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October 17, 2018
Project 6706180002

Mr. Craig York
Texas Municipal Power Agency
Gibbons Creek Steam Electric Station
12824 FM 244 Road
Anderson, Texas 77830

Re: Demonstration of Compliance with CCR Siting Restrictions: 40 CFR §257.64 – Unstable Areas

Dear Mr. York:

Wood Environment & Infrastructure Solutions, Inc. (Wood) has completed a demonstration of compliance with United States Environmental Protection Agency (USEPA) Coal Combustion Residuals (CCR) siting restrictions applicable to the Texas Municipal Power Agency (TMPA) Gibbons Creek Steam Electric Station (Plant) in Anderson, Texas.

The Plant currently operates one CCR landfill identified as the Site F Landfill (SFL), and two CCR surface impoundments: the Scrubber Sludge Pond (SSP) and the Ash Ponds (APs). These units are subject to regulation under 40 Code of Federal Regulations (CFR) §257 Subpart D. The specific demonstrations made in this document are related to the siting restrictions found in 40 CFR §257.64 – Unstable Areas.

LIMITATIONS

Wood has relied upon information provided by others in the evaluation of environmental site conditions reported herein. We did not attempt to independently verify the accuracy or completeness of that information. To the extent that the opinion and conclusions in this report are based in whole or in part on such information, those conclusions are contingent on its accuracy and validity. We assume no responsibility for any consequence arising from any information or condition that was concealed, withheld, misrepresented, or otherwise not fully disclosed or available to us. This report does not constitute legal advice.

The opinions and conclusions presented in this report are based only on the information reviewed at the time of this assessment. No site visits were conducted as part of this evaluation. Information pertaining to site conditions or changes may exist of which we are not aware at the time of this report.



Within the limitations of the agreed upon scope, we have conducted our work in a professional manner in accordance with generally accepted practices, using the degree of skill and care ordinarily exercised by environmental consultants under similar circumstances. No other warranties, expressed or implied, are made.

This report has been prepared by Wood for the express use of TMPA. No other parties shall rely on this report without written consent from Wood.

DESCRIPTION OF CCR UNITS

The Plant is located in a rural area of Grimes County approximately 10 miles northwest of Anderson, Texas. As stated previously, the Plant operates three CCR units: a landfill identified as the Site F Landfill (SFL), and two CCR surface impoundments: the Scrubber Sludge Pond (SSP) and the Ash Ponds (APs). **Figure 1** presents the general Plant location and identifies the three CCR units.

Site F Landfill

The SFL was constructed in 1992 and is located northeast of the Plant, on the opposite side of the Gibbons Creek Reservoir, on property currently owned by TMPA. The active unit receives CCR waste generated by the Plant and occupies a footprint of approximately 114 acres. Outer dikes approximately 20 feet high were constructed and a compacted clay liner was installed at the base of the landfill, with toe drains. CCR materials are placed in 20-foot high sections with a 3:1 (horizontal to vertical) slope.

Scrubber Sludge Pond

The SSP was constructed in 1978 and began receiving material in 1983. The active unit is located west of the Ash Ponds, and south of the coal pile storage area. The SSP occupies approximately 7.4 acres and is 20 feet deep from the crest of the berm to the bottom of the pond. A Hypalon® flexible membrane liner was installed in February 1985.

Ash Ponds

The three APs were constructed in 1982, and are located east of the coal pile storage area and SSP. Gibbons Creek Reservoir is located just to the east. In aggregate, the three APs occupy a footprint of approximately 33.5 acres. Each pond is approximately 265 feet wide, 1,820 feet long, and 20 feet deep. The APs were constructed with flat bottoms and 3:1 (horizontal to vertical) slopes, with a berm separating each pond.

UNSTABLE AREAS DETERMINATION

Applicable Regulatory Citation: *40 CFR §257.64 Unstable areas.*

(a) An existing or new CCR landfill, existing or new CCR surface impoundment, or any lateral expansion of a CCR unit must not be located in an unstable area unless the owner or operator demonstrates by the dates specified in paragraph (d) of this section that recognized and generally accepted good engineering practices have been incorporated into the design of the CCR unit to ensure that the integrity of the structural components of the CCR unit will not be disrupted.



(b) The owner or operator must consider all of the following factors, at a minimum, when determining whether an area is unstable:

- (1) On-site or local soil conditions that may result in significant differential settling;*
- (2) On-site or local geologic or geomorphologic features; and*
- (3) On-site or local human-made features or events (both surface and subsurface).*

According to 40 CFR §257.53 (Definitions), *unstable area* means a location that is susceptible to natural or human-induced events or forces capable of impairing the integrity, including structural components of some or all of the CCR unit that are responsible for preventing releases from such unit. Unstable areas can include poor foundation conditions, areas susceptible to mass movements, and karst terrains.

Based on a review of the “United States Geological Survey (USGS) Karst in the United States: A Digital Map Compilation and Database” report and online resource, the Plant’s CCR units are not located on karst terrain. The USGS resource contains maps and information delineating areas of the United States “having karst or the potential for development of karst and pseudokarst.” **Figure 2** illustrates the Plant location relative to such areas, as mapped by the USGS.

Regional geologic mapping in the area of the Plant was reviewed to identify unstable on-site or local geologic and geomorphologic features. The 1981 Geologic Atlas of Texas, Austin Sheet, indicates the Plant and associated CCR units are underlain by the Wellborn (Ewb) Formation. The Wellborn Formation is characterized by interbedded layers of sandstone and clay, with layers of lignite and silts of varying thickness. No unstable characteristics associated with the Wellborn Formation were noted. Topography in the Plant area is generally flat to gently rolling and no salient geomorphologic features that would adversely affect the stability of the CCR units were identified.

According to the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), January 1996 “Soil Survey of Grimes County, Texas,” the Plant area is situated on the Singleton-Burlewash-Shiro soil unit. This unit is described as nearly level to strongly sloping, well drained or moderately well drained, sandy and loamy soils mainly used as range or pasture. Low permeability and shrink-swell potential were noted as possible limitations affecting urban development in this soil unit. No mention of potential significant differential settling associated with this soil unit was identified. Evidence of significant differential settling has not been observed by Wood staff members over several visits to the CCR units over the past few years.

There are two significant human-made features in the Plant area: the adjacent Gibbons Creek Reservoir and the former Gibbons Creek Lignite Mine. The Gibbons Creek Reservoir’s conservation pool elevation of 247 feet above mean sea level is carefully managed by TMPA. Flooding from the reservoir is not a threat to the CCR units. The nearest boundary of the former Gibbons Creek Mine area is approximately 1.5 miles to the south of the Plant, and all mining activity ceased February 1996. Accordingly, the Plant and associated CCR units are not susceptible to instability due to historic mining operations.

As described herein, based on the information obtained and reviewed as part of this determination, the three CCR units (Site F Landfill, Scrubber Sludge Pond, and Ash Ponds) at the Gibbons Creek Steam Electric Station meet the requirements specified in *40 CFR §257.64 Unstable areas*.



CERTIFICATION

This Certification Statement documents that the Site F Landfill, Scrubber Sludge Pond, and Ash Ponds at the Texas Municipal Power Agency Gibbons Creek Steam Electric Station meet the Unstable Areas siting requirements specified in 40 CFR §257.64. The Site F Landfill, Scrubber Sludge Pond, and Ash Ponds are existing CCR units as defined by 40 CFR §257.53. The CCR Rule requires that a Unstable Areas Siting Certification be prepared for existing CCR units by October 17, 2018.

I, SETH GREEN being a Registered Professional Engineer in good standing in the State of Texas, do hereby certify, to the best of my knowledge, information, and belief that the information contained in this certification has been prepared in accordance with the accepted practice of engineering. I certify, for the above referenced CCR Units, that the Unstable Areas Certification dated October 17, 2018, meets the requirements of 40 CFR §257.64.



SETH GREEN
Printed Name of Registered Professional Engineer

[Signature]
Signature of Registered Professional Engineer

October 17, 2018
Date

Wood Environment & Infrastructure Solutions, Inc.
Company

F-00012
License Number

Texas
State of Registration



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We appreciate the opportunity to serve TMPA on this project. If you have any questions, feel free to contact us.

Sincerely,

Wood Environment & Infrastructure Solutions, Inc.



Brian Gieselman
Environmental Scientist

Reviewed by:



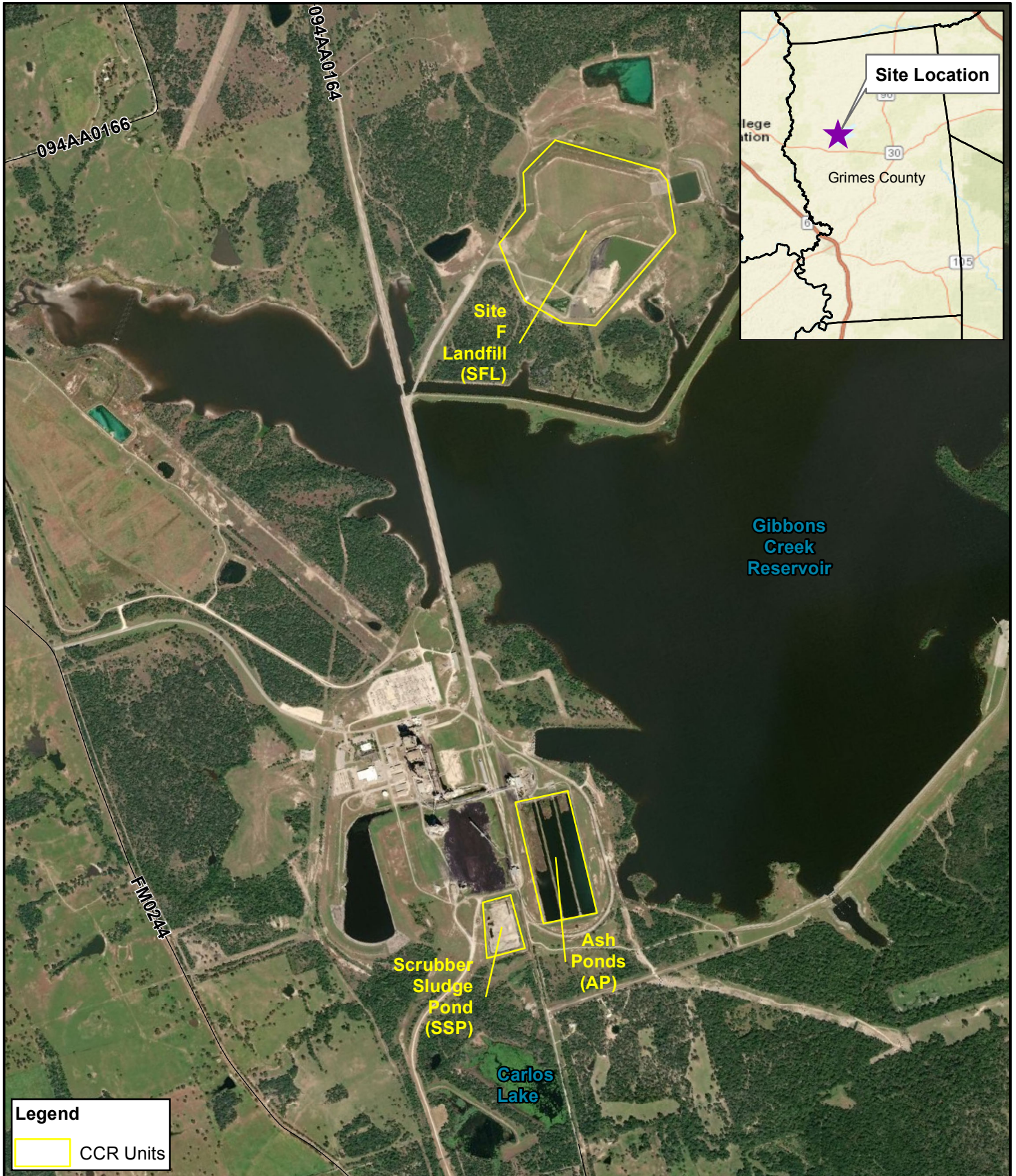
Greg Seifert, P.G.
Principal Geologist

Attachments:

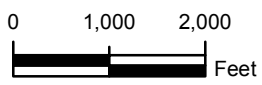
Figure 1 – Site Location Map and CCR Units

Figure 2 – Karst Areas





Texas Municipal Power Agency
 Gibbons Creek Steam Electric Station
 Grimes County, Texas



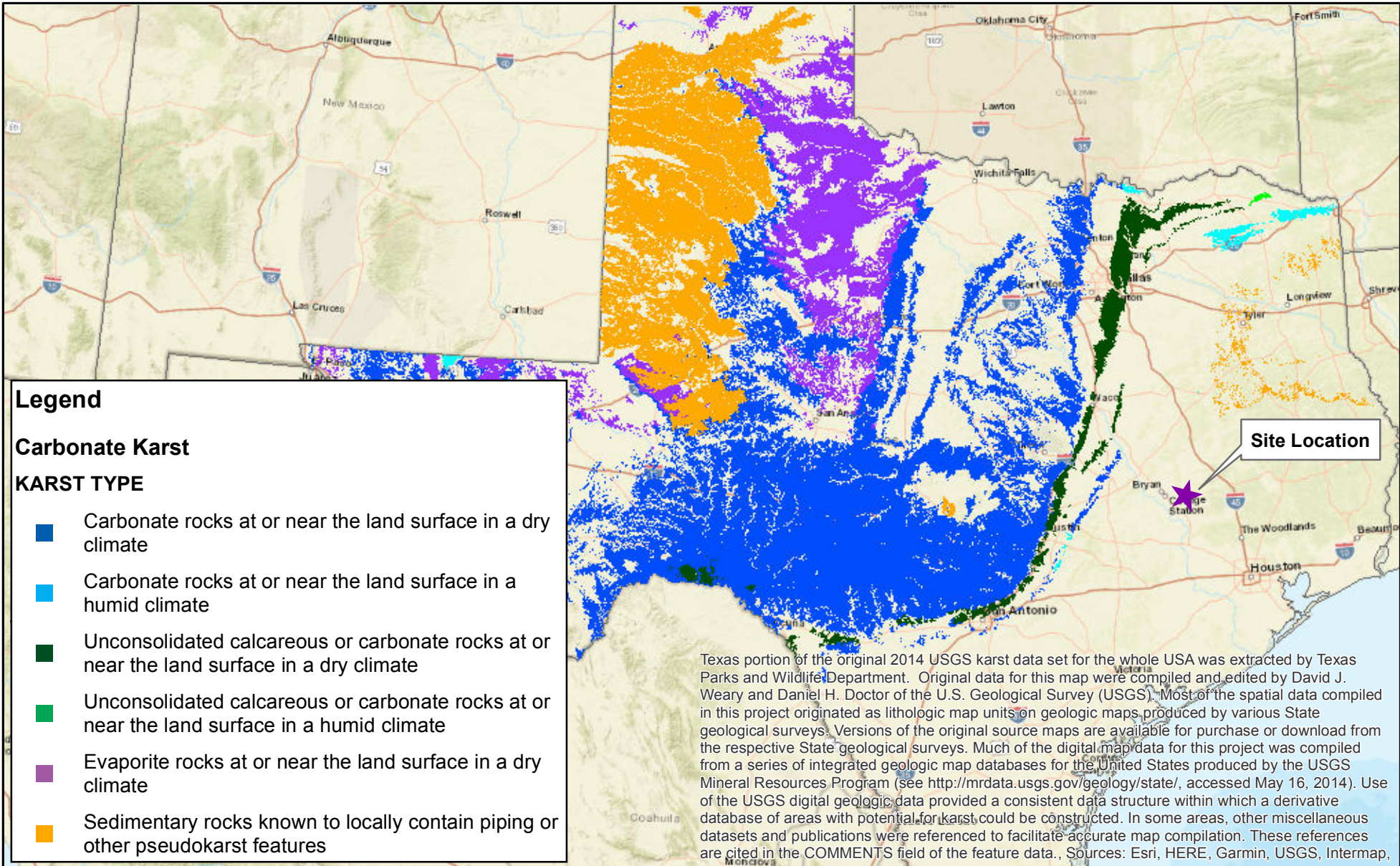
CCR Units

DATE	OCTOBER 2018
SCALE	1" = 2,000 feet
PROJECT NO.	6706180002
FIGURE	1

SITE LOCATION MAP



DRAWN BY: CJR CHECKED BY: GS



Texas portion of the original 2014 USGS karst data set for the whole USA was extracted by Texas Parks and Wildlife Department. Original data for this map were compiled and edited by David J. Weary and Daniel H. Doctor of the U.S. Geological Survey (USGS). Most of the spatial data compiled in this project originated as lithologic map units on geologic maps produced by various State geological surveys. Versions of the original source maps are available for purchase or download from the respective State geological surveys. Much of the digital map data for this project was compiled from a series of integrated geologic map databases for the United States produced by the USGS Mineral Resources Program (see <http://mrddata.usgs.gov/geology/state/>, accessed May 16, 2014). Use of the USGS digital geologic data provided a consistent data structure within which a derivative database of areas with potential for karst could be constructed. In some areas, other miscellaneous datasets and publications were referenced to facilitate accurate map compilation. These references are cited in the COMMENTS field of the feature data. Sources: Esri, HERE, Garmin, USGS, Intermap,

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Grimes County, Texas



KARST AREAS

DATE	OCTOBER 2018
SCALE	1" = 100 miles
PROJECT NO.	6706180002
FIGURE	2

DRAWN BY: PM CHECKED BY: JKH