Attachment 4

Exhibit D

Amended Guidelines for Regional Water Planning Data Deliverables

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Amended Guidelines for Regional Water Planning Data Deliverables

DRAFT VERSION 1.0

TO BE UPDATED AS DB17 IS DEVELOPED

- October 2012 -

Fourth Cycle of Regional Water Planning

CONTENTS

Introduction

The Texas Legislature directed the Texas Water Development Board (TWDB) to establish standards for reports and data presented in regional water plans. Section 16.053(d) of the Texas Water Code states: "The board shall provide guidelines for the format in which information shall be presented in the Regional Water Plans." This document, along with 31 Texas Administrative Code (TAC) §357, provides data reporting and formatting specifications for regional water planning groups (RWPGs) to follow when submitting electronic data to the TWDB including submitting data into the Regional Water Planning Application (DB17). It serves as a companion document to the *"First Amended General Guidelines for Regional Water Plan Development."* If there is a conflict between guidance documents, the "*First Amended General Guidelines for Regional Water Plan Development*" takes precedence over this document.

The remainder of this document provides more detailed guidance as to how each RWPG should report data to the TWDB. This includes general data reporting and data reporting through DB17.

The information listed in the following sections is final. Please be aware, though, that additional information may be added as the DB17 application is developed.

- Section 1 discusses general data requirements and expectations, including, but not limited to, data submitted through DB17
- Section 2 details the general format for reporting electronic data, including file and software types. This also includes, but is not limited to, data submitted through DB17
- Section 3 discusses required data for the Sources module of the DB17 application

The following sections are not final and all information in these sections is subject to change as the new DB17 application is developed. Each of these sections will be updated as the new application is developed and the application modules corresponding to these sections are released.

- Section 4 outlines required data for the Water User Group (WUG) module of DB17
- Section 5 discusses required data for the Wholesale Water Provider (WWP) module of DB17
- Section 6 outlines required data for the Water Management Strategy (WMS) module of DB17

**NOTES ON DEVELOPMENT OF NEW DATABASE APPLICATION:

Please be aware that database and application development of DB17 will take a couple of years to complete and along the way there will be significant changes from the previous regional water planning application.

One of the most significant changes is that WUG and WWP data will no longer be entered in separate modules in the application. All WUGs and WWPs will be grouped together in a master list of 'entities'. Each entity will have WUG attributes, WWP attributes or both. Sources will also be associated with entities in a different manner. All direct users of a source will relate directly to the source. However, entities that purchase water will be able to relate to the seller instead of having to relate to the source.

There will be significant changes to the method which strategies, strategy sources and entities relate. As a whole, these changes are intended to simplify the data entry process. This document provides an example of the extent of work that will be associated with entering data into DB17 but will change significantly as the new database and application is developed. These changes will be provided as a developing part of this contract document and released as new modules of DB17 are released for data entry.

Because of the changes to the database and application, it will be necessary for the RWPGs and their technical consultants to reestablish the relationships between entities (including WUGs and WWPs), existing sources of supply and water management strategies in DB17. This work will involve repopulating the database and is anticipated to be similar in effort to what was necessary in the 2007 Regional Water Planning Application (DB07).

ALL SECTIONS OF THIS DOCUMENT-IN-PROGRESS ARE SUBJECT TO CHANGE AS THE REGIONAL WATER PLANNING APPLICATION (DB17) IS DEVELOPED.

SUBSEQUENT VERSIONS OF THIS DOCUMENT SHALL BE NUMBERED CONSECUTIVELY (E.G., 'VERSION 2.0').

NOTE THAT ANY DATA PREPOPULATED INTO DB17 FROM DB12 BY TWDB FOR CONVENIENCE (E.G., SURFACE WATER AVAILABILITY) SHALL NOT BE ASSUMED TO BE CORRECT AND MUST BE UPDATED, CHECKED, AND/OR VERIFIED BY THE RWPGS TO ENSURE THAT IT IS ACCURATE AND MEETS ALL UPDATED PLANNING REQUIREMENTS AND CAN BE DOCUMENTED ADEQUATELY.

1.0 General Data Requirements

Data should conform and comply with all 31 TAC Chapter 357 rules that require RWPGs to evaluate the adequacy of water supplies in each region during drought of record conditions. The data should also be developed based on the guidance in subsequent sections of this document and the *"First Amended General Guidelines for Regional Water Plan Development."* Evaluations should consider surface water, groundwater and reuse data from the state water plan, existing water rights, contracts and option agreements, and any other relevant planning and water supply studies available. In addition:

- submitted information must be accurate and based on the best data and science available
- potential interregional conflicts should be identified and resolved prior to final data entry into DB17
- RWPGs must enter all fields in DB17 unless otherwise stated
- spelling, word order, and proper names must be used consistently and correctly when entering data into DB17
- RWPGs must use the same reporting conventions for data shared by more than one region
- RWPGs must agree on underlying data (e.g. availability numbers) early on
- only whole numbers should be entered into DB17

2.0 Formats for Electronic Data

2.1 Files and Software

Electronic files may be shipped using CD, DVD or external hard drive. RWPGs should deliver one copy of electronic files (on CD, DVD or external hard drive), a copy of electronic file lists for each CD, DVD or external hard drive, and file description print outs, including metadata file printouts. Files and data transferred to the TWDB should be in a ready-to-use format. Formats of all computer files provided to the TWDB should be compatible with widely distributed versions of the following software:

- word processor files - Microsoft Word (MS Office 2007 or newer versions)
- GIS coverages – Arc/Info (7.21 or newer)
- GIS shape files – ArcView (9.0 or newer)

- database files – Microsoft Access (MS Office 2007 or newer); each region will have access to DB17 via the internet and will be able to manage all of their data through DB17 without the need for additional database files
- internet browsers – Internet Explorer (8.0 or newer)
- spreadsheet files – Microsoft Excel (Office 2007 or newer)
- graphs, bar-charts, pie-charts – Microsoft Excel (Office 2007 or newer)

RWPGs should receive approval from the TWDB's executive administrator as to the compatibility of any alternative software.

Metadata and a printed file/disc description should accompany all electronic files. File description documentation must explain file naming conventions and contents of each disc and file. File naming conventions should follow a recognizable pattern. Files submitted must be 100 percent compatible with Microsoft Excel 2007. If using software other than Microsoft Excel 2007, RWPGs should receive prior approval from the TWDB as to its compatibility.

All drawings and graphs included in reports should be provided to the TWDB in two formats: 1) Encapsulated PostScript (EPS) formats with a TIFF preview using Pantone Process Colors (Pantone Matching System Colors - PMS colors) capable of being separated into four colors - cyan, yellow, magenta, and black. 2) Graphics should also be inserted in the Word documents in TIFF or JPG formats, at a minimum of 200 dpi.

Any other deliver methods will only be allowed with pre-approval from the TWDB if these requirements present a significant burden on the RWPG or as technology changes.

2.2 Data Units

The following units of measurement apply to all submitted data presentations:

- land area – square miles (mi^2)
- water area – acres (ac)
- water volume – acre-feet (ac-ft)
- water supply and demand – acre-feet per year (ac-ft/yr)
- treatment plant capacities – million gallons per day (mgd)
- water use per capita – gallons per capita per day (gpcd)
- stream flows and reservoir releases – cubic feet per second (cfs)

- pumping rates – gallons per minute (gpm) or million gallons per day (mgd)
- costs – constant September 2013 U.S. dollars (per Engineering News Record Construction Cost Index)

2.3 Data Requirements for Geographic Information

This section is intended to provide specific requirements and file delivery formats for all GIS materials developed in support of the regional water plan (RWP) process. These work products include GIS and imagery files that are created for the RWPGs and TWDB.

2.3.1 Required Maps and Data

RWPGs shall provide geographic information illustrating important features of each regional water planning area (RWPA) including regional boundaries, political subdivisions, major water demand centers such as cities, major providers of municipal and manufacturing water, major water supplies, mapped aquifers, and any other important and relevant features of a RWPA.

Each RWPG is responsible for submitting a digital data file containing geographic data for each recommended and alternative water management strategy (WMS) identified in the RWP (project specific data such pipelines, well fields or ASR sites etc.) This may include approximate locations and simplified representations as necessary and should be delivered as a self-contained package with metadata (e.g., as an ESRI Map Package)

2.3.2 Base Data

The Texas Natural Resources Information System (TNRIS) is part of the TWDB and provides GIS data state-wide. When available, RWPGs shall use TNRIS StratMap data products available online at: http://www.tnris.org/StratMap

If StratMap data products are not available, and the TWDB has other acceptable data, the TWDB shall make these base maps available. If the TWDB does not have StratMap or other products available, RWPGs may use other types of data, but shall coordinate with TWDB project managers to ensure compatibility.

2.3.3 GIS Data Files

All final versions of spatially-enabled files acquired or developed to support mapping and/or spatial analysis through TWDB-funded projects are considered property of the TWDB and are required to be submitted to TWDB. This includes but is not limited to all GIS, CAD, and image-formatted data. Only final versions of each layer are required for delivery to TWDB, and shall be in an approved format as specified in this document. In addition, all electronic geospatial data, whether vector or raster, shall have spatial reference information and be projection defined (have its coordinate system identified and embedded in or associated with the data file), and in the case of CAD data shall NOT be in page space or a custom site-specific projection. All CAD data shall be in known real world coordinate space, ideally in geographic/decimal degrees/NAD83. Should

tabular data be appropriate to connect location information with attribute information, then documentation specifying the primary and foreign keys is required. Should coordinate information be provided in tabular format it should contain at minimum the following fields:

- ID – a unique identifier given to each feature
- Latitude – the Y coordinate in decimal degrees
- Longitude – the X coordinate in decimal degrees
- Horizontal Datum – the datum of the coordinates.

All static maps shown in RWPs shall be provided in an electronic Adobe PDF format with fonts embedded and at a resolution of 300 dots per inch (dpi) or greater. All ArcMap documents (.mxd) or equivalent map document formats used in final map production are also required for delivery to TWDB with accompanying data in a stand-alone directory structure. Map document formats also need to be configured to use relative paths and not be set to use a printer-specific paper setting.

2.3.4 Metadata and Projection Requirements

All GIS files developed for TWDB are required to have associated metadata. Deliverables are not considered complete without metadata. Metadata, including information about the data's projection, can be developed using one of several built-in or add on tools within ArcGIS, and typically is associated with the geometry file as an XML file.

All GIS files submitted to TWDB must have spatial reference information that describes the projection, datum, and where applicable the collection methods. The TWDB prefers to have vector data be submitted in geographic coordinate system, decimal degree units, and NAD83. Raster data, such as aerial photographs may be submitted in their native projection, and maps shall be in the appropriate projection/coordinate system for the area depicted.

2.3.5 Delivery Requirements and Standard Organizational Structures

As stated in Section 2.1, RWPGs shall deliver one copy of electronic files and a copy each of electronic file lists and file description print outs including metadata file printouts. TWDB will accept data delivered on CD, DVD, or external hard drive. Other delivery methods may be allowed with pre-approval from the TWDB if those requirements present a significant burden or as technology changes.

If the project is complex, a directory structure and readme text file in the upper level directory that describes the structure is required. File description documentation must explain file naming conventions and contents of each disc and file. File naming conventions shall follow a recognizable pattern and shall include information about the Region and figure title when relevant.

A recommended directory structure is as follows:

<ProjectName>

Docs (reports, SOPs, correspondence, and other such documents)
Images (aerial photos, satellite imagery, logos, DEMs, and other raster type data)
Maps (MPK, MXD and PDF. Map names shall reference the Region and figure title as a prefix when possible)
Shapes (geodatabases, shape files, and other approved vector data formats)
Source (original unmodified data that may have been acquired from external/internal sources)
Tables (databases, spreadsheets, delimited text files, or other such tabular data not stored in a geodatabase)

File naming conventions shall be logical, consistent, and contain no spaces or special characters, including the underscore. It is preferred that "camel case" be used in the formatting of file names. "Camel case" is a formatting style that capitalizes the first letter of each word in the file name and does not include spaces. An example of "camel case" can be seen in the previous paragraph (ProjectName). File naming shall include Region and figure title when relevant.

2.3.6 TWDB Acceptable Data Formats

The following file formats are considered acceptable and all maps and data shall include an associated metadata document:

- Vector - projected to geographic, decimal degrees, NAD83 - other defined projections allowed on an individual basis:
    - Shape File (.shp, .shx, .dbf, .prj, .sbx, .sbn)
    - File Geodatabase (.gdb)
    - Personal Geodatabase (.mdb)
    - Map package (.mpk)
    - Oracle Dump (.dmp)
    - XML Workspace Document with dependencies clearly documented (.xml)
- Raster - native projection acceptable
    - TIFF image with world reference file or as a GeoTIFF (.tif, .tfw)
    - JPEG image with world reference file (.jpg, .jpw)
    - ERDAS Imagine image with pyramid file (.img, .rrd)
    - MrSid image (.sid)
    - ESRI Grid

  - DEM

- TINs - appropriate projection/coordinate system for the area depicted
  - ESRI TIN
- CAD - projected to geographic, decimal degrees, NAD83 or appropriate, specified projection
  - DXF layer separates (.dxf)
- Tabular - primary keys shall be clearly identified/documented
  - Microsoft Access 2007 database (.accdb)
  - Microsoft Excel 2007 spreadsheet (.xlsx)
  - Delimited text file (.txt, .csv)
- Static Maps
  - Adobe PDF at 300 dpi or better with embedded fonts (.pdf)
- Dynamic Maps
  - ArcMap document with associated data files in a stand-alone directory structure using relative paths (.mxd)

2.3.7 Checklists

Appendix B provides a one page checklist that can be used to verify that all geographic information meets the data requirements outlined in this section.

2.4 Graphs

Presentations of data using bar graphs, pie charts, line graphs etc. may be used where appropriate.

2.5 Data Time Frame and Time Steps

Data regarding population, water demands, water supplies, etc. are reported in decadal increments starting with the year 2020 and extending through the year 2070. Each decadal increment is a one-year representative of all years in that decade. For example, the year 2020 is a one-year snapshot of the entire decade and represents the years 2020 through 2029. Data must be developed and all requirements listed in this document and the *" First Amended General Guidelines for Regional Water Plan Development "* must be met for all decades even if the RWP cycle moves past the initial year.

3.0 Data for Existing Water Sources

This section describes the information in the Sources Module of DB17. It includes data fields that the RWPGs are required to populate, along with possible entry codes and methods to develop the required information. For additional guidance on the methods for regional water plan development, see the "*First Amended General Guidelines for Regional Water Plan Development."*

The Sources Module in DB17 includes projected volumes of water from sources located in or available to each region under drought-of-record and existing development conditions, regardless of whether the supply is physically or legally available to use. The data within the Sources Module contains fields to describe all sources of water in the state along with their availability volumes.

The availability volumes will be entered as annual values for decades 2020 through 2070. Water sources will be described as groundwater, surface water or reuse. Sources that have the potential for desalination will also be identified in the Sources Module during the fourth cycle of regional and state water planning.

3.1 Types of Sources

Sources may be categorized under the following grouping levels in the Sources Module – surface water, groundwater, or reuse.

- Surface water: Lakes and reservoirs may be listed as individual reservoirs, as a system's surface water component (where reservoirs are operated in combination), or as the non-system portion of a reservoir. List all lakes and reservoirs as reservoirs or systems, but do not list any as run-of-river diversions. Report reservoirs and any lake/reservoir surface water components of a system at the basin level. All other surface water sources (run-of-river permits and local supplies) will be reported at the county-basin level. Surface water volumes will be reported as annual values under drought-of-record conditions.

- Groundwater: For groundwater sources, Modeled Available Groundwater estimates (MAGs) for approved desired future conditions in Groundwater Management Areas (GMAs) will be populated in the database application by the TWDB and the values will not be editable by the RWPGs. For select aquifers in areas where MAGs do not exist, RWPGs may use other methods to determine groundwater availability, but the methods must be justified and documented. Groundwater sources may be listed as a component of a system if surface water, groundwater and/or reuse are combined together to supply end users. Groundwater volumes will be reported as annual values under drought-of-record conditions for each aquifer at the appropriate county-basin level.

- Reuse: Reuse sources should be listed as direct or indirect. Reuse sources may be listed as a component of a system if surface water, groundwater and/or reuse are combined together to supply end users. Reuse volumes will be reported as annual values under drought-of-record conditions for each reuse source at the appropriate county-basin level.

3.2 Systems

Surface water, groundwater and/or reuse sources may be aggregated and listed as systems, if applicable. It may be appropriate to list some sources as systems when 1) multiple reservoirs operate together to achieve a system gain, 2) multiple reservoirs operate together and the specific source of supply to each end user cannot be determined or 3) surface water, groundwater and/or reuse sources are combined together to supply end users.

Regardless of the justification for reporting multiple sources as a system, the firm yield of each reservoir that makes up the surface water component of the system should be listed in DB17. The only exception is when the firm yield of each reservoir that makes up the surface water component of the system has not been modeled individually. If the reservoirs that make up the surface water component of a system can be tracked to an end user, RWPGs should report these surface water sources as separate records and report any system gain as an additional source. For systems composed of surface water, groundwater and/or reuse, list both components separately. If a reservoir that is part of a system has a non-system portion, report the non-system portion as a separate record and report the system portion as part of the combined system yield (when the supply to each end user cannot be determined) or as a separate record (when the supply to each end user can be determined).

Availability volumes for systems and system components will be reported as annual values under drought-of-record conditions. The lake/reservoir surface water components of systems will be reported at the basin level, while all other surface water, groundwater and reuse components of systems will be reported at the county-basin level. The availability volume for a system may include a gain achieved via system operation.

3.3 Interregional Sources

If more than one RWPG uses an individual surface water, groundwater or reuse source, or system or any component of a system, the availability volumes must be consistent among the regions sharing the source. For example, if Region X and Region Y both use an individual source, system or system component, Region X and Region Y should agree on the amount of water available prior to data entry. The naming conventions for shared sources, systems and system components must also be listed consistently in the database application.

3.4 Overallocating Sources

RWPGs should not overallocate water sources on a temporary or permanent basis. This means that the sum of existing water supplies plus any future WMS supplies assigned to entities (WUGs and WWPs), cannot exceed the total availability volume from a particular source in a county or river basin. For example, if an existing water source in a particular county or basin has an availability volume of 1,000 acre-feet per year, and 500 acre-feet per year has been apportioned to entities as their existing supply, no more than the remaining 500 acre-feet per year can be used as a source of supply for recommended WMSs.

3. 5 Data Fields for Existing Water Sources

The following is a listing of all data fields for existing water sources. All fields are editable through the application and are required unless otherwise stated below. Please refer to the matrix in Appendix C for a detailed description of field visibility and requirements.

- **SourceId** – Unique, numeric identifier for each source in the database application for the fourth round of regional water planning. This field is auto generated by the database and is not editable by the RWPGs.

- **DBSOID** – Unique, numeric identifier that was assigned to each source in the database applications for the second and third round of regional water planning. This field is assigned by TWDB staff and is not editable by the RWPGs.

- **Source Name** – Name of the water source. RWPGs and the TWDB must identify any sources not already included in the database application. The RWPGs will request to add sources to the Sources Module through the application, as necessary. The TWDB will evaluate all source requests to ensure that duplicate source records are not created within a region or between regions and that the new source record meets all database requirements. Source names will be listed consistently throughout the database application and approved by the TWDB. The source name will comply with standard database naming conventions developed by the TWDB. The source name will be editable by the RWPG when requesting a new source. Once the TWDB has finalized the RWPG's request, the source name will not be editable through the application.

- **Source Details** – Lists additional descriptive information about the water source. The RWPG may list additional information in this field to help uniquely identify a water source. This field will be displayed in the application to uniquely list all water sources in a region. The source details field will be editable by the RWPG when requesting a new source. Once the TWDB has finalized the RWPG's request, the source details field will not be editable through the application.

- **Source Region** – Identifying letter of the region (A through P) where the source is located. The source region will be editable by the RWPG when requesting a new source. Once the TWDB has finalized the RWPG's request, the source region will not be editable through the application.

    - A = Panhandle Region
    - B = Region B
    - C = Region C
    - D = North East Texas Region
    - E = Far West Texas Region
    - F = Region F

  - G = Brazos Region
  - H = Region H
  - I = East Texas Region
  - J = Plateau Region
  - K = Lower Colorado Region
  - L = South Central Texas Region
  - M = Rio Grande Region
  - N = Coastal Bend Region
  - O= Llano Estacado Region
  - P = Lavaca Region

- **Source County** – County name where the source (or portion of the source) is located. This field is required for all sources except lakes/reservoirs, the Gulf of Mexico, the lake/reservoir surface water components of systems and sources located outside the state. For Gulf of Mexico sources, the source county will be Gulf of Mexico. For sources located outside the state, the county will be the state in which the source is located. The TWDB will provide a list of all county names. The source county will be editable by the RWPG when requesting a new source. Once the TWDB has finalized the RWPG's request, the source county will not be editable through the application.

- **Source Basin** – Name of the river basin where the source (or portion of the source) is located. This field is required for all sources except the Gulf of Mexico and sources located outside the state. For Gulf of Mexico sources, the source basin will be Gulf of Mexico. For sources located outside the state, the basin will be the state in which the source is located. The TWDB will provide a list of all river basin names. The source basin will be editable by the RWPG when requesting a new source. Once the TWDB has finalized the RWPG's request, the source basin will not be editable through the application.

- **Source Type** – Type of source. The source type will be editable by the RWPG when requesting a new source. Once the TWDB has finalized the RWPG's request, the source type will not be editable through the application. Please refer to the matrix in Appendix D that displays the relationships between source type and source sub type.

  - Groundwater
  - Surface water
  - Reuse

- **Source Sub Type** – Additional qualifier that describes the type of source. The source sub type will be editable by the RWPG when requesting a new source. Once the TWDB has finalized the RWPG's request, the source sub type will not be editable through the application. Please refer to the matrix in Appendix D that displays the relationship between source sub type and source type.
    - Groundwater
    - System
    - Reservoir
    - Run-of-river
    - Gulf of Mexico
    - Livestock Local Supply
    - Other Local Supply
    - Direct Reuse
    - Indirect Reuse
- **Is this an existing or future source?** — Indicates whether the source is an 'existing source only,' a 'future source only,' or 'both an existing and future source.' A source is an 'existing source only' if it 1) exists currently, regardless of whether the supply is physically or legally available for use and 2) will not be used for WMSs. A source is a 'future source only' if it 1) does not exist currently and 2) will only be used for WMSs. A source is 'both an existing and future source' if it 1) exists currently and 2) will also be used for WMSs. The RWPG will be able to indicate if the source is an existing or future source, or both, when requesting a new source. Once the TWDB has finalized the RWPG's request, this field will not be editable by the RWPG through the application.
    - Existing
    - Future
    - Both
- **Is this source generally considered brackish or saline?** – Indicates whether the source is considered fresh, brackish or saline water. The default value will be 'fresh.' This field will be editable by the RWPG when requesting a new source. Once the TWDB has finalized the RWPG's request, this field will not be editable through the application.
    - Fresh (<0.5 dissolved salts in parts per thousand)
    - Brackish (0.5–30 dissolved salts in parts per thousand)
    - Saline (30–50 dissolved salts in parts per thousand)

- **Was total availability reduced due to water quality considerations?** – Indicates whether water quality constraints were considered when developing total water availability estimates and total availability was reduced accordingly. The default value will be 'N.'
    - Y = total availability was reduced due to water quality considerations
    - N = total availability was not reduced due to water quality considerations
- **Methodology used to determine total availability volumes** – This field identifies the methodology used to determine the total availability volumes. Values from the following list are only valid for certain **Source Type** and **Source Sub Type** combinations. If certain values are selected from the following list, additional information must be provided in the **Based on the requirements listed in the Guidelines for Data Deliverables, please enter related information about the methodology value chosen in the text box below** field. Please refer to the matrix in Appendix E for details. For sources with a **Source Type** and **Source Sub Type** of 'Groundwater' and where total availability volumes are determined by Modeled Available Groundwater (MAG) numbers, the default value will be 'Modeled Available Groundwater (MAG).' For all other sources, the default value will be 'No methodology selected.' If more than one methodology can be selected from the list, please select 'Other' and enter all the methodologies and any supporting information in the **Based on the requirements listed in the Guidelines for Data Deliverables, please enter related information about the methodology value chosen in the text box below** field.
    - Modeled Available Groundwater (MAG)
    - Groundwater Availability Model (GAM)
    - Groundwater Availability Model (GAM) Modified
    - Effective aquifer recharge
    - Availability set to demand
    - Published reports/data
    - Livestock/holding tank volume
    - Permitted amount
    - Diversion infrastructure capacity
    - Wastewater treatment plant discharge
    - Water Availability Model (WAM) Run 3
    - Water Availability Model (WAM) Run 3 Modified
    - Source is not in use

  - Other

- **Based on the requirements listed in the Guidelines for Data Deliverables, please enter related information about the methodology value chosen in the text box below** – When certain values are selected in the **Methodology used to determine total availability volumes** field, additional information is required to be provided in this field. Please refer to the matrix in Appendix E for details.

- **If the source name is 'Other Aquifer' please list the aquifer name. If the aquifer name is unknown, please list 'Unknown'** – If the **Source Name** is 'Other Aquifer,' please specify the name of the aquifer in this field. If the name of the aquifer is unknown, please state that the aquifer name is unknown. This field is only visible and required in the application if the **Source Name** is 'Other Aquifer.'

- **Is total availability based on firm yield?** – Indicates whether the **Total Availability (2020-2070**) fields are based on firm yield. If the values entered into the **Total Availability (2020-2070)** fields are not based on firm yield, then the firm yield of the source must be entered into the **Firm Yield (2020-2070)** fields. This field will only be visible and required in the application if the **Source Type** is 'Surface Water' and the **Source Sub Type** is 'Reservoir' or 'System.' The default value will be 'Y.'

  - Y = total availability is based on firm yield

  - N = total availability is not based on firm yield

- **Additional comments about this source** – List any additional comments that may be pertinent to this source. This is an optional field.

- **Total Availability (2020-2070)** – Values for the total, annual, amount of water available from each source for years 2020, 2030, 2040, 2050, 2060 and 2070. The total availability volume for each source will be reported 1) under drought-of-record and 2) existing development conditions, even if the source is not connected and available for use.

  MAG estimates for approved desired future conditions in GMAs will be populated in the database application by the TWDB and will not be editable by the RWPGs. If the MAG estimate covers the entire geographic split of the aquifer, region, county and basin (in other words, the whole source) the **Total Availability (2020-2070)** numbers will equal the **MAG Availability (2020-2070)** numbers. These fields will be populated by the TWDB and neither will be editable by the RWPG. If the MAG estimate does not cover the entire geographic split of the whole source, then the **Total Availability (2020-2070)** numbers will equal the **MAG Availability (2020-2070)** plus the **Non-MAG Availability (2020-2070)** numbers. In this case the **Total Availability (2020-2070)** and **MAG Availability (2020-2070)** numbers will not be editable by the RWPG; however, the **Non-MAG Availability (2020-2070)** will.

  If a source is a lake/reservoir or the lake/reservoir surface water component of a system, the total availability volume will be the total firm yield or total operational supply. If the value entered is based on an operational procedure, it should not exceed the firm yield of

the lake or reservoir under drought-of-record conditions, except when documented system operations yield system gains.

When a source is shared among regions, list the mutually agreed-upon total availability for the source. The basis for the total availability volume entered must be noted in the **Methodology used to determine total availability volumes** field. The RWPGs must have prior approval from the TWDB to list total availability volumes for 1) surface water sources that are not based on firm yield and 2) modified MAG estimates. In addition, if the total availability for a reservoir or the lake/reservoir surface water component of a system is not based on firm yield, the **Firm Yield (2020-2070)** fields must be completed.

- **Firm Yield (2020-2070)** – If **Total Availability (2020-2070)** is not based on firm yield for reservoirs and the lake/reservoir surface water components of systems; list the value for the total firm annual amounts of water available from sources for years 2020, 2030, 2040, 2050, 2060 and 2070. If a source is a lake or reservoir, the value will be the total firm yield or total operational supply. If the value entered is based on an operational procedure, it should not exceed the firm yield of the lake or reservoir under drought-of-record conditions, except when documented system operations yield system gains. This field will only be visible and editable in the application if 'N' is selected from the '**Is total availability based on firm yield?**' field.

- **MAG Availability (2020-2070)** – The MAG estimates for approved desired future conditions in GMAs. This value will be populated for the years 2020, 2020, 2030, 2040, 2050, 2060 and 2070 by the TWDB and will not be editable by the region. If the MAG estimate covers the entire geographic split of the aquifer, region, county and basin (in other words, the whole source) these numbers will equal the **Total Availability (2020-2070)** numbers. If the MAG estimate does not cover the entire whole source, then the **Total Availability (2020-2070)** numbers will equal the **MAG Availability (2020-2070)** plus the **Non-MAG Availability (2020-2070)** numbers. This field will only be visible in the application if any part of the **Total Availability (2020-2070)** field is calculated based on MAG estimates. It will never be editable in the application by the RWPG.

- **Non-MAG Availability (2020-2070)** – If the MAG estimate does not cover the entire geographic split of the aquifer, region, county and basin, then the RWPG can enter additional available supply for the geographic area not covered by the MAG. This field will only be visible and editable in the application by the RWPG under these conditions.

- **Additional comments about availability, including, if applicable, any comments about firm yield or MAG volumes** – List any additional comments specific to the availability, firm yield or MAG volumes.

- **Source Conservation Pool Details** – The following fields are listed in the **Source Conservation Pool Details** section. This section is only visible when the **Source Type** is 'Surface Water' and the **Source Sub Type** is 'Reservoir' or 'System.'

- **System Name** – If the source is a reservoir system, then this will be the name of the source. If the source is not a reservoir system this will be 'Not a Reservoir System.' This field is not editable in the application.
- **Reservoir Name** – If the source is a reservoir system, then this field will list the name of each reservoir that makes up the lake/reservoir surface water component of the system. If the source is not a reservoir system this will be the source name. This field is not editable in the application.
- **Is this reservoir or reservoir component of this system associated with a federal facility, or water right owned or controlled by a federal agency (e.g. dam owned or reservoir operated by a federal agency)?** – If the reservoir's water right is owned or controlled by a federal agency, this field should be set to 'Y.' If not, then the field should be set to 'N.' This field will be pre-populated by the TWDB.
- **What is the original conservation pool of this reservoir or reservoir component of this system?** – Enter the reservoir's initially determined conservation pool capacity, in acre-feet, as stated in best available data in this field. This may include the reservoir's water right, hydrosurvey reports, USACE revisions, owner information, or other appropriate sources. Cite the source of the information in the **Additional comments about this reservoir or reservoir component of this system** field. This field will be pre-populated by the TWDB.
- **Additional comments about this reservoir or reservoir component of this system** – List any additional comments related to the Source Conservation Pool Details section in this field. This includes the source of the original conservation pool information.
- **Source System Availability: Firm Yield (2020-2070)** – Values for the total, annual, amount of water available from each reservoir component of the system for years 2020, 2030, 2040, 2050, 2060 and 2070. The availability volume for each reservoir will be reported under drought-of-record and existing development conditions, even if the reservoir is not connected and available for use. This should be the firm yield of the reservoir component of the system.

4.0 Data for Water User Groups

The new regional water planning application (DB17) will combine the Water User Group and Wholesale Water Provider modules into one data entry component. The new single module will contain all entities. RWPGs will be responsible for providing the Water User Group and Wholesale Water Provider attributes of each entity, as necessary. In addition, the Water Management Strategy module will be revised to incorporate the new entity concept. Application development is still in the planning phase and a detailed descriptive of the new combined Water User Group and Wholesale Water Provider module and the Water Management Strategy module cannot be provided at this time. The following Water User Group, Wholesale Water Provider and Water Management Strategy sections are based on the 2012 database and application (DB12). As

the application development moves through the planning phase a more detailed descriptive of the new entity module will be provided to replace the Water User Group and Wholesale Water Provider sections in this document.

4.1 General Information for Calculating and Reporting Data for Water User Groups

The Water User Groups module includes information for water user groups such as: 1) population and water demand projections, 2) existing water supply sources apportioned to water user groups, 3) water needs and water surpluses, and 4) descriptions of water management strategies.

4.2 Data Fields for Water User Groups

4.2.1 Descriptive Data for Water User Groups

The Water User Groups module includes descriptive data for water user groups over the 50-year planning horizon. Water user groups include:

- cities with population 500 or more;
- utilities providing more than 280 acre-feet per year of water for municipal use for counties having four or less of these utilities;
- Collective Reporting Units consisting of grouped utilities having common association;
- rural and unincorporated areas with municipal water use (referred to as "county-other" and aggregated on a county basis)
- manufacturing (aggregated on a county basis);
- steam electric power generation (aggregated on a county basis);
- mining (aggregated on a county basis);
- irrigation (aggregated on a county basis), and
- livestock (aggregated on a county basis).

Water user group are represented at county and basin unit levels, and if a water user group exists in one or more regions, counties, or basins, then that group will be reported in a divided fashion for each divided combination.

- "WUG Name"– Water user group name. The TWDB will provide a list of known names. Planning groups should contact the TWDB to add names not included in the list.

- "WUG Detail" – Lists additional descriptive information about the WUG. The planning group may request that the TWDB populate this field with provided information.
- "WUG ID" – Identification code for the water user group. The TWDB will provide a list of known water user group IDs.
- "City ID" – Four-digit identification codes for cities. The TWDB will provide a list of all known city IDs.
- "Data Category" – Three-character identifier provided by the TWDB, for different categories of water user groups:
    - MUN = municipal
    - MFG = manufacturing
    - PWR = steam electric power generation
    - MIN = mining
    - IRR = irrigation
    - STK = livestock
- "WUG Region" – Identifying letter for region (A through P) where the water user group (or portion) is located.
- "WUG Split?" - Indicates if water user group is divided by counties, river basins, or regional boundaries. The TWDB will provide this information for identified water user groups.
    - Y = Water user group is split by county, basin, or regional boundary
    - N = Water user group is not split by county, basin, or regional boundary
- "Utility?" – Indicates if a water user group is reported as an individual utility per TWDB Chapter 357 rules. Planning groups are required to report and analyze individual utilities that provide more than 280 acre-feet per year. Utilities may be reported individually if counties in which they reside have four or fewer utilities providing more than 280 acre-feet per year each. Utilities should not be reported within a Collective Reporting Unit if they are reported individually. Cities served by utilities must be reported as a city, not as a utility. If a portion of a city is served by a utility, that portion of the city's demand will remain with the city.
    - Y = water user group is an individual utility
    - N = water user group is not an individual utility
- "CRU?"– Indicates if water user groups are Collective Reporting Units. Planning groups are allowed, but not required, to group and assign utilities serving more than 280 acre-

feet per year to a Collective Reporting Unit rather than report and analyze them individually. Utilities composing a Collective Reporting Unit must be located in counties having five or more utilities, each providing more than 280 acre-feet per year. Utilities within a Collective Reporting Unit must have a logical relationship, such as being served by common wholesale water providers, having common sources, or other appropriate associations.

  - Y = water user group is a Collective Reporting Unit
  - N = water user group is not a Collective Reporting Unit

- "CRU Utilities" – An editable field to be used to list utilities that comprise a Collective Reporting Unit if water user group is categorized as such.
- "WUG County Name" – Name of county in which the water user group (or portion) is located. The TWDB will provide a list of county names.
- "WUG County ID" – Three-digit county identification number. The TWDB will provide a reference table listing county identification numbers.
- "WUG Basin Name" – Name river basin in which water user group (or portion) is located. The TWDB provides a list of river basin names.
- "WUG Basin ID" – Two-digit basin identification number. The TWDB will provide a list of basin identification numbers.
- "Regional Comments" – An editable field that is optional to provide additional comments regarding a water user group's attributes, population values, daily values in gallons per capita per day (gpcd), water demand values, or other information related to the water user group section of the form.
- "Population (2020-2070)" – Water user group population values for 2020, 2030, 2040, 2050, 2060 and 2070. Population data is only entered for municipal water user groups. The TWDB will upload all population data after the regional review process for population and water demands is complete and the Board has approved population estimates.
- "WUG GPCD (2020-2070)" – Water user group gallons per capita per day values for 2020, 2030, 2040, 2050, 2060 and 2070, for water user groups with municipal demands. The TWDB will upload this data after the regional review process for population and water demands is complete and the Board has approved all estimates.
- "Total Demand (2020-2070) - Total county-basin water demand values for water user groups for 2020, 2030, 2040, 2050, 2060 and 2070. Total demand includes calculated plumbing code replacement savings amount per decade. The database application will generate these values automatically.

- "Plumbing Code Replacement Savings (2020–2070)" – Estimated water use reduction due to normal plumbing fixture replacement for 2020, 2030, 2040, 2050, 2060 and 2070. The TWDB will upload this data after the regional review process for population and water demands is complete and the Board has approved all estimates.

- "Net Demand (2020-2070)" – Water user group water demand values for years 2020, 2030, 2040, 2050, 2060 and 2070. Net demand equals total demand minus plumbing code replacement values per decade for municipal data categories and is the demand value on which to base water needs for municipal water user groups. For other water use categories, net demand equals total demand. The TWDB will upload this data after the regional review process for population and water demands is complete and the Board has approved all estimates.

4.2.2 Data for Existing Water Supplies for Water User Groups

In the following fields, planning groups should report water supply amounts from sources that currently exist, are connected, and accessible to water user groups, under drought-of-record conditions, and limited to the most restrictive factor (see field description for a list of restrictive factors). Planning groups will select from a list, a supply or supplies of water for each water user group. This list will be populated by the TWDB with sources of supply identified in the Sources module (described in Section 3.0 of this document). When reporting supplies for water user groups planning groups should also:

- separate source supply values into county-basin units for all sources except lakes/reservoirs and surface water components of systems;

- develop supply quantities at the basin level for reservoirs and surface water components of systems;

- distribute source supply values to each water user group (or portion);

- identify sources of existing and future water use for water user groups (for example, if a user receives water from a provider who uses four sources, then there must be at least four records for that user; if it is known that a user does not receive water from all four sources, then list sources used);

- not list source volumes more than once as a supply; therefore, if a portion of a supply accessible to a water user group is sold directly or indirectly to another water user group, the supply amounts allocated to each group should reflect this (for example, if water user group A owns a water right from a source for 1,000 acre-feet, and sells 500 acre-feet of this amount to water user group B, planning groups should divide the 1,000 acre-feet evenly between the two water user groups); [will change in DB17]

- supplies based on contractual agreements should extend past the existing term of a contract if a contract is renewable;

- water supply amounts reported by multiple users of a shared source must not exceed the total source availability; and
- if a water user group lack reliable supply sources during a drought of record conditions, enter the source's information and show supplies as zero (every demand should have at least one corresponding source even if a supply is unreliable during drought of record).

When a supply is added to a water user group the following fields will be listed automatically by the database application (a description of these fields can be found in Section 3.0 of this document):

- "Source or System Name"
- "Source ID"
- "Source Region"
- "Source Type ID"
- "System?"
- "Source County Name"
- "Source County ID"
- "Source Basin Name"
- "Source Basin ID"

Additional fields to be completed by the planning group include:

- "Water Right Permit Numbers" – An editable field used to list the identifying code for water rights permit numbers for sources with water rights. Coding should conform to the following syntax: TBBWWWWW, where T is the type of water right, B is the two-digit basin cod, with leading zeros, and W is a five-digit permit number assigned by the Texas Commission on Environmental Quality. Planning groups should list all water rights associated with a source used by a water user groups.
- "IBT?"– An editable field that indicates if a source is an interbasin transfer (surface water only).
    - Y = Is an IBT
    - N = Is not an IBT
- "Regional Comments" – An editable field that is optional to list additional comments about a water user group's supply values, source attributes, or other information related

to the "Current Supplies" form. If option "J: Other" is entered as a limiting factor in any decade the limiting factor must be listed in this field. [will be a separate filed in DB17]

- "Contract?" – An editable field that indicates if a supply is under contract.
    - Y = supply is contracted
    - N = supply is not contracted
- "Contract Expiration" – If "Y" is selected for the "Contract?" field this field must be completed. This is an editable field that lists the date (mm/dd/yyyy) when a contract expires, assuming a supply is based on a contract, and the contract has an expiration date. Planning groups should include this date even if a contract is assumed to be renewable (supplies based on contractual agreements may extend past the existing term of the contract if contractual agreements include contract renewal or extension).
- "Seller's Name"– Name of seller providing water directly to the water user group.
- "WWP ID" – Identification code for wholesale water providers who sell water directly to water user groups. Planning groups should contact the TWDB for wholesale water providers not included in the list.
- "Supply Volume (2020-2070)" – An editable field that lists the supply volume for the water user group for years 2020, 2030, 2040, 2050, 2060 and 2070. Specific volumes of water from a source should not be reported twice. Therefore, if a portion of a source connected to a water user group is sold to another water user group, either directly or indirectly, supply amounts apportioned to each water user group should reflect this. Distribute source supply values to each water user group, or portions of one as applicable. Supplies based on contractual agreements must extend past the existing term of a contract if contract holders expect renewals or extensions. Increases requiring new infrastructure should be attributed to recommended water management strategies.
- "Limiting Factor"– Water supplies for water user groups should be limited to the most restrictive of the following criteria:
    - A: Supplies or fractions of supplies available from reservoirs or surface water components of systems.
    - B: Current well field capacities.
    - C: Hydrogeologic properties of aquifers.
    - D: Water quality.
    - E: Current water rights, permits or other applicable regulatory restrictions.
    - F: Current contracts and/or option agreements.
    - G: Existing conveyance infrastructure.

- H: At a planning group's discretion, and if information is readily available, water treatment plant capacity (this is optional).
- I: Obligations that water user groups may have in terms of contracts or direct and indirect water sales to other water user groups.
- J: Other. If supply is limited by none of the above or a combination of the above, explicitly state the most restrictive limitation(s) in the "Regional Comments" field.

Please note that internal water distribution networks should not be considered a restrictive condition when determining amounts of available water.

4.2.3 Supply Summaries for Water User Groups

The "*Supply Summary*" section of the Water User Groups module identifies the total sum of supplies connected to water user groups.

- "Supply Sum (2020-2070)" – Sum of source water supply amounts connected to water user groups for the years 2020, 2030, 2040, 2050, 2060 and 2070. The database application will generate values automatically.

4.2.4 Water Needs and Surpluses for Water User Groups

The "*Needs and Surplus*" section of the Water User Group module identifies water needs and surpluses for water user groups by comparing the sum of existing water supplies with future water demands.

- "Need and Surplus (2020–2070)" – Equals supply summaries values per water user group minus net demand values per water user group for counties and river basins. Negative values indicate water shortages/needs. Positive values indicate water surpluses. Needs (negative values) require that each planning groups develop water management strategies to meet needs. The database application will generate these values automatically once supplies and demands are entered.

4.2.5 Water Management Strategies for Water User Groups

Planning groups will select from a list, a water management strategy or strategies to be used to meet the needs of the water user group. This list will be populated by the TWDB with strategies identified in the Water Management Strategies module (described in Section 6.0 of this document).

When a water management strategy is added to a water user group the following fields will be listed automatically by the database application (a description of these fields can be found in Section 6.0 of this document):

- "Sponsor Region"

- "WMS Unique Project ID"
- "WMS Project Name"
- "Source or System Name"
- "Source ID"
- "Source Type ID"
- "Source County Name"
- "Source County ID"
- "Source Basin Name"
- "Source Basin ID"
- "Water Quality Improvements"
- "WMS Online Date"

Additional fields to be completed by the planning group include:

- "Include WUG WMS Supply numbers in WMS Source Total Yield Rollup?" – An editable field that details whether a WUG WMS Supply should be included in the WMS Source Total Yield calculation.
    - Y = include the WUG WMS Supply numbers in the WMS Source Total Yield rollup.
    - N = do not include the WUG WMS Supply numbers in the WMS Source Total Yield rollup.
- "Total Strategy Supply Volume (2020-2070)" – An editable field that lists total water supplies from each strategy that could feasibly be made available from current or potential water supply sources to each water user group with future needs. Current water rights, water contracts, and option agreements should be protected, although amendments to these may be recommended realizing that owner consent would be needed for implementation. Values are reported for the decade beginning with 2010. If a strategy redistributes or reallocates supplies, the entity providing the supply must be noted in the strategy's name. Reallocations and redistributions require original source and supplier information. If a portion of a water user group has a need, even if the group as a whole appears to have adequate water supplies, then planning groups should include a strategy for that portion of the water user group with a need. For example, if a water user group is split between two counties and data show that one part of the group has a need while the other part of the does not, then planning groups should identify a strategy that satisfies the part of the water user group with need.

- "Recommendation Type?"– An editable field that indicates if a planning group recommended a given strategy, recommended the strategy as an alternate, or evaluated, but did not recommend the strategy at all. If the strategy is recommended as an alternate, all data required for a recommended strategy must be completed.
    - S = strategy was evaluated and recommended
    - A = strategy was evaluated and recommended as an alternative
    - C = strategy was evaluated but not recommended
- "Is Used to Meet Need?" – A computed field that indicates whether a strategy meets water needs.
    - Y = strategy meets a need
    - N = strategy does meet a need
- "IBT?"– An editable field that indicates if a source is an interbasin transfer from a strategy's supply source basin of origin to a water user group basin of use (surface water only).
    - Y = is an interbasin transfer
    - N = is not an interbasin transfer
- "Seller's Name" – If a supply is sold directly to water user group lists the seller's name.
- "WWP ID" – Identification code for wholesale water provider supplying a strategy's water supply. Contact the TWDB to add new wholesale water providers to the list.
- "Seller's WUG ID" - Lists the "WUG ID" of a seller if a strategy's supply is from another water user group.
- "Recursive WMS Supply?"- An editable field that indicates if a strategy's supply redistributes water from another listed strategy. This is necessary to prevent double counting strategy supply volumes. For example, if strategy A1 conserves a certain volume of water and another strategy B1 allocates all or part of that conserved volume, this field would be marked "Y" for strategy B1.
- "Recursive WMS Project ID" - List "WMS Unique Project ID" from where a strategy's supply is derived. For example, if strategy A1 conserves a certain volume of water and another strategy B1 allocates all or part of that conserved volume, enter the "WMS Project ID "A1" here when listing strategy B1.
- "Exception Code" – Identifies why a strategy was not developed for a water user group with needs.
    - A = strategy was not feasible

  - B = a political subdivision providing water supply (other than water supply corporations, counties, or river authorities) chose not to participate in regional water planning efforts for needs located within its boundaries or extraterritorial jurisdiction

- "Include WUG WMS Cost numbers in WMS Source Cost Rollup?" – An editable field that details whether a WUG WMS Cost numbers should be included in the WMS Source cost calculations.
  - Y = include the WUG WMS cost numbers in the WMS Source cost rollup.
  - N = do not include the WUG WMS cost numbers in the WMS Source cost rollup.
- "WMS Capital Costs" – An editable field that specifies total capital costs needed to implement a given strategy. Note that total capital cost of implementing a strategy should equal the sum of all capital costs associated with a particular strategy's "Unique Project ID" (i.e. several water user groups or wholesale water providers may each have expected capital costs associated with a single strategy). To further ensure that capital costs are not redundant, capital costs are to be entered into the database application only once for each water management strategy and should be associated only with the expected borrower(s) of these funds. For example, capital costs for strategies funded by wholesale water providers should be associated with borrowing wholesalers only, not with any retail water users using the water even though they may be affected indirectly through water rates.
- "Term of Debt Service"– An editable field that specifies the estimated length or term of the debt service.
- "WMS Annual Operating Costs (2020-2070)" – Enter operating and maintenance costs based on water quantities supplied by a strategy as defined in the TWDB document "*First Amended General Guidelines for Regional Water Plan Development*."
  - For year 2020, list the average annual total of operation and maintenance 2020-2029.
  - For year 2030, list the average annual total of operation and maintenance 2030-2039.
  - For year 2040, list the average annual total of operation and maintenance 2040-2049.
  - For year 2050, list the average annual total of operation and maintenance 2050-2059.
  - For year 2060, list the average annual total of operation and maintenance 2060-2069.
  - For year 2070, list the annual total of operation and maintenance for the year 2070.

- "WMS Annual Cost per Acre-Foot (2020-2070)" – The TWDB will calculate the average annual cost per acre-foot by dividing total average annual costs by the volume of water generated by a given strategy.
- "WMS Discounted Annual Cost (2020-2070)" – The TWDB will estimate discounted costs.
- "Total WMS Cost per Acre-Foot" – The TWDB will calculate total strategy costs over the entire planning period divided by the total acre-feet of a strategy's supply over the planning period.
- "Total Discounted Present Value Cost"– For each water user group, the total discounted present value of each strategy will be calculated as the sum of the discounted annual costs over the planning period. Discounted values will be automatically calculated by the database application and based on annual costs for each strategy.
- "Total Discounted Present Value per Acre-Foot" – The TWDB will calculate the total discounted present value of a strategy over the planning period divided by the total acre-feet of strategy supply over the planning period.
- "Regional Comments" – An editable field that is optional for additional comments from a planning group pertaining to a strategy's attributes, supplies or other information.
- "Sum of WMS Supplies for WUG" – A field that lists the total sum of supplies provided by all water management strategies for a given water user group. The database will generate values automatically. Compare these values to need values, if any exist, to ensure that water user group's needs are satisfied.

5.0 Data for Wholesale Water Providers

5.1 General Information for Calculating and Reporting Data for Wholesale Water Providers

The Wholesale Water Providers module reports data for wholesale water providers within each regional water planning area that meet the following definition:

- any person or entity, including river authorities and irrigation districts, that has contracts to sell more than 1000 acre-feet of water wholesale in any one year during the five years immediately preceding the adoption of the last regional water plan.

However, planning groups may include other persons and entities that are expected to meet the above definition during the period covered by the plan.

The form includes data fields regarding:

- all obligations, contracts or non-contracts of wholesale water providers through the 50-year planning horizon;

- water sources and existing water supply amounts in future decades assuming current infrastructure does not change through time;
- the amount of water existing water supplies that wholesale water providers and their customers can depend on and use during a drought of record;
- water supply needs or water surplus data for each recipient as well as the wholesale water provider as a whole; and
- water management strategies pertaining to recipients with needs;

Some fields within this form will not require input from planning groups, but will contain data automatically generated by database application. Additionally, some data represented on this form may be provided and pre-loaded by the TWDB.

There are key differences between the Wholesale Water Providers and Water User Groups modules and data. Specifically, water user groups are analyzed from a user's perspective, whereas wholesale water providers are analyzed from a provider's perspective. Also, analyses for water user groups are based on projections of one type of water use, whereas analyses for wholesale water providers are based primarily on existing water contracts. For example, a water user group's demand is based on only one of the six categories of water use (i.e., municipal, manufacturing, steam electric power, mining, irrigation, or livestock). Conversely, "demands" for wholesale water providers include contracts with recipients that they serve, and among the recipients of water from a wholesale water provider, all six categories of TWDB water use may be represented. Additionally, in analyses of water user group needs, demands are based on projected water demand. Conversely, wholesale water providers are analyzed by first identifying a provider's current contract obligations including how much water each contract provides. Then, other current non-contract obligations are incorporated. Demands for wholesale water providers, therefore, are based on current contract and non-contract commitments. This provides two separate but complementary scenarios.

Since data for wholesale water providers require tabulating contract information external to TWDB data sets, planning groups must develop contract and demand data for wholesale water providers. Wholesale water providers do not require population projections beyond those already provided by the TWDB for water user groups.

Demand obligations, either contract or non-contract, for entities supplied by wholesale water providers, whether located within or outside of a planning region, should be included when developing total demands assigned to wholesale water providers. Providers could conceivably supply water to entities located within neighboring regions. If two or more regions list a common provider, then planning groups should communicate with each other when developing provider demands to ensure accuracy.

5.2 Data Fields for Wholesale Water Providers

5.2.1 Descriptive Information for Wholesale Water Providers

The "*WWP*" section of the Wholesale Water Providers module identifies providers meeting specified criteria.

- "WWP Sponsor Region" – Identifying letter of region (A through P) of the RWPG "sponsoring" the wholesale water provider.
- "WWP Name" – Wholesale Water Provider name. The TWDB will provide a list of known names. Planning groups should contact the TWDB to add names not included in the list.
- "WWP Alpha Number" – Identification code for providers assigned by TWDB. The TWDB will provide a list of alpha numbers. If a TWDB alpha number is not listed, please contact TWDB staff for assignment.
- "WWP ID" – Unique identification code for providers assigned by the TWDB.

5.2.2 Customers of Wholesale Water Providers

The customers section of the Wholesale Water Providers module identifies provider customers, referred to as "recipients" on the form. In addition, this form identifies data categories for a recipient's type of water use, data regarding contract and non-contract water demand obligations, and general attributes of each recipient.

- "Recipient Name" – An editable field that lists the name of the recipient with which the wholesale water provider has contract or non-contract obligations.
- "Recipient Alpha" – TWDB identification code for recipients.

The planning group will be required to associate all wholesale water provider customers with a water user group. The TWDB will provide a list a water user groups. Once a water user group is selected, the following fields will be listed automatically by the database application (a description of these fields can be found in Section 4.0 of this document):

- "WUG Name"
- "WUG ID"
- "City ID"
- "Data Category"
- "WUG County Name"
- "WUG County ID"

- "WUG Basin Name"
- "WUG Basin ID"
- "WUG Region"

Additional editable fields include:

- "Regional Comments" – An editable field that is optional for providing additional comments from planning groups pertaining to recipient attributes, water user group attributes, wholesale water provider demand values, or other information related to the customers section of the form.
- "Current Demand (2020-2070)" – An editable field that lists wholesale water provider demand obligation values per recipient for years 2020, 2030, 2040, 2050, 2060 and 2070 for all data categories. If an obligation is based on a contract, list the contract amount.
- "Contract or Non-Contract Demand" – An editable field that indicates whether a demand obligation is contract or non-contract based.
    - C = demand is based on a contract
    - NC = demand is not based on a contract
- "Contract Expiration" – Date of contract expiration assuming demands are based on a contract and a contract has an expiration date. A contract expiration date should be included even if a contract is assumed to be renewable. This field is required if "C" is selected from the "Contract or Non-Contract Demand" field.

5.2.3 Wholesale Water Provider Obligations Summary

The "*WWP Obligations Summary*" section of the Wholesale Water Providers module identifies the total sum of obligations for each provider.

- "Sum (2020-2040)" – Sum of contract and non-contract obligation for wholesale water providers for years 2020, 2030, 2040, 2050, 2060 and 2070. Values are generated by the database application.

5.2.4 Existing Water Supplies for Wholesale Water Providers

The "*Current Supplies*" section of the Wholesale Water Providers module identifies water sources, source attributes, and existing supply values connected to each recipient from wholesale water provider sources. Planning groups will select from a list a supply or supplies of water for each wholesale water provider customer. This list will be populated with sources identified in the Sources module (described in Section 3.0 of this document). Supplies based on contractual agreements will extend past the existing term of the contract if a contract contemplates renewal or extension. Only provider sources and supplies connected to each recipient should be listed. Planning groups should separate source supply values into county and basin units for sources

except lakes/reservoirs and surface water components of systems. For reservoirs and surface water components of systems, supply quantities should be developed at basin levels, and source supply values should be distributed to each recipient basin or portion of one as applicable.

When a supply is added to a wholesale water provider customer, the following fields will be listed automatically by the database application (a description of these fields can be found in Section 3.0 of this document):

- "Source or System Name"
- "Source ID"
- "Source Region"
- "Source Type ID"
- "System?"
- "Source County Name"
- "Source County ID"
- "Source Basin Name"
- "Source Basin ID"

Additional editable fields include:

- "Water Right Permit Numbers" – An editable field that lists the code for TCEQ water rights permit numbers for source supplies and associated water rights. Coding should conform to the syntax: TBBWWWWW, where T is the type of water right, B is a two-digit basin code with leading zeros, and W is the five-digit water right permit number with leading zeros. All water rights associated with a source of supply must be listed in this subsection.
- "IBT?" – An editable field that indicates if a source is an interbasin transfer from a supply source basin of origin to a wholesale water provider customer basin of use (surface water only).
    - Y = is an IBT
    - N = is not an IBT
- "Regional Comments" – An optional, editable field for providing additional comments pertaining to wholesale water provider recipient source supplies, source values, source attributes, or other information related to the current supplies section of the form.
- "Supply Volume (2020-2070)" – Supply amounts for years 2020, 2030, 2040, 2050, 2060 and 2070 from sources currently available through a wholesale water provider to

recipients. If contracts are renewable, then supplies based on contractual agreements may extend past the existing term of a contract. Supply amounts should not increase in later years.

5.2.5 Supply Summary for Wholesale Water Providers

The "*Supply Summary*" section of the Wholesale Water Providers module identifies the total sum of supplies available to each wholesale water provider.

- "Supply Sum (2020-2070)" – Sum of source supply amounts available to each wholesale water provider. The database application will generate these values.

5.2.6 Recipient Needs and Surplus

The "*Recipient Needs and Surplus*" section of the Wholesale Water Providers module identifies water needs and/or surpluses for each recipient of water from a wholesale water provider.

- "Recipient Needs and Surplus (2020-2070) – Sum of total supplies per recipient minus total recipient demand obligations, contract or non-contract, for wholesale water providers. Negative values indicate water needs for recipients, while positive values indicate water surpluses. The database application will generate these values.

5.2.7 Wholesale Water Provider Needs and Surpluses

The "*Wholesale Water Provider Needs and Surpluses*" section of the Wholesale Water Providers module identifies water needs and surpluses for providers. For providers with unassigned surpluses (i.e. a provider has a surplus for which they do not have a recipient), enter recipients as "*unassigned*" along with county and/or basin names where surpluses exist if known. Also, sources corresponding to that surplus must be listed.

- "WWP Needs and Surpluses (2020-2070)" – Sum of total supplies per provider minus total demand obligations, contract and non-contract, for providers. Negative values indicate water needs, while positive values indicate water surpluses.

5.2.8 Water Management Strategies for Wholesale Water Providers

Planning groups should develop potentially feasible water management strategies when future water supply needs exist for individuals that receive water from wholesale providers. The "*Water Management Strategies*" section of the Wholesale Water Providers module provides a list of potentially feasible water management strategies and their costs for each wholesale water provider and their respective customers. The planning group will select from a list a water management strategy or strategies to meet the needs of the wholesale water provider and its customers. This list will be populated by the TWDB with water management strategies identified in the Water Management Strategies module (described in Section 6.0). Data for strategies listed should include amounts of water supply from current or potential water sources along with lists of recipients with future needs. If a recipient (or portion of one) shows a need, even if the

wholesale water provider as a whole appears to have adequate supplies, include a water management strategy to address recipient's need.

When a water management strategy is added to a wholesale water provider customer, the following fields will be listed by the database application (refer to Section 6.0 for a description of these fields):

- "Sponsor Region"
- "WMS Unique Project ID"
- "WMS Name"
- "Source Region"
- "Source Name"
- "Source County Name"
- "Source County ID"
- "Source Basin Name"
- "Source Basin ID"
- "Source ID"
- "Source Type"

Additional editable fields include:

- "Recommendation Type?"– An editable field that indicates if a planning group recommended a given strategy, recommended the strategy as an alternate, or evaluated, but did not recommend the strategy at all.
    - S = strategy was evaluated and recommended
    - A = strategy was evaluated and recommended as an alternative
    - C = strategy was evaluated but not recommended
- "Is Used to Meet Need?" – A computed field that indicates whether a strategy meets water needs.
    - Y = strategy meets a need
    - N = strategy does meet a need
- "Exception Code" –Identifies why a strategy was not developed for a wholesale water provider recipient with needs.

  - A = the strategy was not feasible
  - B = a political subdivision providing water supply (other than water supply corporations, counties, or river authorities) chose not to participate in regional water planning efforts for needs located within its boundaries or extraterritorial jurisdiction

- "IBT?"– An editable field that indicates if a source is an interbasin transfer from a strategy's supply source basin of origin to a wholesale water provider customer basin of use (applies to surface water only).
  - Y = Is an interbasin transfer
  - N = Is not an interbasin transfer
- "Regional Comments" – An editable field for additional comments from a planning group pertaining to a strategy's attributes, supplies, or other information.
- "Include WWP WMS Supply numbers in WMS Source Total Yield Rollup?" – An editable field that details whether a WWP WMS Supply should be included in the WMS Source Total Yield calculation.
  - Y = include the WWP WMS Supply numbers in the WMS Source Total Yield rollup.
  - N = do not include the WWP WMS Supply numbers in the WMS Source Total Yield rollup.
- "WMS Supply (2020-2070)" – Shows total water supplies from each strategy that could feasibly be made available from current or potential water supply sources to wholesale water provider customers with future needs. Current water rights, water contracts, and option agreements should be protected, although amendments to these may be recommended realizing owner consent would be needed for implementation. Values are reported for each decade beginning with 2020. If a strategy redistributes or reallocates supplies, the entity providing the supply must be noted in the strategy's name. Reallocations and redistributions require original source and supplier information. If a wholesale water provider customer (or portion of one) has a need, even if the wholesale water provider as a whole appears to have adequate water supplies, then the planning groups should include a strategy for that wholesale water provider customer with a need.
- "Include WWP WMS Cost numbers in WMS Source Cost Rollup?" – An editable field that details whether a WWP WMS Cost numbers should be included in the WMS Source cost calculations.
  - Y = include the WWP WMS cost numbers in the WMS Source cost rollup.
  - N = do not include the WWP WMS cost numbers in the WMS Source cost rollup.

- "WMS Capital Costs" – An editable field that specifies total capital costs needed to implement a given strategy. Note that total capital cost of implementing a strategy should equal the sum of all capital costs associated with a particular strategy's "Unique Project ID" (i.e. several water user groups or wholesale water providers may each have expected capital costs associated with a single strategy). To further ensure that capital costs are not redundant, capital costs are to be entered into the database application only once for each water management strategy and should be associated only with the expected borrower(s) of these funds. For example, capital costs for strategies funded by wholesale water providers should be associated with borrowing wholesalers only, not with any retail water users using the water even though they may be affected indirectly through water rates.

- "Term of Debt Service"– An editable field that specifies the estimated length or term of the debt service.

- "WMS Annual Operating Costs (2020-2070)" – Enter operating and maintenance costs based on water quantities supplied by a strategy as defined in the TWDB document "*First Amended General Guidelines for Regional Water Plan Development*."

    - For year 2020, list the average annual total of operation and maintenance 2020-2029.

    - For year 2030, list the average annual total of operation and maintenance 2030-2039.

    - For year 2040, list the average annual total of operation and maintenance 2040-2049.

    - For year 2050, list the average annual total of operation and maintenance 2050-2059.

    - For year 2060, list the average annual total of operation and maintenance 2060-2069.

    - For year 2070, list the annual total of operation and maintenance for the year 2070.

- "WMS Annual Cost per Acre-Foot (2020-2070)" – The TWDB will calculate the average annual cost per acre-foot by dividing total average annual costs by the volume of water generated by a given strategy.

- "WMS Discounted Annual Cost (2020-2070)" – The TWDB will estimate discounted costs by calculating the present value of each decade's costs. For 2010 through 2050, the discounting procedure assumes that average annual costs for each decade occur in each year of the decade and discounted to a base year from that year.

- "Total WMS Cost per Acre-Foot" – The TWDB will calculate total strategy costs over the entire planning period divided by the total acre-feet of a strategy's supply over the planning period.

- "Total Discounted Present Value Cost"– For each wholesale water provider, the total discounted present value of each strategy will be calculated as the sum of the discounted annual costs over the planning period. Discounted values will be automatically calculated on database forms and based on annual costs for each strategy.

- "Total Discounted Present Value per Acre-Foot" – The TWDB will calculate the total discounted present value of a strategy over the planning period divided by the total acre-feet of strategy supply over the planning period.

5.2.9 Recipient Supplies Summary for Water Management Strategies

- "Sum of WMS Supplies for Recipient" – Total sum of supplies available from all water management strategies for recipients. Values will be generated automatically by the database application. Compare these values to the need values, if any exist, to ensure that recipient needs are satisfied.

5.2.10 Wholesale Water Provider Summary for Water Management Strategies

- "Sum of WMS Supplies for WWP" – Total sum of supplies provided by water management strategies for wholesale water providers. Values will be generated automatically by the database application. Compare these values to the need values, if any exist, to ensure that needs are satisfied.

6.0 Data for Water Management Strategies

6.1 General Information for Calculating and Reporting Data for Water Management Strategies

The Water Management Strategies module reports data for water management strategies evaluated by each regional water planning area to meet the needs of water user groups or wholesale water providers and their customers. This section includes information about the water management strategy; the sources included in the project and water user group and wholesale water provider water management strategy supply and cost information.

6.2 Data Fields for Water Management Strategies

6.2.1 Descriptive Information for Water Management Strategies

The "*WMS*" section of the Water Management Strategies module lists water management strategies evaluated by the regional water planning groups to meet the needs of water user groups or wholesale water providers and their customers.

- "WMS Sponsor Region" – Identifying letter of region (A through P) of the regional water planning group "sponsoring" the project.

- "WMS Unique Project ID" – Specifies unique identification numbers for water management strategies created and assigned by each planning group. Planning groups will designate each "Unique Project ID" with a region's letter (i.e., A through P) followed by a numerical tag. For example, water management strategy Project A1 is the first strategy listed for Region A that serves two water user groups with one new well field (water management strategies may serve multiple users). If a water management strategy supplies multiple water user groups, or is used by both a water user group and a wholesale water provider (or multiple water user groups and multiple wholesale water providers), the "Unique Project ID" must be consistent among all users of a strategy in question. Furthermore, if a strategy is multi-regional, all regions using it should cooperate to assign a "Unique Project ID," and regions using the strategy should list the same "Unique Project ID" when referring to the strategy. "Unique Project IDs" should be assigned to facilitate easy identification of distinct strategies as well as strategies used by more than one entity.

- "WMS Name" – Strategy name including pertinent information needed to concisely and accurately describe a strategy. If necessary, use the "WMS Description" field in this section of the form to add additional information. If a strategy is used by more than one water user groups or wholesale water provider, the strategy's name must be consistent for all entities using the strategy.

- "WMS Description" – An editable field to be utilized by the planning group or TWDB staff to provide additional descriptive information related to the water management strategy.

- "WMS Type" – letters specifying different types of water management strategies

    - A = aquifer storage and recovery
    - B = brush control
    - C = conservation
    - D = drought management
    - E = existing source or expanded use of an existing source
    - N = new source (for example new reservoir or new wells)
    - P = precipitation harvesting
    - R = reuse
    - W= weather modification
    - Planning groups are not restricted to using only the WMS types listed above, however, all unique strategies, should be listed separately and discussed in written reports.

- "WMS Infrastructure" – Indicates if a strategy includes pipelines or water treatment plants.
    - P = pipeline
    - W = water treatment plant
    - PW = pipeline and water treatment plant
- "Additional RWPGs that will use this project" – An editable field containing the identifying letter of all planning groups, including the "WMS Sponsor Region", using the water management strategy.
- "Include in State Water Plan?" – A computed field based on the "Include in State Water Plan?" field entered in the WMS Source section. If any water management strategy source is included in the State Water Plan, the project will be included in the State Water Plan.
- "Calculate Total Yield of WMS based on Total Yield of Sources chosen for rollup?"- If selected, the "Total Yield of WMS" field will be calculated by the application. The calculation will sum up the "Total Yield of WMS Source" field of any sources where the "Include Source Total Yield numbers in WMS Project Rollup?" field in the WMS Source section is set to "Y".
- "Calculate Total Yield of WMS based on all Sources?"- If selected, the "Total Yield of WMS" field will be calculated by the application. The calculation will sum up the "Total Yield of WMS Source" field for all WMS Sources related to the WMS Project.
- "Total Yield of WMS (2020 – 2070)" – If the "Calculate Total Yield of WMS based on Total Yield of Sources chosen for rollup?" or the "Calculate Total Yield of WMS based on all Sources?" fields are not selected this is an editable field. It identifies the total yield of a water management strategy for 2020, 2030, 2040, 2050, 2060 and 2070. This field should include all potential yield from a water management strategy project, not just supplies allocated to water user groups and/or wholesale water providers. For example, if the water management strategy is to develop a new reservoir and only a portion of the firm yield has been allocated to water user groups and/or wholesale water providers and their customers, the firm yield of the new reservoir would be listed in this field. The number listed in this scenario would be greater than what was listed in the Water User Groups and/or Wholesale Water Providers modules. The number listed in this field will be used to calculate totals for the 2017 State Water Plan.
- "Calculate Total Cost of WMS based on Total Cost of Sources chosen for rollup?"- If selected, the "Total WMS Capital Costs" and the "Total WMS Annual Operating Costs" fields will be calculated by the application. The calculation will sum up the "Total WMS Capital Costs", "Total WMS Debt Service" , and the "Total WMS Annual Operating Costs" fields of any sources where the "Include Source Total Cost numbers in WMS Project Rollup?" field in the WMS Source section is set to "Y".

- "Calculate Total Cost of WMS based on all Sources?"- If selected, the "Total WMS Capital Costs" and the "Total WMS Annual Operating Costs" fields will be calculated by the application. The calculation will sum up the "Total WMS Capital Costs", "Total WMS Debt Service", and the "Total WMS Annual Operating Costs" fields for all WMS Sources related to the WMS Project.

- "Total WMS Capital Costs" – If the "Calculate Total Cost of WMS based on Total Cost of Sources chosen for rollup?" or the "Calculate Total Cost of WMS based on all Sources?" fields are not selected this is an editable field. It specifies total capital costs needed to implement a given strategy. Note that total capital cost of implementing a strategy should equal the sum of all capital costs associated with a particular strategy's "Unique Project ID" (i.e. several water user groups or wholesale water providers may each have expected capital costs associated with a single strategy). To further ensure that capital costs are not redundant, capital costs are to be entered into the database application only once for each water management strategy and should be associated only with the expected borrower(s) of these funds. For example, capital costs for strategies funded by wholesale water providers should be associated with borrowing wholesalers only, not with any retail water users using the water even though they may be affected indirectly through water rates. The number listed in this field will be used to calculate totals for the 2017 State Water Plan.

- "WMS Term of Debt Service"– If the "Calculate Total Cost of WMS based on Total Cost of Sources chosen for rollup?" or the "Calculate Total Cost of WMS based on all Sources?" fields are not selected this is an editable field. It specifies the estimated length or term of the debt service.

- "Total WMS Annual Operating Costs" (2020-2070) – If the "Calculate Total Cost of WMS based on Total Cost of Sources chosen for rollup?" or the "Calculate Total Cost of WMS based on all Sources?" fields are not selected this is an editable field. Enter operating and maintenance costs based on water quantities supplied by a strategy as defined in the TWDB document "*First Amended General Guidelines for Regional Water Plan Development*." The number listed in this field will be used to calculate totals for the 2017 State Water Plan.

    - For year 2020, list the average annual total of operation and maintenance 2020-2029.

    - For year 2030, list the average annual total of operation and maintenance 2030-2039.

    - For year 2040, list the average annual total of operation and maintenance 2040-2049.

    - For year 2050, list the average annual total of operation and maintenance 2050-2059.

  - For year 2060, list the average annual total of operation and maintenance 2060-2069.
  - For year 2070, list the annual total of operation and maintenance for the year 2070.

- "Regional Comments" – An editable field that is optional for providing additional comments from the planning groups pertaining to the water management strategy.

6.2.2 Water Management Strategy Source

The water management strategy source section of the Water Management Strategy module identifies all sources of supply that are part of the water management strategy project. When a source is added to a water management strategy, the following fields will be generated by the database application (these fields are described in section 3.0 of this document):

- "Source or System Name"
- "Source ID"
- "Source Region"
- "Source Type ID"
- "System?"
- "Source County Name"
- "Source County ID"
- "Source Basin Name"
- "Source Basin ID"

Additional editable fields include:

- "Water Quality Improvements" – Indicates if a strategy source requires water quality improvements.
  - D = desalination of Gulf of Mexico water
  - Q = other water quality enhancements
- "WMS Online Date" – An editable field indicating the estimated decade (yyyy) when a strategy source will be operational.
- "WMS Funding Date" – An editable field that details the estimated decade (yyyy) when the needed capital funds would be obtained for construction.

- "Include in State Water Plan?" – An editable field that details whether a WMS source should be included in the State Water Plan.
    - Y = include the WMS Source, including its supply volume and costs, in the State Water Plan.
    - N = do not include the WMS Source, its supply volume or costs, in the State Water Plan.
- "Include WMS Source Total Yield numbers in WMS Project Total Yield Rollup?" – An editable field that details whether a WMS Source should be included in the WMS Project Total Yield calculation.
    - Y = include the WMS Source Total Yield numbers in the WMS Project Total Yield rollup.
    - N = do not include the WMS Source Total Yield numbers in the WMS Project Total Yield rollup.
- "Calculate Total Yield of Source based on WUG and/or WWP WMS Supply chosen for rollup?"- If selected, the "Total Yield of WMS Source" field will be calculated by the application. The calculation will sum up the "WUG WMS Supply" and/or the "WWP WMS Supply" fields of any WUGs and/or WWPs where the "Include WUG WMS Supply numbers in WMS Source Rollup?" and/or "Include WWP WMS Supply numbers in WMS Source Rollup?" fields in the WUG and WWP sections are set to "Y".
- "Calculate Total Yield of WMS Source based on all WUGs and WWPs?"- If selected, the "Total Yield of WMS Source" field will be calculated by the application. The calculation will sum up the "WUG WMS Supply" and the "WWP WMS Supply" fields for all recommended WUGs and/or WWPs related to the WMS Source.
- "Total Yield of WMS Source (2020 – 2070)" – If the "Calculate Total Yield of WMS Source based on Total Yield of WUGs and/or WWPs chosen for rollup?" or the "Calculate Total Yield of WMS Source based on all WUGs and WWPs?" fields are not selected this is an editable field. It identifies the total yield of a water management strategy source for 2020, 2030, 2040, 2050, 2060 and 2070. This field should include all potential yield from a water management strategy project, not just supplies allocated to water user groups and/or wholesale water providers. For example, if the water management strategy is to develop a new reservoir and only a portion of the firm yield has been allocated to water user groups and/or wholesale water providers and their customers, the firm yield of the new reservoir would be listed in this field. The number listed in this scenario would be greater than what was listed in the Water User Groups and/or Wholesale Water Providers modules. The number listed in this field will be used to calculate totals for the 2017 State Water Plan.
- "Include WMS Source Cost numbers in WMS Project Cost Rollup?" – An editable field that details whether a WMS Source cost numbers should be included in the WMS Project cost calculations.

  - Y = include the WMS Source cost numbers in the WMS Project cost rollup.
  - N = do not include the WMS Source cost numbers in the WMS Project cost rollup.

- "Calculate Total Cost of WMS Source based on Total Cost of WUGs and/or WWPs chosen for rollup?"- If selected, the "Total WMS Source Capital Costs" and the "Total WMS Source Annual Operating Costs" fields will be calculated by the application. The calculation will sum up the "WMS Capital Costs", "WMS Debt Service" , and the "WMS Annual Operating Costs" fields of any WUGs and/or WWPs where the "Include WUG WMS Cost numbers in WMS Source Rollup?" and/or "Include WWP WMS Cost numbers in WMS Source Rollup?" fields in the WMS WUG and/or WWP sections are set to "Y".

- "Calculate Total Cost of WMS Source based on all WUG and/or WWP WMS Costs?"- If selected, the "Total WMS Source Capital Costs" and the "Total WMS Source Annual Operating Costs" fields will be calculated by the application. The calculation will sum up the "WMS Capital Costs", "WMS Debt Service", and "WMS Annual Operating Costs" fields for all recommended WUGs and/or WWPs related to the WMS Source.

- "Total WMS Source Capital Costs" – If the "Calculate Total Cost of WMS Source based on Total Cost of WUGs and/or WWPs chosen for rollup?" or the "Calculate Total Cost of WMS Source based on all WUGs and WWPs?" fields are not selected this is an editable field. It specifies total capital costs needed to implement a given strategy. Note that total capital cost of implementing a strategy should equal the sum of all capital costs associated with a particular strategy's "Unique Project ID" (i.e. several water user groups or wholesale water providers may each have expected capital costs associated with a single strategy). To further ensure that capital costs are not redundant, capital costs are to be entered into the database application only once for each water management strategy and should be associated only with the expected borrower(s) of these funds. For example, capital costs for strategies funded by wholesale water providers should be associated with borrowing wholesalers only, not with any retail water users using the water even though they may be affected indirectly through water rates. The number listed in this field will be used to calculate totals for the 2017 State Water Plan.

- "WMS Source Term of Debt Service"– If the "Calculate Total Cost of WMS Source based on Total Cost of WUGs and/or WWPs chosen for rollup?" or the "Calculate Total Cost of WMS Source based on all WUGs and WWPs?" fields are not selected this is an editable field. It specifies the estimated length or term of the debt service.

- "Total WMS Source Annual Operating Costs (2020-2070)" – If the "Calculate Total Cost of WMS Source based on Total Cost of WUGs and/or WWPs chosen for rollup?" or the "Calculate Total Cost of WMS Source based on all WUGs and WWPs?" fields are not selected this is an editable field. Enter operating and maintenance costs based on water quantities supplied by a strategy as defined in the TWDB document "*First Amended General Guidelines for Regional Water Plan Development*." The number listed in this field will be used to calculate totals for the 2017 State Water Plan.

  - For year 2020, list the average annual total of operation and maintenance 2020-2029.
  - For year 2030, list the average annual total of operation and maintenance 2030-2039.
  - For year 2040, list the average annual total of operation and maintenance 2040-2049.
  - For year 2050, list the average annual total of operation and maintenance 2050-2059.
  - For year 2060, list the average annual total of operation and maintenance 2060-2069.
  - For year 2070, list the annual total of operation and maintenance for the year 2070.

- "Regional Comments" – An editable field that is optional for providing additional comments from the planning groups pertaining to the water management strategy source.

6.2.3 Water Management Strategies for Water User Groups

A description of this section of the Water Management Strategy module is included in section 4.0 of this document.

6.2.4 Water Management Strategies for Wholesale Water Providers

A description of this section of the Water Management Strategy module is included in section 5.0 of this document.

Appendix A: Acronym Definitions

The following is a list of definitions for common acronyms used throughout this document:

- TWDB – Texas Water Development Board
- DB17 – The 2017 Regional Water Planning Application
- RWPG – Regional Water Planning Group
- RWP – Regional Water Plan
- RWPG – Regional Water Planning Area
- WUG – Water User Group
- WWP – Wholesale Water Provider
- WMS – Water Management Strategy
- DB07 – The 2007 Regional Water Planning Application

DB12 – The 2012 Regional Water Planning Application

Appendix B: Geographic Information Data Requirements Checklist

The following checklists may be used to assist in complying with data requirements for geographic information listed in Section 2.3:

- Data
    - ☐ Is each vector file, CAD included, in geographic, decimal degrees, NAD83 or appropriate, specified projection?
    - ☐ Is each raster file in its native projection?
    - ☐ Is each data file one of the TWDB acceptable formats?
    - ☐ Does each data file have metadata in an associated file?
    - ☐ Are the primary and foreign keys documented for tabular data?
    - ☐ Is a README text file included with a directory structure explaining how the structure is organized?
- Maps
    - ☐ Is each static map provided in an electronic format at a resolution of 300 dpi or higher?
    - ☐ Does each static map have fonts embedded?
    - ☐ Has the page and print setup for map documents been configured to NOT use printer-specific paper settings?
    - ☐ Are map documents set to use relative paths?
    - ☐ Are map names prefixed with the project name, including the appropriate region?
    - ☐ Are map documents accompanied with their relevant data in a stand-alone directory structure?
    - ☐ Does each map have metadata in an associated file?

Appendix C: DB17 Sources Module Data Field Matrix

The following matrix lists the data fields in the Source Module, the various source types and sub types and whether the field is visible, editable and required in the DB17 application. 'Y' equals 'Yes,' 'N' equals 'No' and 'C' equals 'Conditional.' If a row and column have a 'C' listed, please refer to the footnotes below the table.

	Label	Groundwater: MAG			Groundwater: Non-MAG (With MAG Availability)		
		Visible	Editable	Required	Visible	Editable	Required
1	SourceId:	Y	N	N	Y	N	N
2	DbSoId:	Y	N	N	Y	N	N
3	Source Name:	Y	N	N	Y	N	N
4	Source Details:	Y	N	N	Y	N	N
5	Source Region:	Y	N	N	Y	N	N
6	Source County:	Y	N	N	Y	N	N
7	Source Basin:	Y	N	N	Y	N	N
8	Source Type:	Y	N	N	Y	N	N
9	Source Sub Type:	Y	N	N	Y	N	N
10	Is this an existing or future source?:	Y	N	N	Y	N	N
11	Is this source generally considered brackish or saline?:	Y	Y	Y	Y	Y	Y
12	Was total availability of the source reduced due to water quality considerations?:	Y	Y	Y	Y	Y	Y
13	Methodology used to determine availability volumes:	Y	Y	Y	Y	Y	Y
14	Based on the requirements listed in the Guidelines for Data Deliverables, please enter related information about the methodology value chosen in the text box below:	Y	Y	C[1]	Y	Y	C[1]
15	If the source name is 'Other Aquifer' please list the aquifer name. If the aquifer name is unknown, please list 'Unknown':	C[2]	C[2]	C[2]	C[2]	C[2]	C[2]
16	Is total availability based on firm yield?:	N	N	N	N	N	N
17	Additional comments about this source:	Y	Y	N	Y	Y	N
18	Decade	Y	N	N	Y	N	N
19	Total Availability	Y	N	N	Y	N	N
20	Firm Yield	N	N	N	N	N	N
21	MAG Availability	Y	N	N	Y	N	N
22	Non-MAG Availability	N	N	N	Y	Y	Y
23	Additional comments about availability, including, if applicable, any comments	Y	Y	N	Y	Y	N

	about firm yield or MAG volumes:						
24	System Name:	N	N	N	N	N	N
25	Reservoir Name:	N	N	N	N	N	N
26	Is this reservoir or reservoir component of this system associated with a federal facility, or water right owned or controlled by a federal agency (e.g. dam owned or reservoir operated by a federal agency)?:	N	N	N	N	N	N
27	What is the original conservation pool of this reservoir or reservoir component of this system?:	N	N	N	N	N	N
28	Additional comments about this reservoir or reservoir component of this system:	N	N	N	N	N	N
29	Decade	N	N	N	N	N	N
30	Source System Availability: Firm Yield	N	N	N	N	N	N

[1]This field is required when certain values are selected from the **Methodology used to determine availability volumes** field. Please refer to Appendix # for further details.
[2]This field is visible, editable and required only when the **Source Name** is 'Other Aquifer.'
[3]This field is visible, editable and required only when **Is total availability based on firm yield?** equals 'N.'

	Label	Groundwater: Non-MAG (Without MAG Availability)			Surface Water: Local Supply		
		Visible	Editable	Required	Visible	Editable	Required
1	SourceId:	Y	N	N	Y	N	N
2	DbSoId:	Y	N	N	Y	N	N
3	Source Name:	Y	N	N	Y	N	N
4	Source Details:	Y	N	N	Y	N	N
5	Source Region:	Y	N	N	Y	N	N
6	Source County:	Y	N	N	Y	N	N
7	Source Basin:	Y	N	N	Y	N	N
8	Source Type:	Y	N	N	Y	N	N
9	Source Sub Type:	Y	N	N	Y	N	N
10	Is this an existing or future source?:	Y	N	N	Y	N	N
11	Is this source generally considered brackish or saline?:	Y	Y	Y	Y	Y	Y
12	Was total availability of the source reduced due to water quality considerations?:	Y	Y	Y	Y	Y	Y
13	Methodology used to determine availability volumes:	Y	Y	Y	Y	Y	Y
14	Based on the requirements listed in the Guidelines for Data Deliverables, please enter related information about the methodology value chosen in the text box below:	Y	Y	C[1]	Y	Y	C[1]
15	If the source name is 'Other Aquifer' please list the aquifer name. If the aquifer name is unknown, please list 'Unknown':	C[2]	C[2]	C[2]	N	N	N
16	Is total availability based on firm yield?:	N	N	N	N	N	N
17	Additional comments about this source:	Y	Y	N	Y	Y	N
18	Decade	Y	N	N	Y	N	N
19	Total Availability	Y	Y	Y	Y	Y	Y
20	Firm Yield	N	N	N	N	N	N
21	MAG Availability	N	N	N	N	N	N
22	Non-MAG Availability	N	N	N	N	N	N
23	Additional comments about availability, including, if applicable, any comments about firm yield or MAG volumes:	Y	Y	N	Y	Y	N
24	System Name:	N	N	N	N	N	N
25	Reservoir Name:	N	N	N	N	N	N
26	Is this reservoir or reservoir component of this system associated with a federal facility, or water right owned or controlled by a federal agency (e.g. dam owned or reservoir operated by a federal agency)?:	N	N	N	N	N	N
27	What is the original conservation pool of this reservoir or reservoir component of this system?:	N	N	N	N	N	N
28	Additional comments about this reservoir or reservoir component of this system:	N	N	N	N	N	N
29	Decade	N	N	N	N	N	N
30	Source System Availability: Firm Yield	N	N	N	N	N	N

[1]This field is required when certain values are selected from the **Methodology used to determine availability volumes** field. Please refer to Appendix # for further details.
[2]This field is visible, editable and required only when the **Source Name** is 'Other Aquifer.'
[3]This field is visible, editable and required only when **Is total availability based on firm yield?** equals 'N.'

	Label	Surface Water: Run-of-River			Surface Water: Reservoir		
		Visible	Editable	Required	Visible	Editable	Required
1	SourceId:	Y	N	N	Y	N	N
2	DbSoId:	Y	N	N	Y	N	N
3	Source Name:	Y	N	N	Y	N	N
4	Source Details:	Y	N	N	Y	N	N
5	Source Region:	Y	N	N	Y	N	N
6	Source County:	Y	N	N	Y	N	N
7	Source Basin:	Y	N	N	Y	N	N
8	Source Type:	Y	N	N	Y	N	N
9	Source Sub Type:	Y	N	N	Y	N	N
10	Is this an existing or future source?:	Y	N	N	Y	N	N
11	Is this source generally considered brackish or saline?:	Y	Y	Y	Y	Y	Y
12	Was total availability of the source reduced due to water quality considerations?:	Y	Y	Y	Y	Y	Y
13	Methodology used to determine availability volumes:	Y	Y	Y	Y	Y	Y
14	Based on the requirements listed in the Guidelines for Data Deliverables, please enter related information about the methodology value chosen in the text box below:	Y	Y	C[1]	Y	Y	C[1]
15	If the source name is 'Other Aquifer' please list the aquifer name. If the aquifer name is unknown, please list 'Unknown':	N	N	N	N	N	N
16	Is total availability based on firm yield?:	N	N	N	Y	Y	Y
17	Additional comments about this source:	Y	Y	N	Y	Y	N
18	Decade	Y	N	N	Y	N	N
19	Total Availability	Y	Y	Y	Y	Y	Y
20	Firm Yield	N	N	N	C[3]	C[3]	C[3]
21	MAG Availability	N	N	N	N	N	N
22	Non-MAG Availability	N	N	N	N	N	N
23	Additional comments about availability, including, if applicable, any comments about firm yield or MAG volumes:	Y	Y	N	Y	Y	N
24	System Name:	N	N	N	Y	N	N
25	Reservoir Name:	N	N	N	Y	N	N
26	Is this reservoir or reservoir component of this system associated with a federal facility, or water right owned or controlled by a federal agency (e.g. dam owned or reservoir operated by a federal agency)?:	N	N	N	Y	Y	Y
27	What is the original conservation pool of this reservoir or reservoir component of this system?:	N	N	N	Y	Y	Y
28	Additional comments about this reservoir or reservoir component of this system:	N	N	N	Y	Y	N
29	Decade	N	N	N	N	N	N
30	Source System Availability: Firm Yield	N	N	N	N	N	N

[1]This field is required when certain values are selected from the **Methodology used to determine availability volumes** field. Please refer to Appendix # for further details.
[2]This field is visible, editable and required only when the **Source Name** is 'Other Aquifer.'
[3]This field is visible, editable and required only when **Is total availability based on firm yield?** equals 'N.'

	Label	Surface Water: System			Reuse: Direct Reuse		
		Visible	Editable	Required	Visible	Editable	Required
1	SourceId:	Y	N	N	Y	N	N
2	DbSoId:	Y	N	N	Y	N	N
3	Source Name:	Y	N	N	Y	N	N
4	Source Details:	Y	N	N	Y	N	N
5	Source Region:	Y	N	N	Y	N	N
6	Source County:	Y	N	N	Y	N	N
7	Source Basin:	Y	N	N	Y	N	N
8	Source Type:	Y	N	N	Y	N	N
9	Source Sub Type:	Y	N	N	Y	N	N
10	Is this an existing or future source?:	Y	N	N	Y	N	N
11	Is this source generally considered brackish or saline?:	Y	Y	Y	Y	Y	Y
12	Was total availability of the source reduced due to water quality considerations?:	Y	Y	Y	Y	Y	Y
13	Methodology used to determine availability volumes:	Y	Y	Y	Y	Y	Y
14	Based on the requirements listed in the Guidelines for Data Deliverables, please enter related information about the methodology value chosen in the text box below:	Y	Y	C[1]	Y	Y	C[1]
15	If the source name is 'Other Aquifer' please list the aquifer name. If the aquifer name is unknown, please list 'Unknown':	N	N	N	N	N	N
16	Is total availability based on firm yield?:	Y	Y	Y	N	N	N
17	Additional comments about this source:	Y	Y	N	Y	Y	N
18	Decade	Y	N	N	Y	N	N
19	Total Availability	Y	Y	Y	Y	Y	Y
20	Firm Yield	C[3]	C[3]	C[3]	N	N	N
21	MAG Availability	N	N	N	N	N	N
22	Non-MAG Availability	N	N	N	N	N	N
23	Additional comments about availability, including, if applicable, any comments about firm yield or MAG volumes:	Y	Y	N	Y	Y	N
24	System Name:	Y	N	N	N	N	N
25	Reservoir Name:	Y	N	N	N	N	N
26	Is this reservoir or reservoir component of this system associated with a federal facility, or water right owned or controlled by a federal agency (e.g. dam owned or reservoir operated by a federal agency)?:	Y	Y	Y	N	N	N
27	What is the original conservation pool of this reservoir or reservoir component of this system?:	Y	Y	Y	N	N	N
28	Additional comments about this reservoir or reservoir component of this system:	Y	Y	N	N	N	N
29	Decade	Y	N	N	N	N	N
30	Source System Availability: Firm Yield	Y	Y	Y	N	N	N

[1]This field is required when certain values are selected from the **Methodology used to determine availability volumes** field. Please refer to Appendix # for further details.
[2]This field is visible, editable and required only when the **Source Name** is 'Other Aquifer.'
[3]This field is visible, editable and required only when **Is total availability based on firm yield?** equals 'N.'

	Label	Reuse: Indirect Reuse		
		Visible	Editable	Required
1	SourceId:	Y	N	N
2	DbSoId:	Y	N	N
3	Source Name:	Y	N	N
4	Source Details:	Y	N	N
5	Source Region:	Y	N	N
6	Source County:	Y	N	N
7	Source Basin:	Y	N	N
8	Source Type:	Y	N	N
9	Source Sub Type:	Y	N	N
10	Is this an existing or future source?:	Y	N	N
11	Is this source generally considered brackish or saline?:	Y	Y	Y
12	Was total availability of the source reduced due to water quality considerations?:	Y	Y	Y
13	Methodology used to determine availability volumes:	Y	Y	Y
14	Based on the requirements listed in the Guidelines for Data Deliverables, please enter related information about the methodology value chosen in the text box below:	Y	Y	C[1]
15	If the source name is 'Other Aquifer' please list the aquifer name. If the aquifer name is unknown, please list 'Unknown':	N	N	N
16	Is total availability based on firm yield?:	N	N	N
17	Additional comments about this source:	Y	Y	N
18	Decade	Y	N	N
19	Total Availability	Y	Y	Y
20	Firm Yield	N	N	N
21	MAG Availability	N	N	N
22	Non-MAG Availability	N	N	N
23	Additional comments about availability, including, if applicable, any comments about firm yield or MAG volumes:	Y	Y	N
24	System Name:	N	N	N
25	Reservoir Name:	N	N	N
26	Is this reservoir or reservoir component of this system associated with a federal facility, or water right owned or controlled by a federal agency (e.g. dam owned or reservoir operated by a federal agency)?:	N	N	N
27	What is the original conservation pool of this reservoir or reservoir component of this system?:	N	N	N
28	Additional comments about this reservoir or reservoir component of this system:	N	N	N
29	Decade	N	N	N
30	Source System Availability: Firm Yield	N	N	N

[1]This field is required when certain values are selected from the **Methodology used to determine availability volumes** field. Please refer to Appendix # for further details.
[2]This field is visible, editable and required only when the **Source Name** is 'Other Aquifer.'
[3]This field is visible, editable and required only when **Is total availability based on firm yield?** equals 'N.'

Appendix D: Source Types and Source Sub Types Matrix

The following matrix lists the source types and their corresponding sub types.

Source Type	Source Sub Type
Surface Water	Run-Of-River
Surface Water	Reservoir
Surface Water	System
Surface Water	Livestock Local Supply
Surface Water	Other Local Supply
Surface Water	Gulf of Mexico
Groundwater	Groundwater
Reuse	Direct Reuse
Reuse	Indirect Reuse

Appendix E: Methodology Used to Determine Total Availability Volumes Matrix

The following matrix lists the available values for the **Methodology used to determine total availability volumes** field, what types of sources should be associated with those values, if any additional information is required and the description of the additional information required. Additional information should be listed in the **Based on the requirements listed in the Guidelines for Data Deliverables, please enter related information about the methodology value chosen in the text box below** field in the DB17 application.

Methodology Used to Determine Total Availability Volumes	Source Type & Source Sub Type	Additional Information Required?	Description of Additional Information Required
Modeled Available Groundwater (MAG)	• Groundwater: MAG	N	
Groundwater Availability Model (GAM)	• Groundwater: Non-MAG (With MAG Availability) • Groundwater: Non-MAG (Without MAG Availability)	Y	Specify which model, whose model and the date.
Groundwater Availability Model (GAM) Modified	• Groundwater: Non-MAG (With MAG Availability) • Groundwater: Non-MAG (Without MAG Availability)	Y	Specify which model, whose model, the date, description of modification and EA approval date.
Effective Aquifer Recharge	• Groundwater: Non-MAG (With MAG Availability) • Groundwater: Non-MAG (Without MAG Availability)	N	Specify basis of recharge estimates.

Methodology Used to Determine Total Availability Volumes	Source Type & Source Sub Type	Additional Information Required?	Description of Additional Information Required
Availability Set to Demand	• Groundwater: Non-MAG (With MAG Availability) • Groundwater: Non-MAG (Without MAG Availability) • Surface Water: Livestock Local Supply • Surface Water: Other Local Supply • Reuse: Direct Reuse	N	Specify justification for setting availability equal to demand if demand is less than actual availability during drought of record conditions.
Published Reports/Data	• Groundwater: Non-MAG (With MAG Availability) • Groundwater: Non-MAG (Without MAG Availability) • Surface Water: Livestock Local Supply • Surface Water: Other Local Supply	Y	Name of report/dataset, who published the report/dataset and the date the report/dataset was published.
Livestock/Holding Tank Volume	• Surface Water: Livestock Local Supply • Surface Water: Other Local Supply	N	

Methodology Used to Determine Total Availability Volumes	Source Type & Source Sub Type	Additional Information Required?	Description of Additional Information Required
Permitted Amount	• Groundwater: Non-MAG (With MAG Availability) • Groundwater: Non-MAG (Without MAG Availability) • Reuse: Direct Reuse • Reuse: Indirect Reuse	N	
Diversion Infrastructure Capacity	• Surface Water: Run-of-River • Surface Water: Reservoir • Surface Water: System • Surface Water: Gulf of Mexico • Reuse: Direct Reuse • Reuse: Indirect Reuse	N	
Wastewater Treatment Plant Discharge	• Reuse: Direct Reuse • Reuse: Indirect Reuse	N	
Water Availability Model (WAM) Run 3	• Surface Water: Run-of-River • Surface Water: Reservoir • Surface Water: System	N	
Water Availability Model (WAM) Run 3 Modified	• Surface Water: Run-of-River • Surface Water: Reservoir • Surface Water: System	Y	Specify which model, whose model, the date, description of modification, qualifier, and EA approval date.

Methodology Used to Determine Total Availability Volumes	Source Type & Source Sub Type	Additional Information Required?	Description of Additional Information Required
Source is Not in Use	• All	N	
Other	• All	Y	Must provide a detailed description of the methodology used. If more than one of the methodologies are identified, any additional information listed previously in this table must also be included.