FAR WEST TEXAS
REGIONAL WATER PLAN
ERRATA SHEET

CHAPTER 3

(Section 3.3.6 / Page 3-17) Insert at end of section.

Naturally occurring low-flow or no-flow in the river during drought periods poses restrictions to water-related recreational activities, water-dependent wildlife, and desired diversions.

(Section 3.7 / Page 3-24) Insert the following text in the appropriate sections of each aquifer description.

3.7.3.1 Hueco Bolson and Rio Grande Alluvium

Discharge

Discharge from the aquifer under natural conditions is by direct evaporation from bare soil where the capillary fringe is near the land surface, by leakage to springs and to streams, by consumptive use of phreatohytes, and by interbasin and cross formational flow. Well pumpage accounts for the largest component of discharge from the aquifer (Hibbs and others, 1997).

Nearly all of the ground water in the Hueco Bolson flowed toward the Rio Grande during predevelopment times (White, 1987; Hibbs and others, 1997), when ground water moved upward through the Rio Grande alluvium and discharged by channel seepage and by consumptive use by phreatophytes. The average simulated discharge from the Hueco Bolson to the Rio Grande between 1903 and 1920 – before the period of substantial development of the aquifer – was 6,864 acre-ft/year (Meyer, 1976, as reported by Hibbs and others, 1997).

Contamination Threats

Contamination threats are mostly centered in and around El Paso. The aquifer has a moderate ground-water pollution potential (as measured by the DRASTIC index) of 80–109 for general, municipal, and industrial sources (Cross and Terry, 1991; as reported by Hibbs and others, 1997). The DRASTIC index is 110 – 124 along the slopes of the El Paso Valley where the Rio Grande has incised older bolson material.

In addition to the encroachment of naturally occurring, poorer quality ground water, there are a number of anthropogenic sources of contamination: abandoned wells, poorly constructed water wells, underground storage tanks, municipal sewage lines, septic tanks, dumps, underground pipelines, treated sewage injection wells, and abandoned animal feedlots (Cross and Terry, 1991; as reported by Hibbs and others, 1997).

Point-source contaminants detected in ground water at several sites in El Paso include: toxic trace elements (arsenic, copper, lead, zinc), PCB's, benzene, volatile, organics, glycols, gasoline, diesel, jet fuel, unspecified chemical, and waste oil (Texas Groundwater Protection Committee, 1992; as reported by Hibbs and others, 1997).

Nitrate contamination was identified near El Paso's Old Mesa Well Field. Contamination most likely occurred as a result of the seepage of perched or shallow ground water into abandoned wells which recharge the deeper aquifer (White, 1987; as reported by Hibbs and others, 1997).

Sewage contamination of ground water has been documented in Ciudad Juarez. Ninety-one percent of ground-water samples collected by Cech and Essman (1992) were fecal coliform positive. Sixty percent of tap-water samples were fecal coliform positive.

3.7.3.2 Mesilla Bolson Aquifer

Discharge

Most ground-water discharge occurs as municipal and industrial pumping in the Mesilla Valley. Gates and others (1980) comment that unpublished water-level maps prepared by the U.S. Geological Survey indicate that the direction of ground-water flow is toward the south. Before irrigation and ground-water pumping began, the lower Mesilla Valley was probably a swampy area of ground-water discharge. The narrow outlet at El Paso restricts the flow of ground water, and ground water in this area discharges by evapotranspiration.

Contamination Threats

Gates and others (1980) surmised that the seepage of shallow saline ground water in response to pumping-induced drawdowns of water levels may cause saline waters to move downward and laterally into freshwater zones of the aquifer. Poorer quality water also underlies the freshwater and may move upward in response to stresses imposed by pumping.

3.7.3.3 West Texas Bolson Aquifers

3.7.3.3.2 Ryan Flat

Discharge

There is no reliable published estimate of average annual ground-water discharge from the Ryan Flat aquifer. The natural discharge of ground water from the basin occurs by subsurface flow northward to Lobo Valley and through springs along the base of the mountains (Gates and others, 1980). Gates and others (1980) estimate that flow from Ryan Flat to Lobo Valley may be as much as 1,600 acre-ft per year. All other natural discharge is attributable to spring flow. Accurate estimates of discharge will require the development of a water-balance model and a numerical flow model for the basin.

Water Quality

A map depicting the quality of ground water in Ryan Flat (Figure 16 in Gates and others, 1980) indicates that there is no known brackish water or saline water in storage.

3.7.3.3.3 Lobo Valley

Discharge

Ground water does not discharge to the surface of Lobo Valley. The discharge of ground water from Lobo Valley occurs entirely by subsurface flow northward to Wild Horse Flat (Gates and others, 1980; Black, 1993). A numerical model of the Lobo Valley aquifer (Black, 1993) yielded an estimate of total flow through the aquifer of 3,599 acre-ft per year.

Contamination Threats

There are no known major contamination threats to ground water in Ryan Flat. The basin is not a site of industrial development, nor does it appear to be a suitable location for the disposal or processing of hazardous waste.

3.7.3.3.4 Wild Horse Flat and Michigan Flat

Discharge

There is no area within Wild Horse Flat and Michigan Flat where ground water discharges to the surface. Sharp (1989) surmised that ground water exits the basin, through the porous and permeable carbonate rocks of the Apache Mountains along the eastern margin of the basin. Accurate estimates of discharge will require the development of a water-balance model and a numerical flow model for the basin.

Contamination Threats

The large topographic basin formed by Wild Horse Flat and Michigan Flat does not appear to be threatened by widespread sources of contamination. Most of the population in this area of Far West Texas is clustered around the Town of Van Horn – a major stopping point for tourists and commercial traffic on Interstate Highway 10. Many of the threats to ground water in this area are probably associated with the potential for contamination associated with leaking petroleum storage tanks and possibly antiquated septic systems. However, because the depth to ground water in the vicinity of Van Horn is between 400 – 500 ft (White and others, 1980), it is difficult to render an assessment of the potential for contamination without first addressing the potential for the seepage of refined hydrocarbons and septic fluids through several hundred feet of basin fill.

Water Quality

The volume of fresh water beneath Wild Horse Flat and Michigan Flat has not been reported in previous studies. However, based on Figure 9 in Gates and others (1980), the volume of fresh water in the basin may be as much as one-third to one-half of the 7.2 million acre-ft of water in storage – or approximately 2.4 to 3.6 million acre-ft.

3.7.3.3.5 Green River Valley

Discharge

Ground water discharges to small springs and seeps in the southernmost areas of Green River Valley. The direction of flow is toward the Rio Grande, which is the principal zone of discharge for the aquifer (Gates and others, 1980; Darling, 1997). In other areas, ground water discharges to small springs and seeps within the basin (Gates and others, 1980; Darling, 1997). There are not reliable published estimates of the amount of ground water that discharges from the basin each year.

Water Quality

Fresh water probably accounts for at least 95 percent of recoverable water in storage – or 250 acre-ft.

Contamination Threats

Green River Valley is an isolated and rugged area within the Far West Texas region. As such, the basin is not likely to attract the type of development that would present either a short-term or a long-term threat to water quality.

3.7.3.3.6 Red Light Draw

Discharge

Ground water discharges to small springs and seeps in the southernmost areas of Red Light Draw (Gates and others, 1980; Darling and others, 1994). Darling and others (1994) report artesian flow from a shallow geophysical borehole in the southern part of the basin. Ground water flows toward the Rio Grande, which is the principal zone of discharge for the aquifer (Gates and others, 1980; Darling, 1997). Accurate estimates of discharge will require the development of a water-balance model and a numerical flow model for the basin.

Water Quality

Fresh water may account for 95 percent of recoverable ground water in storage in the Red Light Draw aquifer, or 673,000 acre-ft.

Contamination Threats

Red Light Draw is an isolated and rugged area within the Far West Texas region. As such, the basin is not likely to attract the type of development that would present either a short-term or a long-term threat to water quality.

3.7.3.3.7 Eagle Flat

Discharge

Ground water does not discharge to the surface in any area of Eagle Flat. The depth to water beneath the topographically lowest areas of the basin ranges from 400 ft to as much as 800 ft (Darling and others, 1994; Darling, 1997). The direction of ground-water flow beneath southeastern Eagle Flat is eastward. Subsurface discharge probably occurs through porous and permeable rocks that separate southeastern Eagle Flat and Wild Horse Flat (Gates and others, 1980; Darling, 1997). A small amount of ground water also flows from small springs and seeps in the highlands that surround the basin (Gates and others, 1980). Accurate estimates of discharge will require the development of a water-balance model and a numerical flow model for the basin.

Water Quality

All of the ground water in storage within the southeastern Eagle Flat aquifer is fresh, on the basis of hydrochemical analyses reported by the researchers cited above.

Contamination Threats

Southeastern Eagle Flat is an isolated and rugged area within the Far West Texas region. As such, the basin is not likely to attract the type of development that would present either a short-term or a long-term threat to water quality.

3.7.3.4 Bone Spring-Victorio Peak

Discharge

Large quantities of water are discharged each year through springs, seeps, and evaporation from the salt flats. Estimates of discharge by evaporation in the salt flats range from 40,000 to 250,000 acre-ft (Scalapino, 1950; Davis and Leggat, 1965; and Boyd and Kreitler, 1986).

Water Quality

Although there are no reliable published estimates of the volume of water in storage, based on TDS concentrations, nearly all producible ground water of the Bone Spring-Victorio Peak aquifer appears to be at least slightly saline (1,000 – 3,000 mg/l).

Contamination Threats

Nitrate derived from fertilizers is probably the greatest threat to ground water of the Bone Spring-Victorio Peak aquifer. Ashworth (1995) notes that samples of ground water from eight wells sampled over a 14-year period (1979 to 1993) yielded nitrate concentrations in excess of the recommended drinking-water standard of 44.3 mg/l. Nitrate in drinking water is typically not a problem to adults. Infants younger than three months old, however, are susceptible to the nitrate-related health problem, methemoglobinemia – a condition that involves the inability of blood to carry oxygen (Stewart, 1990).

Elevated naturally occurring radiological activity is not uncommon. Fourteen samples from 30 wells had gross-alpha activity in excess of the recommended drinking-water standard of 15 picocuries per liter (pCi/l). Two samples exceeded the recommended safe level of gross-beta activity of 50 pCi/l. The source of the radioactive elements in ground water of the Bone Spring-Victorio Peak aquifer is probably from the disintegration of radioactive parent materials of volcanic rocks in the vicinity of Dell City (Ashworth, 1995).

3.7.3.5 Igneous Aquifer

Discharge

Ground water discharges to numerous springs and small streams within the boundaries of the Igneous aquifer, but there are no reliable published estimates of total discharge. It must be emphasized here that because the Igneous aquifer has not been the subject of extensive hydrogeologic investigations, it remains one of the least understood ground-water systems of Far West Texas.

Water Quality

Nearly all ground water of the Igneous aquifer appears to be fresh, based on the limited number of published hydrochemical analyses for this area.

Contamination Threats

Most of the potential for contamination is probably limited to those areas with the greatest population densities: Alpine, Fort Davis, and Marfa. The most likely sources of contamination around these cities include leaking petroleum storage tanks and faulty septic systems. Judicious management of areas around public water-supply wells should minimize many of the direct threats to drinking water. The igneous rocks of the region might also be a source of elevated radiological activity.

3.7.3.6 Edwards-Trinity (Plateau) Aquifer

Discharge

Ground water discharges to numerous springs in canyons and along escarpments of the formations that comprise the Edwards-Trinity (Plateau) aquifer in Far West Texas. The amount of discharge, however, has not been well documented because most springs are on privately owned land. Ground water that does not issue as spring flow discharges by subsurface flow.

Water Quality

There are insufficient data to estimate the volume of ground water based on TDS ranges within the area of the Plateau aquifer that lies beneath Far West Texas.

Contamination Threats

Oil and gas wells in Terrell County are the most significant sources of potential contamination. Improperly cased and cemented wells, or wells that have not been plugged according to standards of the Texas Railroad Commission may allow brine to mix with ground water of the Plateau aquifer. Leaking underground petroleum storage tanks and antiquated septic tanks may also be point sources of contamination.

3.7.3.7 Capitan Reef Aquifer

Discharge

Ground water does not discharge naturally to the surface from the Capitan aquifer. All ground water moves through the system by subsurface flow (Hess, 1984). Assuming steady-state conditions are characteristic of the Capitan aquifer, then the volume of ground water flowing from the aquifer entirely through the subsurface should be equal to the average annual recharge.

Contamination Threats

There are no major contamination threats to the Capitan aquifer in Far West Texas. In areas east of the region, oil and gas wells present a problem with oilfield brine and hydrocarbons.

3.7.3.8 Marathon Aquifer

Discharge

Discharge from the Marathon occurs by springflow. DeCook (1961) reports that discharge from 11 springs in the Marathon area in 1957 was estimated to be about 660 acre-ft per year. There has not been a survey of this area since DeCook's (1961) study. A full accounting of the number of springs and of total springflow, however, is not possible at this time. A large quantity of ground water probably discharges by evapotranspiration. The amount of evapotranspirative loss varies by season, with the greatest losses occurring during the summer when environmental water demand is highest. Discharge also occurs by direct evaporation at several places along Pena Colorado Creek, Maravillas Creek, and other streams, where the water table is at or near the land surface (DeCook, 1961).

Water Quality

There are insufficient published data to estimate the volume of ground water in storage according to the range of TDS concentrations. Fluoride may also exceed recommended limits in many areas.

Contamination Threats

At least 12 wells in the vicinity of Marathon have been reported to have been contaminated by oil, gas, and saline water (DeCook, 1961). According to King (1937), the oil "does not appear to have come from storage tanks or other surface supplies. These oil showings suggest that the Gaptank formation in this district contains oil. The wells near Marathon, where the country rock is of Ordovician age, may receive their oil from the Gaptank formation by migration upward through the plane of the Dugout Creek overthrust." DeCook (1961) comments that the contamination appears to be spreading slowly eastward. The oil and gas are apparently encountered near the top of the zone of saturation, so that most of the contamination is at depths of about 90 to 140 feet below the land surface. Other sources of contamination are related to point sources, such as leaking underground petroleum storage tanks and antiquated septic tanks.

3.7.3.9 Rustler Aquifer

Discharge

There is no known point of ground-water discharge from the Rustler aquifer in Far West Texas.

Contamination Threats

There are no major contamination threats to the Rustler aquifer in Far West Texas. In areas east of the region, oil and gas wells present a problem with oilfield brine and hydrocarbons.

(Section 3.9 / Page 3-56) Insert at beginning of section.

To varying degrees, all living species rely on water for survival. In Far West Texas, natural resources in the form of both plants and animals are, likewise, influenced by changes in water supply availability. Although the normal desert climate of this region has prepared native plants and animals for survival under adverse dry conditions, unusual changes in volume or quality of available moisture may have adverse effects on some species. During prolonged drought periods, little or now flow may occur along segments of the Rio Grande and the lower reaches of the Pecos River are generally dry.

Historically, a decline in the diversity of species endemic to the Rio Grande, such as the Rio Grande Silvery Minnow, is principally attributable to modification of stream discharge patterns and channel desiccation by impoundment, water diversion for agriculture, and stream channelization (Burton, 1998). An impact assessment of Upper Rio Grande environmental water needs is currently being conducted as part of the El Paso-Las Cruces Regional Sustainable Water Project. Also, the International Boundary and Water Commission has proposed a project that will include an environmental impact assessment of rechanneling segments of the Rio Grande.

(Section 3.9 / Page 3-56) Insert at end of section.

An intensive water-quality investigation of the Rio Grande from El Paso/Juarez to Brownsville/Matamoros was conducted by several state, federal and international agencies (International Boundary and Water Commission, 1994). The study concluded that fish and microbenthic communities generally are healthy. However, of the 36 sampling stations, one station located downstream from El Paso/Juarez exhibited a high potential for toxic chemical impacts.

CHAPTER 5

(Section 5.10 / Sixth paragraph / Page 5-39)

Delete Community of Fabens, Fort Bliss, and El Paso County Other and add El Paso County Mining and El Paso County Livestock to the list of entities with unmet water-supply needs.

STRATEGIES
(Located in Chapter 5)

Strategy 22-1

The following text is modified in the Quantity section: ~~Total volume = 807 ac-ft/yr~~ Initial volume of 507 ac-ft/yr in 2000 will increase to 807 ac-ft/yr in 2050. The following text is modified in the Cost section: For 400 wells, the total cost is ~~$3,614,350~~ $3,400,00. The following text is added to end of the Cost section: Total capital cost is $3,614,350.

Strategy 22-2

The following text is added in the Cost section: There is no capital cost assumed for this strategy, however, there is an annual maintenance cost.

Strategy 55-2

The following text is added in the Quantity section: An initial volume of 55 ac-ft/yr in 2030 will increase to 88 ac-ft/yr in 2050.

Strategy 55-3

The following text is added in the Quantity section: An initial volume of 50 ac-ft/yr in 2030 will increase to 106 ac-ft/yr in 2050.

Strategy 71-2

In the Strategy Description section, delete the fourth through the last sentences.

In the Quantity of Water section, replace existing paragraph with the following: For purposes of this evaluation, it is assumed that the Riverside Canal would be lined for its entire 17.23-mile length over a 20 year time span, and that the economic lifetime of the lining is 30 years. Research by Zhuping Sheng, Ph.D., of El Paso Water Utilities, in 1999 tabulated and summarized the upper, average, and lower water savings estimates that could be expected during the summer irrigation season from lining of the Riverside Canal, using data from three separate studies and three different methodologies. Conservatively using the lower water savings estimates, the average savings from these studies is 28,835 AF/year during the summer irrigation season.

In the Cost of Water section, replace the existing paragraph with the following: Cost estimate for lining of the Riverside Canal is approximately 1,653,823 per mile, including engineering, contingency, and O&M costs. Lining the total 17.23-mile length of the Canal would result in capital costs of $28,353,600.

Assuming the District lined 1 mile of the Canal per year, the annual water savings per mile would be 28,835 / 17.23 = 1,673 AF. Assuming that only 80% of the 1,673 AF/year/mile savings was actually realized due to a lower average allotment over the 30 year lifespan of each 1 mile segment, the present value of the water saved over the 30 year economic lifespan of each segment would be 80 % x 1,673 x 15.372 (present worth factor, i=5%, n=30), or 20,574 AF. Dividing these savings by the cost per mile of $1,653,823 results in a unit cost of $80.38 per AF.

The above cost represents the cost to the El Paso County Water Improvement District #1 for lining the canal. The cost to the City for conversion of this water to M&I use would likely be higher. Assuming a cost of water to the City (after conversion of the saved water to M&I use) of $260 per AF and a surface water treatment cost of $326 per AF (based on existing treatment costs), the total cost to the City would be $586 per AF.

Strategy 71-3

The following text is modified in the Quantity section: The estimated quantity of reclaimed water could eventually amount from 15,000 to over 19,000 acre feet per year…

The following text is modified in the Reliability section: ~~However, source water (Upper Rio Grande and ground water) is not considered available during drought-of-record conditions after 2030~~. For this strategy it is assumed that the city will have a supply of water from a combination of strategies.

Strategy 71-5

The following text is modified in the Cost section: The annual cost associated with this strategy is ~~$4,271,128~~ $8,550,000. Cost estimate is based on a quantity of ~~15,000~~ 30,000 acre-feet/year.

Strategy 71-10

The following text is modified in the Reliability section: ~~The reliability of~~ Water supply from the Mesilla Bolson is projected to be depleted after 2010 as a result of ~~becomes doubtful with~~ the increased reliance on this source by many of the communities on the west side of El Paso and in southern New Mexico.

Strategy 71-17

The following text is modified in the Strategy Description section: Withdrawals from existing wells in the Hueco Bolson operated by …. ~~Fort Bliss would thus be dependent on water purchased from the City of El Paso (Strategy 71-16).~~

Strategy 71-45

The following text is added to the Time Intended To Implement section: Long Term: To be continued through 2050. The following text is added to the Reliability section: Beyond 2020, strategy 71-44 (desalination) would be necessary to assure a potable source of water.

Strategy 71-46

The following text is added to the Reliability section: <u>Beyond 2020, the availability of a potable source of water from El Paso is dependent on the implementation of City of El Paso strategies.</u>

Strategy 71-21

The following text is modified in the Strategy Description section: Desired quantity of treated water from the Upper Rio Grande and the ~~Hueco~~ <u>Mesilla</u> Bolson …. The following text is modified in the Reliability section: … Mesilla Bolson becomes doubtful … after the year ~~2020~~ <u>2010</u>. The following text is modified in the Cost section: The annual cost associated with this strategy is ~~$146,145~~ <u>$134,726</u>. The cost per acre-foot/year is ~~$2,171~~ <u>$1,271</u>.

Strategy 71-22

The following text is modified in the Strategy Description section: Desired quantity of treated water from the Upper Rio Grande and the ~~Hueco~~ <u>Mesilla</u> Bolson …. The following text is modified in the Reliability section: … ~~Hueco~~ <u>Mesilla</u> Bolson becomes doubtful … after the year ~~2020~~ <u>2010</u>.

Strategy 71-32

The following text is modified in the Strategy description section: This strategy considers … 10 wells in ~~the Hueco Bolson or Bone Spring-Victorio Peak aquifers~~ <u>Other Aquifers</u> for the steam generating process. The following text is modified in the Reliability section: Sufficient ground water from ~~the Hueco Bolson or Bone Spring-Victorio Peak aquifers~~ <u>Other Aquifers</u> to meet increased needs may be limited<u>, however, it is assumed that sufficient supplies are available for this need.</u>

Strategy 71-37

The following text is modified in the Reliability section: Sufficient ground water is available from the Hueco <u>and</u> Mesilla <u>Bolson</u> ~~and Rio Grande Alluvium~~ aquifers <u>only through 2020</u> ~~while causing minimal increase in water-level declines~~.

Strategy 71-40

The following text is modified in the Reliability section: Sufficient ground water is available from the ~~Rio Grande Alluvium and likely from the~~ Hueco and Mesilla Bolsons <u>only through 2020</u> ~~without excessive water-level declines~~.

Strategy 71-43

The following text is modified in the first sentence of the Strategy Description section: … Upper Rio Grande and the ~~Mesilla~~ <u>Hueco</u> Bolson …

The following text is modified in the first sentence of the Reliability section: … fresh ground water from the Hueco ~~and Mesilla~~ Bolson…

Strategy 115-3

The following text is modified in the Reliability section: Sufficient ground water is available from <u>the Hueco Bolson aquifer</u> ~~local aquifers~~; however ….

Strategy 115-11

The following text is added to the end of the Quantity section: <u>Forty new wells will generate 5,892 acre-feet/year.</u>

Strategy 115-12

The following text is added to the end of the Cost section: <u>Total capital cost is $425,000.</u>

Strategy 122-1

The following text is modified in the last sentence of the first paragraph in the Cost section: The total cost is <u>$36,350</u>.

The following text is modified in the last two sentences of the second paragraph of the Coat section: Cost of 60 domestic wells is <u>$390,000</u>. Total strategy cost is <u>$426,350</u>.

Strategy 122-2

The following text is added in the Cost section: <u>There is no capital cost assumed for this strategy, however, there is an annual maintenance cost</u>.

Strategy 189-2

The following text is added in the Cost section: <u>There is no capital cost assumed for this strategy, however, there is an annual maintenance cost</u>.

Strategy 222-2

The following text is added in the Cost section: <u>There is no capital cost assumed for this strategy, however, there is an annual maintenance cost</u>.

TWDB TABLES
(Located in appendices volume)

TWDB TABLE 3

Lower Valley Water District / San Elizario: Replace recipient ID code ~~776520~~ with <u>260330</u>.

TWDB TABLE 4

Upper Rio Grande, County 71: Change supply volume in all decades from ~~22,773~~ to <u>72,746</u>.

Lower Rio Grande, County 22: Change supply volume in all decades from ~~35,438~~ to <u>11,813</u>.

Lower Rio Grande, County 189: Change supply volume in all decades from ~~35,438~~ to 11,813.

Lower Rio Grande, County 222: Change supply volume in all decades from ~~35,438~~ to 11,812.

TWDB TABLE 11

Brewster County Other 22-2: Change total capital cost from ~~$1,920,000~~ to $0.

Brewster County Other 22-4: Change total capital cost from ~~$450,000~~ to $0 and change cost for decades 2010 through 2050 from ~~NA~~ to 1,500.

El Paso 71-2: Change the total capital cost from ~~$900,000,000~~ to $28,353,600 and change the annual cost in decades 2010 trough 2030 from ~~$600~~ to $80.

El Paso 71-3: Change the volume in decades 2030 through 2050 from ~~0~~ to 19,000.

Canutillo 71-12: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Mesilla Bolson.

Clint 71-13: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

Fabens 71-14: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

Fort Bliss 71-16: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh). Change cost for decades 2000 through 2050 from ~~$1,279~~ to $1,270.

Fort Bliss 71-45: Change volume for decades 2030 through 2050 from ~~0~~ to 800.

Fort Bliss 71-46: Change volume for decades 2030 through 2050 from ~~0~~ to 780.

Homestead 71-18: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

Homestead 71-51: Change total capital cost from ~~$9,600,000~~ to $0.

San Elizario 71-19: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

Socorro 71-20: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

Vinton 71-21: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Mesilla Bolson.

Westway 71-22: Socorro 71-20: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

El Paso County Other 71-23: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

El Paso County Other 71-24: Change volume in decade 2030 from ~~18,991~~ to 27,549.

El Paso County Other 71-26: Change the volume in decades 2010 and 2020 from ~~24,000~~ to 0.

El Paso County / Manufacturing 71-29: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

El Paso County / Steam Electric 71-30: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

El Paso County / Mining 71-33: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

El Paso County / Irrigation 71-34: Change annual cost for all decades to $6.

El Paso County / Irrigation 71-35: Change annual cost for all decades to $4. Change volume for decades 2030 through 2050 from ~~0~~ to 1,200.

El Paso County / Livestock 71-38: Insert 38071 as the specific source ID.

El Paso County / Livestock 71-43: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (fresh). Change volume in decade 2020 from ~~0~~ to 70.

Hudspeth County Other 115-2: Change total capital cost from ~~$1,920,000~~ to $0.

Hudspeth County Other 115-4: Change cost for decades 2010 through 2050 from ~~$362~~ to $401.

Hudspeth County Other 115-5: Change cost for decades 2010 through 2050 from ~~$285~~ to $756.

Hudspeth County / Irrigation 115-10: Change volume for decades 2010 through 2050 from ~~2,610~~ to 618.

Hudspeth County / Irrigation 115-12: Change cost for decades 2010 through 2050 from ~~$50~~ to $5.

Jeff Davis County Other 122-1: Change total capital cost from ~~$155,350~~ to $426,350.

Jeff Davis County Other 122-2: Change total capital cost from ~~$1,200,000~~ to $0.

Jeff Davis County / Livestock 122-8: Insert 38122 as the specific source ID.

Presidio County Other 189-2: Change total capital cost from ~~$1,920,000~~ to $0.

Terrell County Other 222-2: Change total capital cost from ~~$1,920,000~~ to $0.

TWDB TABLE 12

Insert an additional column at the far right-hand end of the table with a title of Exception. Place the following text *"No water management strategy is feasible to meet all the water-supply needs of this entity"* in the column for the following entities: El Paso, Anthony, Canutillo, Clint, San Elizario, Socorro, Vinton, Westway, El Paso-Manufacturing, El Paso-Steam Electric, El Paso-Mining, El Paso-Irrigation, El Paso-Livestock.

Brewster County Other 22-2: Change total capital cost from ~~$1,920,000~~ to $0.

Brewster County Other 22-4: Change total capital cost from ~~$450,000~~ to $0.

Brewster County Other 22-6: Insert 38022 as the specific source ID.

El Paso 71-2: Change the total capital cost from ~~$900,000,000~~ to $28,353,600.

El Paso 71-3: Change the volume in decades 2030 through 2050 from ~~0~~ to 19,000.

Canutillo 71-12: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Mesilla Bolson.

Clint 71-13: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

Fabens 71-14: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

Fort Bliss 71-16: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

Fort Bliss 71-44: Add data from the strategy 71-44 line in Table 11 to Table 12.

Fort Bliss 71-45: Change volume for decades 2030 through 2050 from ~~0~~ to 800.

Fort Bliss 71-46: Change volume for decades 2030 through 2050 from ~~0~~ to 780.

Homestead 71-18: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

Homestead 71-51: Change total capital cost from ~~$9,600,000~~ to $0.

San Elizario 71-19: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

Socorro 71-20: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

Vinton 71-21: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Mesilla Bolson.

Westway 71-22: Socorro 71-20: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

El Paso County Other 71-23: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

El Paso County Other 71-24: Change volume in decade 2030 from ~~18,991~~ to 27,549.

El Paso County Other 71-26: Change volume in decades 2010 and 2020 from ~~24,000~~ to 0.

El Paso County / Manufacturing 71-29: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

El Paso County / Steam Electric 71-30: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

El Paso County / Mining 71-33: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

El Paso County / Irrigation 71-35: Change volume for decades 2030 through 2050 from ~~0~~ to 1,200.

El Paso County / Livestock 71-38: Insert 38071 as the specific source ID.

El Paso County / Livestock 71-43: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (fresh). Change volume in decade 2020 from ~~0~~ to 70.

Hudspeth County Other 115-2: Change total capital cost from ~~$1,920,000~~ to $0.

Hudspeth County / Irrigation 115-10: Change volume for decades 2010 through 2050 from ~~2,610~~ to 618.

Jeff Davis County Other 122-1: Change total capital cost from ~~$155,350~~ to $426,350.

Jeff Davis County Other 122-2: Change total capital cost from ~~$1,200,000~~ to $0.

Jeff Davis County / Livestock 122-8: Insert 38122 as the specific source ID.

Presidio County Other 189-2: Change total capital cost from ~~$1,920,000~~ to $0.

Terrell County Other 222-2: Change total capital cost from ~~$1,920,000~~ to $0.

TWDB TABLE 13

Insert an additional column at the far right-hand end of the table with a title of Exception. Place the following text *"No water management strategy is feasible to meet all the water-supply needs of this entity"* in the column for every line in the table except for the fourth from the last line (El Paso WCID#4 Strategy 71-15).

El Paso 71-3: Change the volume in decades 2030 through 2050 from ~~0~~ to 19,000.

Canutillo 71-12: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Mesilla Bolson.

Clint 71-13: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

Fabens 71-14: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

Fort Bliss 71-16: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

Homestead 71-18: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

San Elizario 71-19: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

Socorro 71-20: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

Vinton 71-21: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Mesilla Bolson.

Westway 71-22: Socorro 71-20: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

El Paso County Other 71-23: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

El Paso County / Manufacturing 71-29: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

El Paso County / Steam Electric 71-30: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

El Paso County / Mining 71-33: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (Fresh).

El Paso County / Livestock 71-43: Change specific source ID from ~~23500~~ to 07101 and change specific source from ~~Upper Rio Grande~~ to Hueco Bolson (fresh). Change volume decade 2020 from ~~0~~ to 70.

TWDB TABLE 14 - SUMMARY TABLE

El Paso County Other 71-24: Change volume in decade 2030 from ~~18,991~~ to 27,549.

El Paso / Livestock: Change volume in decade 2020 from ~~0~~ to 70.

Fort Bliss 71-45: Change volume for decades 2030 through 2050 from ~~0~~ to 800.

Fort Bliss 71-46: Change volume for decades 2030 through 2050 from ~~0~~ to 780.

El Paso / Irrigation 71-35: Change volume for decades 2030 through 2050 from ~~0~~ to 1,200.

Hudspeth / Irrigation 115-10: Change volume for decades 2010 through 2050 from ~~2,610~~ to 618.