column Label	Description	Tables Referenced
L1		none	End-of-Month	End-of-month date	

Column	Reservoir / Permit	Units	Column Label	Description	Tables Referenced
S1	COA5155 Possum Kingdom	acft	Priority	Monthly priority water use under COA5155	SUM1
S2		acft	System Order	Monthly System Order and Excess Flows water use under COA5155	SUM1
S3		acft	Total	Monthly total water use under COA5155. Sum of two previous columns.	
S4	COA5156 Lake Granbury	acft	Priority	Monthly priority water use under COA5156	SUM2
S5		acft	System Order/Excess Flows	Monthly System Order and Excess Flows water use under COA5156	SUM2
S6		acft	Total	Monthly total water use under COA5156. Sum of two previous columns.	
S7	COA5157 Lake Whitney	acft	Priority	Monthly priority water use under COA5157	SUM3
S8		acft	System Order/Excess Flows	Monthly System Order and Excess Flows water use under COA5157	SUM3
S9		acft	Total	Monthly total water use under COA5157. Sum of two previous columns.	
S10	COA5158 Lake Aquilla	acft	Priority	Monthly priority water use under COA5158	SUM4
S11		acft	System Order/Excess Flows	Monthly System Order and Excess Flows water use under COA5158	SUM4
S12		acft	Total	Monthly total water use under COA5158. Sum of two previous columns.	
S13	COA5159 Lake Proctor	acft	Priority	Monthly priority water use under COA5159	SUM5
S14		acft	System Order/Excess Flows	Monthly System Order and Excess Flows water use under COA5159	SUM5
S15		acft	Total	Monthly total water use under COA5159. Sum of two previous columns.	
S16	COA5160 Lake Belton	acft	Priority	Monthly priority water use under COA5160	SUM6
S17		acft	System Order/Excess Flows	Monthly System Order and Excess Flows water use under COA5160	SUM6
S18		acft	Total	Monthly total water use under COA5160. Sum of two previous columns.	

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Column	Reservoir / Permit	Units	Column Label	Description	Tables Referenced
S19	COA5161 Lake Stillhouse Hollow	acft	Priority	Monthly priority water use under COA5161	SUM7
S20		acft	System Order/Excess Flows	Monthly System Order and Excess Flows water use under COA5161	SUM7
S21		acft	Total	Monthly total water use under COA5161. Sum of two previous columns.	
S22	COA5162 Lake Georgetown	acft	Priority	Monthly priority water use under COA5162	SUM8
S23		acft	System Order/Excess Flows	Monthly System Order and Excess Flows water use under COA5162	SUM8
S24		acft	Total	Monthly total water use under COA5162. Sum of two previous columns.	
S25	COA5163 Lake Granger	acft	Priority	Monthly priority water use under COA5163	SUM9
S26		acft	System Order/Excess Flows	Monthly System Order and Excess Flows water use under COA5163	SUM9
S27		acft	Total	Monthly total water use under COA5163. Sum of two previous columns.	
S28	COA5164 Lake Somerville	acft	Priority	Monthly priority water use under COA5164	SUM10
S29		acft	System Order/Excess Flows	Monthly System Order and Excess Flows water use under COA5164	SUM10
S30		acft	Total	Monthly total water use under COA5164. Sum of two previous columns.	
S31	COA5165 Lake Limestone	acft	Priority	Monthly priority water use under COA5165	SUM11
S32		acft	System Order/Excess Flows	Monthly System Order and Excess Flows water use under COA5165	SUM11
S33		acft	Total	Monthly total water use under COA5165. Sum of two previous columns.	
S34		acft	Total Use COA5155 to 5165	Total monthly water use for COA5155 to 5165. Sum of all previous Total columns.	

Column	Reservoir / Permit	Units	Column Label	Description	Tables Referenced
S35		acft	Natural Flow	SysOps water usage from natural flows and Return Flows of Others.	SUM14
S36	P5851 SysOps	acft	BRA Return Flows	SysOps water usage from BRA Return Flows	SUM14
S37		acft	Total	Total SysOps water usage. Sum of two previous columns.	

H.7.8 Table SUM16 – Environmental Flow Report

The Environmental Flow Report is a seasonal summary of the number of days achieving base flow criteria, the number of HFP events per season, and whether the number of HFP events achieves the HFP criteria, reported on a seasonal basis. The winter seasons overlap years and only have partial results. Results are reported for all twelve measurement points.

Values are either imported from the Instream Flow File or are calculated within this worksheet. No values are entered by BRA staff.

Measurement points with one level of HFPs have the following columns:

	Column Label	Description
	Season	Name of season – Winter (partial), Spring or Summer
Gage Name	Climatic Condition	Climatic condition (Wet, Average or Dry) for the current season.
	Number of Days Meeting Base Flows	Number of days in each season (or part of season) that base flow criteria have been achieved.
	Number of Pulses	Number of pulse events at the end of each season
	Pulse Frequency Achieved?	TRUE if the number of pulse events exceeds the pulse frequency criteria. FALSE otherwise.

Measurement points with small and large pulses have the following columns:

	Column Label	Description
	Season	Name of season – Winter (partial), Spring or Summer

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	Climatic Condition	Climatic condition (Wet, Average or Dry) for the current season.
	Number of Days Meeting Base Flows	Number of days in each season (or part of season) that base flow criteria have been achieved.
	Number of Small Pulses	Number of small pulse events at the end of each season
Gage Name	Small Pulse Frequency Achieved?	TRUE if the number of small pulse events exceeds the pulse frequency criteria. Includes any small pulses and subsequently become large pulses. FALSE otherwise.
	Number of Large Pulses	Number of large pulse events at the end of each season
	Large Pulse Frequency Achieved?	TRUE if the number of large pulse events exceeds the pulse frequency criteria. FALSE otherwise.

H.7.9 Table SUM17 – Comparison of Current Year Annual Return Flows to Return Flows Used for Water Availability Analysis

Table SUM17 compares all of the return flows entered into the Accounting Plan (both the Return Flows of Others and BRA Return Flows) to the return flows used for the water availability analysis that served as the basis for the System Operation Permit and the Water Management Plan. Cell H121 gives the percent difference in the total amount of return flows. If this value is less than -5%, then the water availability analysis must be updated.

The following describes the columns in Table SUM17:

Column	Units	Column Label	Description	Tables Referenced
S1	none	Permit	TPDES permit number	
S2	none	Central Registry Permittee Name	Name of the owner of the permit, as shown in the TCEQ Central Registry	
S3	None	Central Registry Facility Name	Name of the facility as shown in the TCEQ Central Registry	
S4	acft	Year XXXX BRA Return Flows	Total annual volume of return flow that originates from BRA sources or is otherwise tracked in the Accounting Plan.	REF3
S5	acft	Year XXXX Return Flows of Others	Total annual volume of the return flows that originate from non-BRA sources and are not tracked in the Accounting Plan.	REF3, REF4
S6	acft	Year XXXXTotal	Sum of the two previous columns	

Column	Units	Column Label	Description	
S7	acft	Return Flows Used for Water Availability	Annual return flows used in the water availability analysis for the System Operation Permit and WMP	
S8	acft	Difference	Difference between the current year return flows and the return flows used for water availability. Column [S5] less column [S6].	

H.7.10 Table SUM18 – Summary of Run-of-River Diversions by Upstream Contract Agreements with BRA

Table SUM18 summarizes the monthly volume of water diverted by entities that have upstream subordination agreements with the Brazos River Authority. These include monthly run-of-river diversions from the Paluxy River into Wheeler's Branch Reservoir, the Clear Fork of the Brazos River into Lake Fort Phantom Hill, and California Creek into Lake Stamford. Other columns may be added as needed for future projects. The monthly data will be obtained from the project owners. All values are entered by BRA staff.

Column	Units	Column Label	Description
I1	none	End-of-Month	Month end date
R1	acft	Run-of-River Diversions from Paluxy River into Wheeler's Branch	These values reflect the monthly run-of-river diversions from Paluxy River into Wheeler's Branch of Brazos River (COA 12-5744).
R2	acft	Run-of-River Diversions from Clear Fork into Lake Fort Phantom Hill	These values reflect the monthly run-of-river diversions from Clear Fork of Brazos River into Lake Phantom Hill. (COA 12-4139).
R3	acft	Run-of-River Diversions from California Creek into Lake Stamford	These values reflect the monthly run-of-river diversions from California Creek into Lake Stamford. These values are based on the contract agreement between City of Stamford and Brazos River Authority (COA 12-4179).

H.8 References

Brazos River Authority: Conformed Water Management Plan for Water Use Permit No. 5851, approved and effective April 2, 2018.

Brazos River Authority: Conformed Technical Report in Support of the Water Management Plan, approved and effective April 2, 2018.

Texas Commission on Environmental Quality: Certificates of Adjudication Nos. 12-5155 through 12-5166, as amended, various dates.

Texas Commission on Environmental Quality: Water Use Permit No. 5851, issued on November 30, 2016.

Texas Commission on Environmental Quality: An Order Granting in Part the Amended Application by the Brazos River Authority for Water Use Permit No. 5851 and Approving Its Water Management Plan, TCEQ Docket No 2005-1490-WR, SOAH Docket No. 582-10-4184, September 16, 2016.