Before the Secretary of the Interior

Petition to the U.S. Fish and Wildlife Service to List the Pedernales River Springs Salamander as a Threatened or Endangered Species Under the Endangered Species Act

September 20, 2021

NOTICE OF PETITION:

VIA EMAIL AND CERTIFIED MAIL

Deb Haaland, Secretary
U.S. Department of the Interior
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Washington DC 20240
exsec@ios.doi.gov

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PETITIONERS:

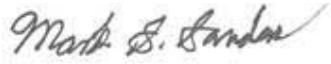
Petitioners are listed with their respective signatures below. With the exceptions of the representatives of Save Our Springs Alliance and Wimberley Valley Watershed Association, the petitioners file this petition in their individual capacity: professional affiliations are listed for identification purposes only.

Crystal Datri

Liza Colucci

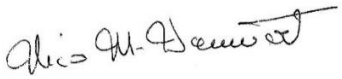
Amber Ahrns-Gosselin

Rachel Barlow



Mark S Sanders

David Baker
Wimberley Valley Watershed Association

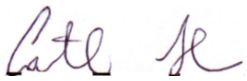


Nico Hauwert, Ph.D., P.G.

J. Hayley Gillespie, Ph.D.
University of Texas at Austin
Founder & Co-chair,
*Euryce*Alliance

Bill Bunch
Save Our Springs Alliance

Paul Fushille



Caitlin Gabor
Texas State University

Submitted this 20th day of September, 2021

Pursuant to Section 4(b) of the Endangered Species Act ("ESA"), 16 U.S.C. § 1533(b); Section 553(e) of the Administrative Procedure Act, 5 U.S.C. § 553(e); and 50 C.F.R. § 424.14(a), the Petitioners hereby petition the Secretary of the Interior, through the United States Fish and Wildlife Service ("USFWS," "Service"), to protect the Pedernales River springs salamander (*Eurycea* sp. 1) as a threatened or endangered species under the ESA. Petitioners also request that critical habitat be designated for the Pedernales River springs salamander concurrently with the species being listed, pursuant to 16 U.S.C. § 1533(a)(3)(A) and 50 C.F.R. § 424.12.

USFWS has jurisdiction over this petition. This petition sets in motion a specific process, placing definite response requirements on the Service. Specifically, the Service must issue an initial finding as to whether the petition "presents substantial scientific or commercial information indicating that the petitioned action may be warranted" (16 U.S.C. § 1533(b)(3)(A)). USFWS must make this initial finding "[t]o the maximum extent practicable, within 90 days after receiving the petition."

We further petition USFWS to use its authority to promulgate an emergency listing rule for the Pedernales River springs salamander pursuant to section 4(b)(7) of the ESA, 16 U.S.C. § 1533(b)(7); section 553(e) of the Administrative Procedure Act, 5 U.S.C. § 553(e); and 50 C.F.R. § 424.20. As detailed in this petition, the majority of the Pedernales River springs salamander population faces a significant and immediate risk to its well-being necessitating emergency listing.

In accordance with 50 C.F.R. § 424.14(b), Petitioners have notified the State of Texas their intent to file a petition addressing species occurring within those States at least 30 days prior to submission of this petition. Copies of notification letters and email receipt confirmation are included below:

Gmail

Crystal Datri <crystal.datri@wrendaytree.com>

Notice of intent to petition listing of native Texas species

Bill Bunch <bill@sosalliance.org> Fri, Aug 20, 2021 at 6:09 AM
To: carter.smith@tpwd.texas.gov
Bcc: crystal.datri@wrendaytree.com

Dear Mr. Smith;

Please accept the attached letter providing notice of the intent of Save Our Springs Alliance and Wimberley Valley Watershed Association to petition the U.S. Fish & Wildlife Service for the listing of native Texas species as endangered or threatened.

Please let me know that you received this message. If you have any questions, please contact me by email or at the cell phone number listed below.

Thank you for your consideration.

Bill Bunch

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Bill Bunch
Save Our Springs Alliance
P.O. Box 684881
Austin, Texas 78768
512-784-3749

NoticetoCarterSmithAug2021Final.docx
628K

August 20, 2021

Carter Smith
Executive Director
Texas Parks and Wildlife Department
Austin, Texas

Via email: carter.smith@tpwd.texas.gov

RE: Notice of intent to file petitions with the U.S. Fish & Wildlife Service to list native Texas species as endangered or threatened

Dear Mr. Smith;

Please accept this notice of intent to file petitions with the U.S. Fish & Wildlife Service to list the following native Texas species as endangered or threatened: Barton cavesnail (*Stygopyrgus bartonensis*), *Eva corbinii*, bracted twistflower (*Streptanthus bracteatus*), black-capped vireo (*Vireo atricapila*), Pedernales River springs salamander (*Eurycea* species 1), Devils and west Nueces salamander (*Eurycea* species 3), the distinct salamander species known from two sites in Williamson County, Texas (*Eurycea* species 5), and Baker's cave amphipod (*Stygobromus bakeri*).

This notice is provided on behalf of Save Our Springs Alliance and its members and advisors and Wimberley Valley Watershed Association and its members and advisors.

Thank you for your consideration.

Sincerely,

Bill Bunch

Executive Director
bill@sosalliance.org

Gmail

Crystal Datri <crystal.datri@wrendaytree.com>

Notice of intent to petition listing of native Texas species

Bill Bunch <bill@sosalliance.org> Fri, Aug 20, 2021 at 7:31 AM
To: Crystal Datri <crystal.datri@wrendaytree.com>, David Baker <davidbaker@wimberleywatershed.org>

---------- Forwarded message ---------
From: **Carter Smith** <Carter.Smith@tpwd.texas.gov>
Date: Fri, Aug 20, 2021 at 7:23 AM
Subject: Re: Notice of intent to petition listing of native Texas species
To: Bill Bunch <bill@sosalliance.org>

Bill,

Greetings. Just confirming receipt of your letter. Thank you for the heads up about the planned petition to USFWS. I will share internally within TPWD.

Thank you.

Best,

C. Smith

Sent from my iPhone

> On Aug 20, 2021, at 8:21 AM, Bill Bunch <bill@sosalliance.org> wrote:
>
> ALERT: This email came from an external source. Do not open attachments or click on links in unknown or unexpected emails.
>
> [Quoted text hidden]
> <NoticetoCarterSmithAug2021Final.docx>

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SUMMARY:

The range of the Pedernales River springs salamander is limited to approximately 10 locations within an 32 square mile (83 km^2) area at the junction of Hays, Travis, and Blanco Counties, Texas. All of its known range is threatened by degraded water quantity and quality and other effects of urbanization.

Species Information

We, the petitioners, present sufficient, reliable information related to the taxonomic status of the Pedernales River springs salamander. The Pedernales River springs salamander meets the definition of a "species" under the Act. This salamander was first found by Paul Chippindale and David Hillis in 1989 in two small springs contributing to the Pedernales River in the western corner of Travis County where RR 3238 crosses the river at Hammetts Crossing (Chippindale et al. 1994, Chippindale et al. 2000). Chippindale et al. 2000 described evidence of species status for the Pedernales population as "particularly strong", stating that "these salamanders possess unique combinations of allozyme and sequence character states and almost certainly represent a distinct species; we expect to formally describe them as such pending completion of additional molecular and morphological studies." The morphological description for this species remains unpublished at the submission of this petition; however, this description is not necessary to demonstrate the clear taxonomic designation of the Pedernales River springs salamander. The genetic distinctiveness of this species has not been refuted since its discovery, while *Eurycea* species boundaries have since been further refined (Hillis et al. 2001, Chippindale & Price 2005, Bendik et al. 2013, Devitt et al. 2019, Corbin 2020). Further, the morphological similarities among *Eurycea* species have confounded previous species delimitation efforts, with many of the species currently recognized through genetic studies being once considered conspecific based on morphology alone (Chippindale 2000, Chippindale et al. 2000, Hillis et al. 2001, Wiens et al. 2003). Devitt et al. (2019) assessed population structure, phylogeny, and distribution of multiple *Eurycea* species across the Edwards-Trinity Aquifer of west-central Texas through analyses of genome-wide DNA, producing an accurate delineation of species boundaries that are critical for U.S. Endangered Species Act listing decisions (O'Brien and Mayr 1991) and preventing the extinction of rare, cryptic, species (Daugherty et al. 1990). Species status for the Pedernales River springs salamander is only further supported in this recent taxonomic analysis where the species is referred to as *Eurycea* sp. 1 (Devitt et al. 2019). These definitive and widely respected results have had significant implications on the status of the many central Texas *Eurycea* species, including the federally threatened Georgetown and Salado salamanders whose proposed critical habitat designations are currently undergoing revision (USFWS 2020).

The Pedernales River Springs salamander (*Eurycea* sp. 1) has an extremely limited range of approximately 10 known locations, distributed among the Texas counties of Hays, Travis, and Blanco, the majority of which are within a 0.5 square mile area (1.3 km^2) (Figure 1). Specimens from five locations have been genetically grouped with the Pedernales River springs salamander (*Eurycea* sp. 1): Hammett's Crossing Spring #2 ([redacted] Chippindale et al. 1994, Chippindale et al. 2000, Bendik et al. 2013, Devitt et al. 2019), Martin Spring ([redacted]; Devitt et al. 2019), Red's Spring ([redacted]; Corbin 2020), Maples Cave ([redacted]; Devitt et al. 2019) and Hope Springs ([redacted]; Corbin 2020). Five locations are within the immediate geographic vicinity and are presumed to be grouped with *Eurycea* sp. 1 following genetic sequencing (Bendik 2021

pers. comm.): Reimers Ranch Spring #1 ([redacted], AGG 2177, awaiting accession with UT Arlington), Climbers Canyon Spring ([redacted], AGG 2176, awaiting accession with UT Arlington), Little Elder Springs ([redacted], TNHC 114809), Bunkhouse Springs ([redacted] Welch 2021 pers. comm.), and Winkler Ranch Windmill Well[redacted], AGG 2164-2165, awaiting accession with UT Arlington, abbreviated "Windmill Well" in Figure 1).

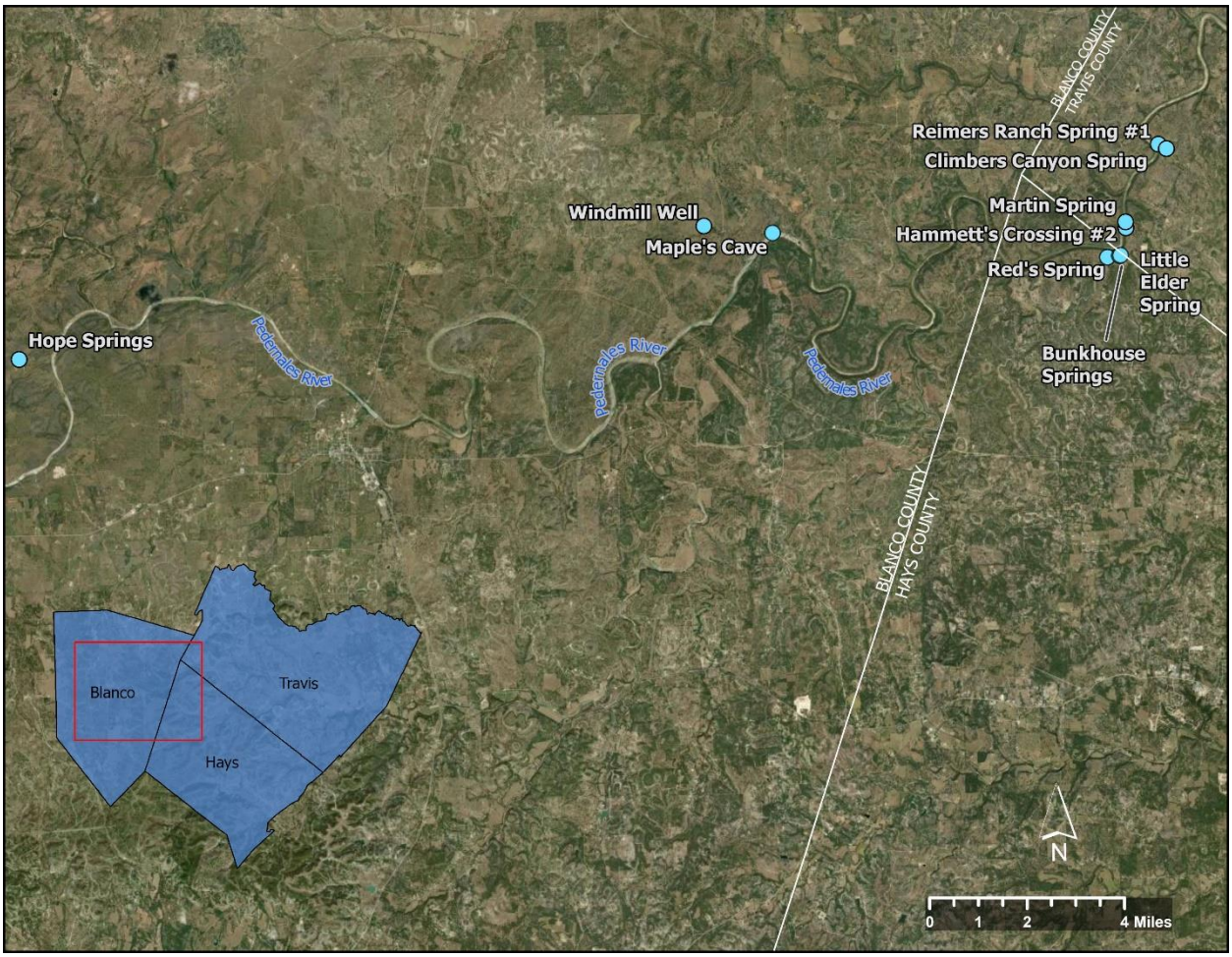

Figure 1. The 10 known locations for the Pedernales River springs salamander, distributed among the counties of Hays, Travis, and Blanco within a 32 square mile area (83 km^2). At this scale, Little Elder and Bunkhouse Springs appear at the same point due to their close proximity.

The 15 delineated *Eurycea* species of central Texas are found in oligotrophic environments of springs, spring-fed streams, and water-bearing karst formations of the Edwards Aquifer and its catchment area in the Edwards-Trinity (Plateau) and Trinity (Hill Country) aquifers (Devitt et al. 2019). The Pedernales River springs salamander is geographically separated from other central Texas *Eurycea* (Chippindale et al. 1994, Chippindale et al. 2000, Devitt et al. 2019). Figure 2 depicts the distribution of *Eurycea* included in recent taxonomic analysis across the Edwards-Trinity aquifer system of west-central Texas.

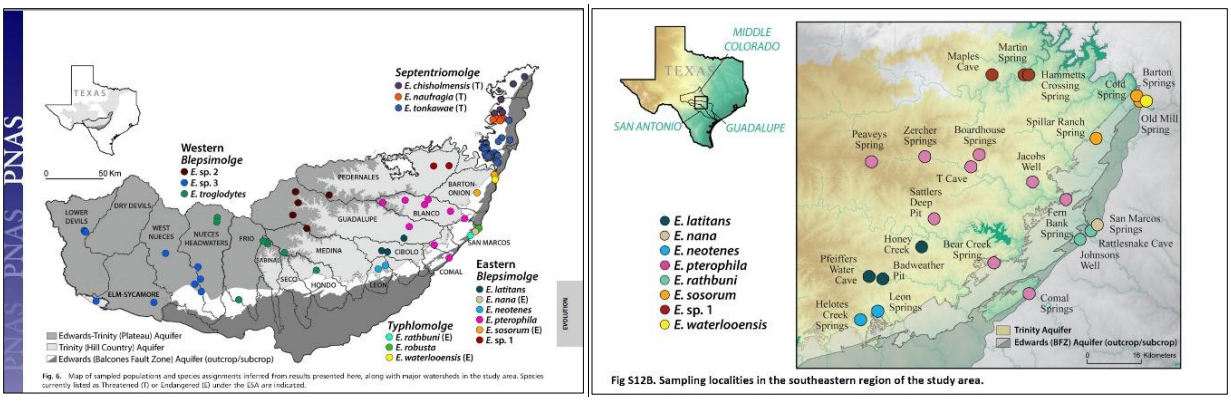

Figure 2. Maps of species assignments and populations sampled by Devitt et al. 2019. The Pedernales River springs salamander is designated as *Eurycea* sp. 1 and geographically separated from other central Texas *Eurycea*. Reprinted from Devitt et al. 2019.

The Pedernales River springs salamander is a neotenic, plethodontid member of the genus *Eurycea* (Devitt et al. 2019). Neotenic salamanders do not metamorphose into a terrestrial form, but retain external gills after reproductive maturity, confining them to strictly aquatic habitats throughout their lives (Chippindale et al. 2000). Chippindale et al. (2000) reported that the melanophores are widely separated, giving these salamanders a light yellowish-gold appearance and that they appear to mature at a very small size. Species-specific studies are limited in *Eurycea*; however, their diets are presumed to be similar (USFWS 2020). Known prey consists of small aquatic invertebrates such as amphipods, copepods, isopods, snails, planarians, and insect larvae (COA 2001, Diaz 2010, Gillespie 2013, Diaz & BronsonWarren 2018). Eggs in *Eurycea* are rarely seen in surface habitat, and it is likely they deposit their eggs underground (Moon et al. 2021, Bendik 2017, O'Donnell et al. 2006, Dries et al. 2013).

Threats Presentation

We, the petitioners, present substantial evidence that the Pedernales River springs salamander is experiencing severe threat levels across its range, resulting in severe population-level impacts. The Service may find a species warrants listing based upon any of the following factors: A. The present or threatened destruction, modification, or curtailment of its habitat or range; B. Overutilization for commercial, recreational, scientific, or educational purposes; C. Disease or predation; D. The inadequacy of existing regulatory mechanisms; or E. Other natural or manmade factors affecting its continued existence (50 C.F.R. § 424.11). The Pedernales River springs salamander is immediately threatened with extinction across all or a significant portion of its range due to the above factors. This critically imperiled species (NatureServe 2021) warrants the highest priority of the U.S. Fish and Wildlife Service (USFWS, the Service) as it appears to be in danger of extinction now and needs immediate listing action in order to prevent extinction.

Observational and experimental studies for the Pedernales River springs salamander are limited; however, the Service has used references for studies conducted on similarly related species of *Eurycea* in determinations of rules and designations for other listed *Eurycea* species where species-specific information was lacking. We, the petitioners, follow the example set forth by the Service, using information relevant to other *Eurycea* species in presenting threats to the Pedernales River springs

salamander due to "(1) A clear systematic (evolutionary) relationship (for example, members of the Family Plethodontidae); (2) shared life-history attributes (for example, the lack of metamorphosis into a terrestrial form); (3) similar morphology and physiology (for example, the lack of lungs for respiration and sensitivity to environmental conditions); (4) similar prey (for example, small invertebrate species); and (5) similar habitat and ecological requirements (for example, dependence on aquatic habitat in or near springs with a rocky or gravel substrate)" (USFWS 2020).

A. Present or Threatened Destruction, Modification, or Curtailment of the Species' Habitat or Range

We present that the Pedernales River springs salamander has an extremely limited range and the majority of known habitat is already degraded or in eminent danger due to increasing urbanization. Degradation of habitat, in the form of reduced water quality and quantity and disturbance of spring sites (physical modification of surface habitat) is the primary threat to other federally listed Central Texas *Eurycea* species (USFWS 2013a). The Service will find the threats presented here analogous to threats to other *Eurycea* species in their files.

Limited Range

The Pedernales River springs salamander has an extremely limited range. There are approximately ten known locations distributed in springs along the Pedernales River as it flows through the counties of Blanco, Hays, and Travis (Figure 1). The majority of the known range (7 of the 10 locations) of the Pedernales River springs salamander is clustered within a 0.5 square mile area (1.3 km^2) at the juncture of southwestern Travis and northern Hays Counties (Figure 3). These salamanders are observed to occur in very low numbers at the surface (Datri 2021 pers. comm.). Small populations are more vulnerable to extinction from demographic and environmental stochasticity (Sabo et al. 2002).

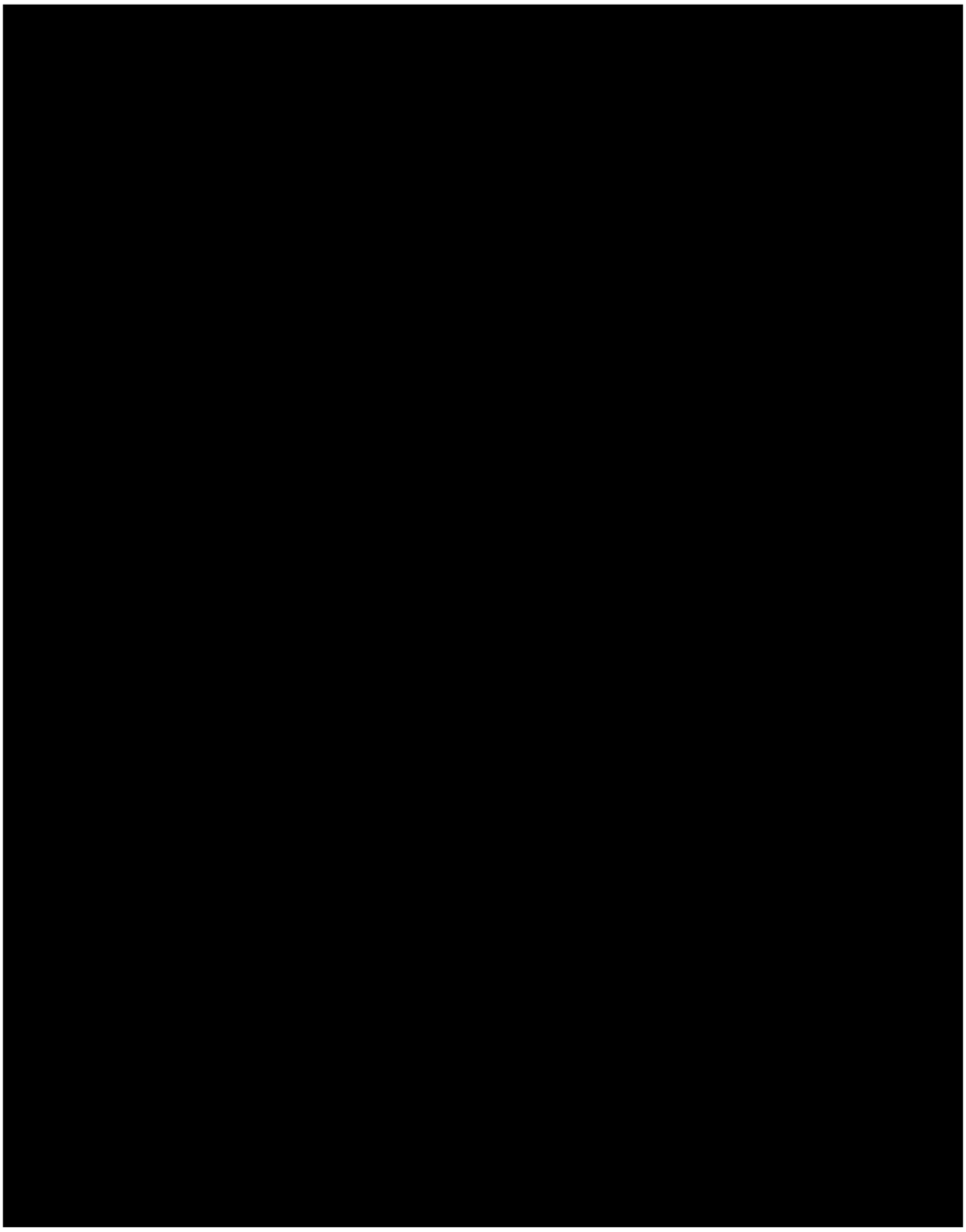

Figure 3. The majority of the Pedernales River springs salamander's range (7 of the 10 known locations) is clustered within a 0.5 square mile area (1.3 km^2) at the juncture of southwestern Travis and northern Hays Counties. Two of these locations are within the immediate vicinity of RR 3238 (located [redacted] from the road pavement).

Water Quantity Degradation

Aquifer drawdown and the subsequent loss of springflow has resulted in habitat loss and fragmentation for groundwater species that has been compounded by reduced water quality from urban development (RECON et al. 2012, National Research Council 2015, NASEM 2017, Bendik et al. 2014). As a result, 13 groundwater-dependent species endemic to the Edwards, Edwards-Trinity and Trinity aquifers are listed as threatened or endangered under the US Endangered Species Act (USFWS 1980, 1997, 2013a, 2014). Seven of these listed species are Central Texas *Eurycea* salamanders (Devitt et al. 2019).

Because the Pedernales River springs salamander is entirely aquatic and breathes through external gills, the availability of an adequate supply of clean water is extremely important to its long-term conservation (USFWS 2013a). Water quantity decreases and spring flow declines are considered threats to *Eurycea* salamanders (Corn et al. 2003, Bowles et al. 2006) and previous Service documents have implicated reduced spring flow as a threat to other listed *Eurycea* salamanders (USFWS 2005, USFWS 2013b, USFWS 2014). The strictly aquatic Pedernales River springs salamander is found in oligotrophic environments of springs, spring-fed streams, and water-bearing karst formation within the rapidly developing Travis, Hays, and Blanco counties. Most locations occur in waters of the Cretaceous age Trinity Aquifer; however, Hope Springs issues from the Paleozoic age Riley Formation and Maples Cave issues from the Paleozoic age Marble Falls Aquifer. These aquifers are generally carbonate aquifers consisting of limestone and dolomite.

Groundwater/surface water interactions between the Trinity Aquifer and overlying surface streams are complex, with many streams alternating back and forth between gaining and losing flow along different reaches (Hunt et al. 2017, Wierman et al. 2017a, Zappitello 2016). Hydraulic connection of groundwater has been shown to occur between the Cretaceous Trinity Aquifer and the Paleozoic aquifers (Wierman 2017b). A dye trace study in the vicinity of Maples Cave illustrates the gain/loss characteristics of the Marble Falls and Pedernales River (Wierman 2017c). The seven Pedernales River springs salamander locations that are clustered at the juncture of southwestern Travis and northern Hays Counties occur in springs emanating from the Cow Creek unit of the Middle Trinity Aquifer (Texas Water Development Board 2016). The most dense population may occur in the Cow Creek due to geologic conditions: these locations are the furthest downstream, so theoretically they should have the most stable water level (i.e. the Pedernales River periodically runs dry in the more upstream reaches); they're found in the thickest limestone unit along the Pedernales River, so the salamanders may have more room to move vertically as the water level fluctuates; the greater number and density of springs downstream compared to the upstream locations (Croskrey 2021 pers. comm.). Regardless, the springs emanating from the Cow Creek unit of the Middle Trinity Aquifer at the juncture of southwestern Travis and northern Hays Counties provide vital habitat for the overwhelming majority of this salamander's known populations.

The Trinity aquifer region includes some of the fastest-growing counties and metropolitan areas in the United States (US Census Bureau 2020a, 2020b). Groundwater withdrawal from domestic and public supply wells is common in the Trinity Aquifer, especially where communities do not have access to surface water resources, and has resulted in major declines in water table, well yields, and baseflow to springs and streams (Asworth 1983, Bluntzer 1992). Groundwater yields are about 250 times less than average yields in the adjacent Edwards Aquifer. Increased pumping demand is predicted in coming

decades due to rapid growth in the Hill Country. Numerical model simulations predict that this increased pumping will result in significant drawdowns in Trinity Aquifer levels (Mace et al. 2000). The U.S. Geological Survey together with the U.S. Fish and Wildlife Service investigated the potential impacts of groundwater pumping on known *Eurycea* spring localities located in the Middle Trinity using Mace et al.'s (2000) numerical groundwater availability model. Projected water levels for both average recharge conditions and drought-of- record conditions show drawdown at all 19 springs identified as *Eurycea* habitat in the Middle Trinity. Under average recharge conditions projected for 2050, water table levels at 15 of 19 springs are predicted to decline by more than 3 m. Under drought-of-record conditions, water levels at 12 of 19 springs are projected to decline by more than 15 m (Heitmuller and Reece 2006).

The most recent hydrogeologic assessment shows that water levels in portions of the Middle Trinity Aquifer have been significantly lowered by hundreds of feet since 1978. Historic Middle Trinity wells located less than 10 miles (16 km) to the east of the majority of known Pedernales River spring salamander locations have become unusable as supply wells. Water-level changes in the Middle Trinity Aquifer in this area are estimated to have dropped greater than 225 feet (69 m) between 1978 and 2018. Due to continued drawdown over time, portions of the Middle Trinity Aquifer can be described as experiencing depletion ("equivalent to groundwater mining") (Hunt et al. 2020).

The majority of the known locations for the Pedernales River springs salamander are found in the immediate vicinity of or directly on the Mirasol Springs property scheduled for development (Figure 4, Appendix A). This development is expected to increase the number of visitors in the project area by 1 million per year (Miller 2021 pers. comm.). Further groundwater use is scheduled for a 70 room boutique hotel, 36 cottages, operations center, 4 acre farm and orchard, equestrian facility, University of Texas Field Station, and 55 new houses, in addition to several existing large houses (Mirasol Springs 2021). At least seven wells have already been installed on the Mirasol Springs property between 2016 and 2019 even though the development is scheduled to "break ground" in early 2022 (Texas Water Development Board 2021). Immediately east of the Mirasol development, an 84 unit RV park is being built. Groundwater use at all of these facilities will be pumped from the Middle Trinity Aquifer, the source of spring flow and salamander habitat.

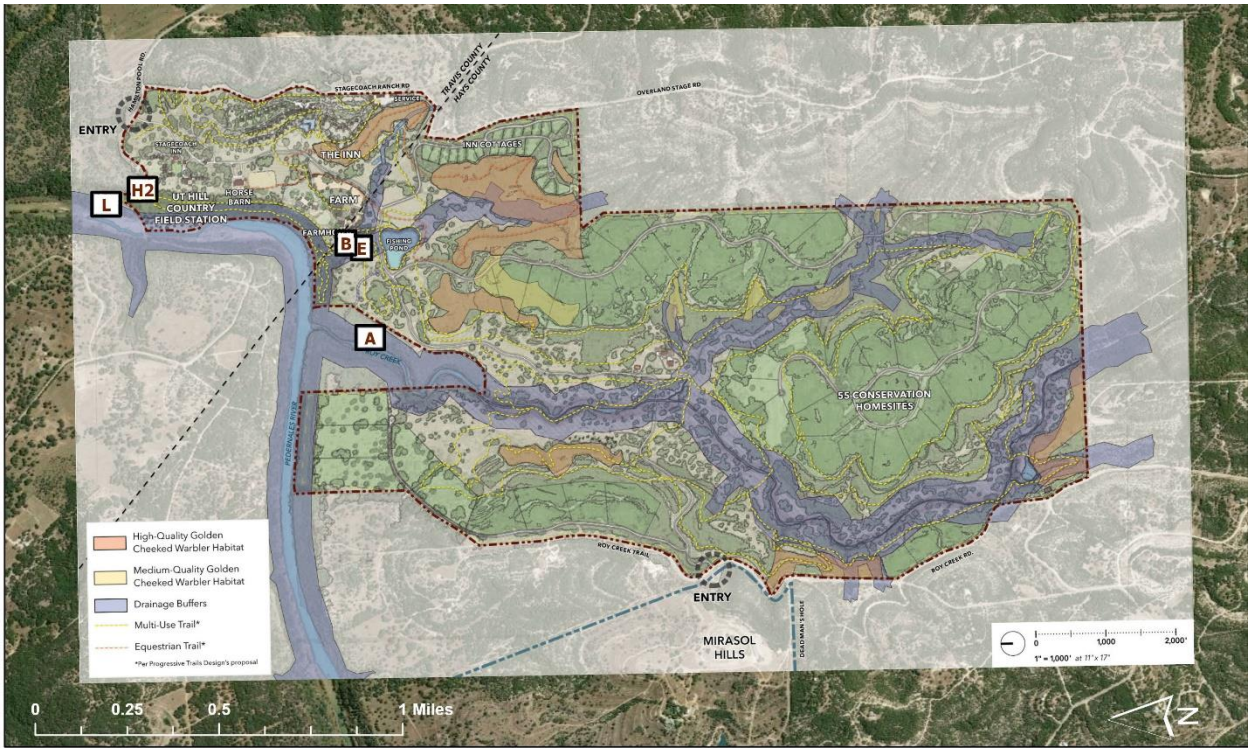

Figure 4. Five of the ten known locations for the Pedernales River springs salamander are located in the immediate vicinity of or directly within the scheduled Mirasol Springs development. L = Martin Spring, H2 = Hammett's Crossing Spring #2, E = Little Elder Spring, B = Bunkhouse Springs, A = Red's Spring. Adapted from https://mirasolsprings.com/vision/. Accessed June 24, 2021. A landscape view of this figure can be found in Appendix A.

Adequate water quantity levels for the Pedernales River springs salamander are not only threatened by aquifer drawdown but river drawdown. Recent studies indicate significant recharge to the Middle Trinity occurs from losing streams, such as the Blanco River, Cypress Creek, and Onion Creek (Smith et al. 2015, Hunt et al. 2017, Smith et al. 2018). Given the potential connections between groundwater and surface streams such as the Pedernales River, maintaining base flows in the Pedernales River could be important for maintaining base flows in the springs where the Pedernales River springs salamander is found. A pump has been installed in the Pedernales River at 30.331524, -98.164955 within the range of the Pedernales River springs salamander for the purpose of creating an artificial 2 acre (8,094 m^2) recreational lake at Mirasol Lodge LLC (Figure 5). Just another 2 km downstream, another pump has been approved to supply water to the Mirasol Springs development for the amount of 108 acre feet per year of Pedernales River waters (Lower Colorado River Authority 2020, Appendix C). The location of the approved intake will be placed within 400 meters of 3 of the 10 known locations for the Pedernales River springs salamander (Figure 6).

Figure 5. Location of an intake pump to supply water to an artificial 2 acre recreational lake at Mirasol Lodge LLC from the Pedernales River within the range of the Pedernales River springs salamander. Maintaining Pedernales River baseflows may be important in maintaining spring baseflows where the Pedernales River springs salamander is found.

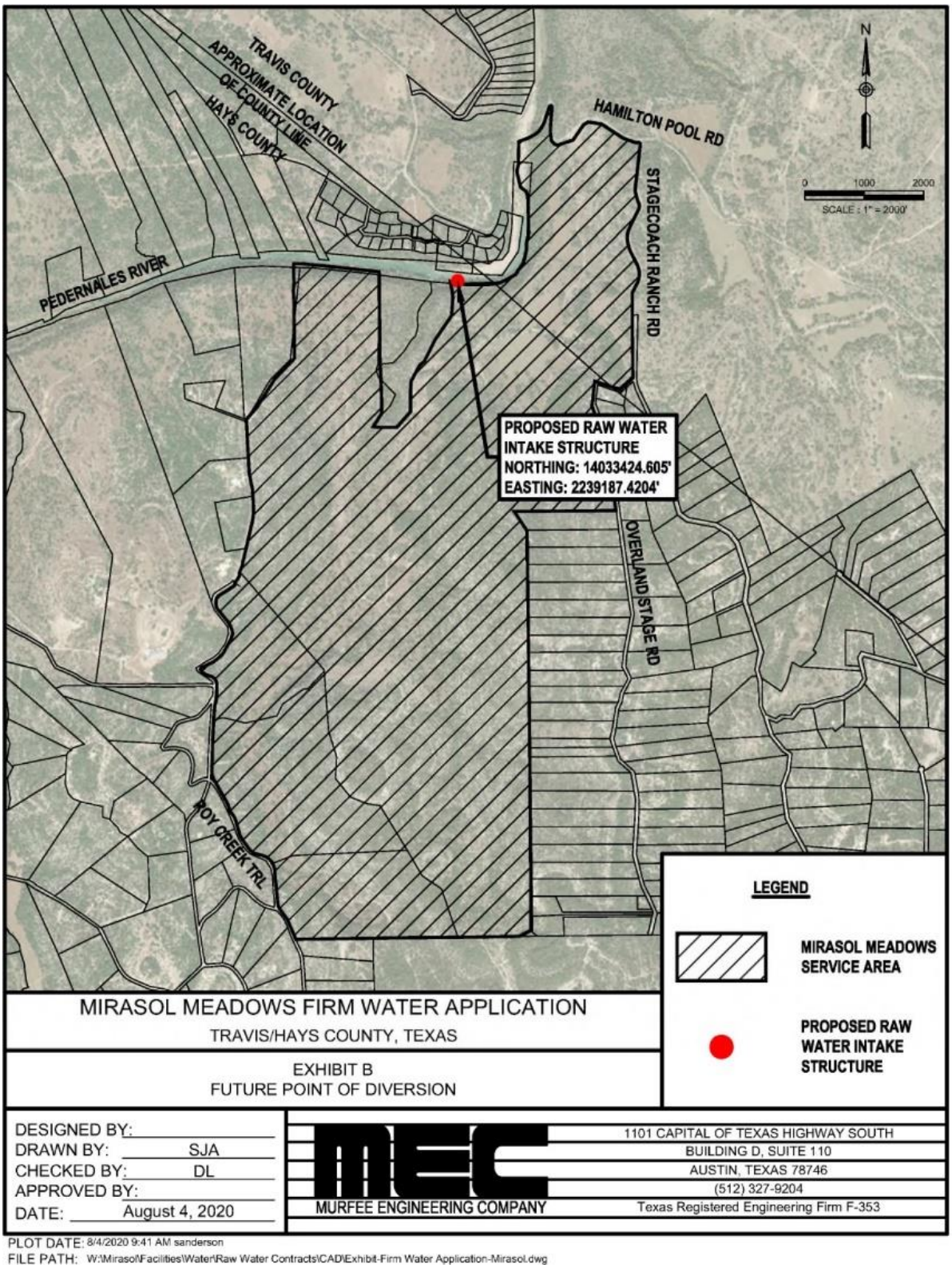

Figure 6. Placement of the raw water intake structure for the Mirasol Springs development within 400 meters of 3 of the 10 known locations for the Pedernales River springs salamander. Maintaining Pedernales River baseflows may be important in maintaining spring baseflows where the Pedernales River springs salamander is found.

"Regional climate models that predict increased air temperature (Hayhoe 2014, Jiang and Yang 2012), together with hydrologic models that project decreased springflow (Heitmuller and Reece 2006, Stamm et al. 2014, Loáiciga et al. 2000), predict that Edwards–Trinity Eurycea salamander populations and other codistributed groundwater-dependent species are highly vulnerable to extinction within the next century" (Devitt et al. 2019). Major aquifer drawdown has been documented in the vicinity of the range of the Pedernales River springs salamander. Urbanization is scheduled to drastically increase in the immediate vicinity of five of the ten known locations for this salamander. Water quantity degradation presents a severe level threat across the Pedernales River springs salamander range that will result in severe population-level impacts.

Water Quality Degradation and Physical Modification of Surface Habitat

The Service uses studies in closely related *Eurycea* species to identify physiological habitat parameters for federally listed salamanders when species-specific studies are unavailable (USFWS 2020, 2013b). It is reasonable to presume the Pedernales River springs salamander's habitat parameters are similar to other listed *Eurycea*: its survival, growth, and reproduction will be most successful when water quality is unaltered from natural aquifer conditions.

Urbanization is one of the most significant sources of water quality degradation that can affect the future survival of central Texas salamanders (Bowles et al. 2006, Chippindale & Price 2005, USFWS 2013b). Aquatic life is sensitive to even low levels of urbanization, and the negative effects of urbanization on aquatic invertebrates (Moore and Palmer 2005, Cuffney et al. 2011) and salamanders (Price et al. 2006) is well established. Amphibians have experienced declines or extirpation in urban areas, exhibiting low survival (Barrett et al. 2010; Price et al. 2012b), occupancy (Price et al. 2011), abundance (Riley et al. 2005), and species richness (Rubbo and Kiesecker 2005, Barrett and Guyer 2008, Scheffers and Paszkowski 2012). Multiple species of stream salamanders have shown decreased abundance with increasing urbanization in watersheds across the U.S. including Georgia (Oser and Shure 1972), North Carolina (Price et al. 2006, Willson and Dorcas 2003, Miller et al. 2007), Maryland and Virginia (Grant et al. 2009), and central Texas (Bendik et al. 2014). The changes associated with urbanization often have drastic negative effects on salamanders at the population level (Bank et al. 2006; Price et al. 2012a). These effects of urbanization in stream-dwelling salamanders are consistent with the findings in a federally threatened, central Texas *Eurycea* species, the Jollyville Plateau salamander. Bowles et al. (2006) documented significantly fewer Jollyville Plateau salamanders occurring at developed sites compared to undeveloped sites. Bendik et al. (2014) expanded on this work, showing a strong negative effect of development on Jollyville Plateau salamander densities from 17 sites over a 4 year period and a negative correlation between counts and increasing development over a 15 year period.

There are numerous possible mechanistic links between urbanization and stream-dwelling salamander declines. The increase in impervious cover that increases with development changes stream hydrologic function and in-stream habitat and delivers high contaminant loads to the detriment of aquatic ecosystems (Walsh et al. 2005, Chadwick et al. 2006, Booth & Jackson 1997). The increase in roads, rooftops, sidewalks, patios, paved surfaces, and compacted soils that increase with urbanization prevent water from filtering into the soil and result in storm flows of more frequent and greater

magnitude (Arnold and Gibbons 1996, Schueler 2000, Poff et al. 2006). These flashy flows have been shown to flush *Eurycea cirrigera* larvae from their preferred habitat and result in low survival (Barrett et al. 2010). Bendik et al. (2014) found lower abundance of small juvenile Jollyville Plateau salamanders in highly developed catchments, indicating either a reduction in reproduction or lower juvenile-specific survival rates. Juvenile Jollyville Plateau salamanders could be more susceptible to mortality from flood events, as in *E. cirrigera*; or, they could be more sensitive to pollutants compared to adults. In water bodies throughout the U.S., urbanization is a major contributor of contaminant loading (Booth and Jackson 1997; Chadwick et al. 2006). Contaminants not only enter water bodies from changes to stream morphology, hydrologic regime, and sedimentation: storms drains, irrigation run-off, and leaking water supply lines, sewer lines, and detention ponds provide artificial baseflow to groundwater catchments (Sharp 2010) and are a significant source of baseflow to streams in Austin, Texas where Jollyville Plateau salamanders are found (Christian et al. 2011). Chemical pollutants harmful to amphibians including heavy metals (Linder and Grillitsch 2000), pesticides (Howe et al. 1998, Larson et al 1998, Hayes 2000), and organic compounds (Bryer et al. 2006) were documented at Bendik et al. study sites (Bendik et al. 2014, City of Austin 2001). It has since been documented that exposure to xenobiotics results in the accumulation of contaminants in Northern Edwards *Eurycea* spp. salamander tissues and a reduction in the diversity of aquatic invertebrates that occupy springs (salamander prey). Diaz et al. (2020) found a positive correlation between the level of impervious cover present and the contaminants detected in salamander tissues and surface water, observed significant differences in water quality and contaminants detected in composite salamander tissue samples between urban developed and non-developed sites, and decreasing aquatic invertebrate diversity with increasing impervious cover. These closely related, federally listed *Eurycea* species "might be both directly affected by the toxicity of impaired waters and indirectly affected by the subsequent loss of prey diversity and reduced forage success as dietary organisms succumb to the acute and chronic effects of xenobiotics" (Diaz et al. 2020).

Urbanization is associated with changes to the sedimentation regime of streams (Walsh et al. 2005). Land use change results in anthropogenically induced increases in fine sediment deposition that can have far reaching impacts to lotic environments (Wood & Armitage 1997). Sediment is a mixture of silt, sand, clay, and organic debris that occurs within water bodies either as suspended sediments or deposited sediment layers (Menzer and Nelson 1980). Sediments suspended in water can smother or clog gill structures in aquatic organisms thereby affecting respiratory processes (USFWS 2005). Interstitial spaces are habitat features for stream-dwelling salamanders that can be filled with sediments (Martin et al. 2012, Welsh & Ollivier 1998). When these spaces are filled with fine sediment or become compacted, the amount of available foraging habitat and protective cover is reduced (Welsh and Ollivier 1998). Unobstructed interstitial space is critical to salamander habitat because it provides hiding space from predators and habitat for macroinvertebrate prey (Bendik 2011). Excess sediment is a pollutant in the Barton Springs ecosystem (USFWS 2005). Endangered Barton Springs salamander abundance was negatively associated with sediment cover, and this effect was most pronounced for juveniles (Dries & Colucci 2018, Bendik and Dries 2018).

Spring water quality and quantity and other *Eurycea* salamander habitat components, such as substrate and interstitial spaces, can be affected by various forms of disturbance (e.g. feral hogs, livestock, and human visitation) (USFWS 2013a). Frequent human visitation resulted in disturbed vegetation, vandalism, and the destruction of travertine deposits by foot traffic in Jollyville Plateau

salamander habitat in the Bull Creek watershed (City of Austin 2001). Bowles et al. (2006) found dead Jollyville Plateau salamanders evidently crushed under rocks from foot traffic at developed sites. The Service recommends that actions be implemented to protect salamander habitats from disturbance (Dries et al. 2013, USFWS 2013a).

The environmental impacts of urbanization can affect the physiology of individual salamanders. Environmental conditions are associated with altered physiological health in amphibians (Homan et al. 2003, Janin et al 2011, 2012, Chambers et al. 2013, Gabor et al 2018). The accuracy of occurrence or count data depends heavily on detection probabilities, and these time-lagged response measures may obscure the current population status (Ewers and Didham 2006, Piha et al. 2007). Physiological indicators such as body condition and hormone status can provide integrative information on sub-lethal impacts of habitat degradation on individuals before population declines can be quantified (Homan et al. 2003). Body condition and level of stress hormone are significantly altered by habitat availability and fragmentation at fine spatial scales in common toads (*Bufo bufo*) (Janin et al. 2011). Water-borne corticosterone release rates and ranavirus infection load were greater in larval salamanders from agricultural wetlands compared to reference wetlands (Davis et al. 2020). Jollyville Plateau salamanders in disturbed habitats have greater stress levels than those in undisturbed habitats, as determined by measurements of water-borne stress hormones in urbanized and undisturbed streams (Gabor et al. 2018). Elevated stress hormones may have direct effects on Jollyville Plateau salamanders such as affecting mating behavior, antipredator behavior, or acting as an immunosuppressant or otherwise decreasing survival or reproduction in individuals. These factors may partially account for the decrease in abundance of salamanders in streams within disturbed environments (Bendik et al. 2014; Bowles et al. 2006).

In addition to the threats detailed above, there are other threats to *Eurycea* salamanders closely related to the Pedernales River springs salamander that the Service considers ongoing and expected to increase with increasing activities associated with urbanization in central Texas: hazardous material spills, underground storage tanks, highways, energy pipelines, water and sewage lines, swimming pools, construction activities, quarries, contaminants and pollutants (e.g. PAHs, pesticides, nutrients), changes in water chemistry, climate change and drought (USFWS 2020, 2013b).

Impacts to Individual Locations

The majority of Pedernales River springs salamander known habitat is degraded, found in urbanized areas, and/or found in areas scheduled for development.

Numerous large tracts of land along the RR 3238 corridor are rapidly being subdivided. Two sites (Martin Spring and Hammett's Crossing Spring #2) are within the immediate vicinity of RR 3238 (located 12 m and 34 m from the road pavement, respectively) and subject to impervious cover, road runoff, pollution, trash, and trespassing (Figure 3).

Reimers Ranch Spring #1 and Climbers Canyon Spring are located on Travis County's Milton Reimers Ranch Park. There is no protection from the effects of human visitation at Climbers Canyon Spring. It is located in Climbers Canyon, a heavily visited access point to hikers and rock climbers. Dogs, both on and off leash, are common. The foot trail enters adjacent to the primary spring, crossing the outflow multiple times, and this site is degraded. Reimers Ranch Spring #1 is generally protected by its

lack of accessibility as it is off-trail and mostly hidden by brush and deep grass (Fushille 2021 pers. comm.).

Figure 7. Martin spring. This spring is located 12 meters from RR 3238. A trail formed by trespassers leads to it. It has been historically degraded with the construction of a spring catchment box. July 2021.

[redacted] The site is subject to road runoff, trash, and foot traffic (Figure 9). Hammett's Spring #2 has degradation from a historical impoundment, a possible cistern (Figure 10). This site is on the Mirasol Springs property scheduled for development.

Figure 9. Trash at Hammett's Crossing Spring #2. April 2020.

Figure 10. Historical modification to Hammett's Crossing Spring #2. This spring is located 34 meters from RR 3238 pavement and subject to frequent human visitation. April 2020.

Three locations (Hammett's Crossing Spring #2, Little Elder Spring, and Bunkhouse Springs) are located directly on the scheduled Mirasol Springs development property (Figures 4 and 11). The developer anticipates this project bringing 1 million people per year to the project area (Miller 2021 pers. comm.). Little Elder Spring and Bunkhouse Springs are located in an ephemeral stream channel that contributes to the Pedernales River. This channel has been historically modified immediately upstream of Bunkhouse Springs (Figure 12). The stream channel crosses what is currently a private road

approximately 80 meters upstream of Little Elder and Bunkhouse Springs. This road is shown as a main road in the Mirasol Springs development plans (Mirasol 2021, Figure 11).

The development also plans a commercial farm, orchard, and poultry coop within this same stream watershed and within 30 meters of the two known salamander locations. Construction on these amenities has begun despite the development being scheduled to "break ground" in early 2022 (Figure 13). A historical well at Bunkhouse Springs is being used to irrigate the farm and orchard (Welch 2021 pers. comm.). Bunkhouse Springs is further degraded by multiple, large impoundments forming a series of pools (Figure 14). The spring run at Little Elder was historically modified, creating a pool immediately upstream of known salamander habitat (Figure 15, Datri 2020). These modifications have degraded the natural stream morphology and hydrology, creating lentic conditions with accumulated sediment and detritus (Datri 2021 pers. comm.). A treehouse and public trail are scheduled to be built within the immediate vicinity of Little Elder and Bunkhouse springs, leaving these sites subject to the effects of construction and frequent human visitation (Figure 11). These two spring groups occupied by salamanders are also immediately downstream of a "fishing pond" scheduled to be located in an ephemeral stream that contributes to Elder Canyon. The pond water will be pumped from the Pedernales River and used as storage for the water supply for the development (Lower Colorado River Authority 2020, also see Figure 6 in Water Quantity Degradation). In addition to water quantity degradation, the salamanders at Bunkhouse and Little Elder springs are threatened by changes to water chemistry, stream hydrology, flow, sedimentation regimes, and pollutants as well as changes to predator and parasite populations. Zebra mussels have been identified in the Colorado River basin (TPWD 2017) and may also pose a threat.

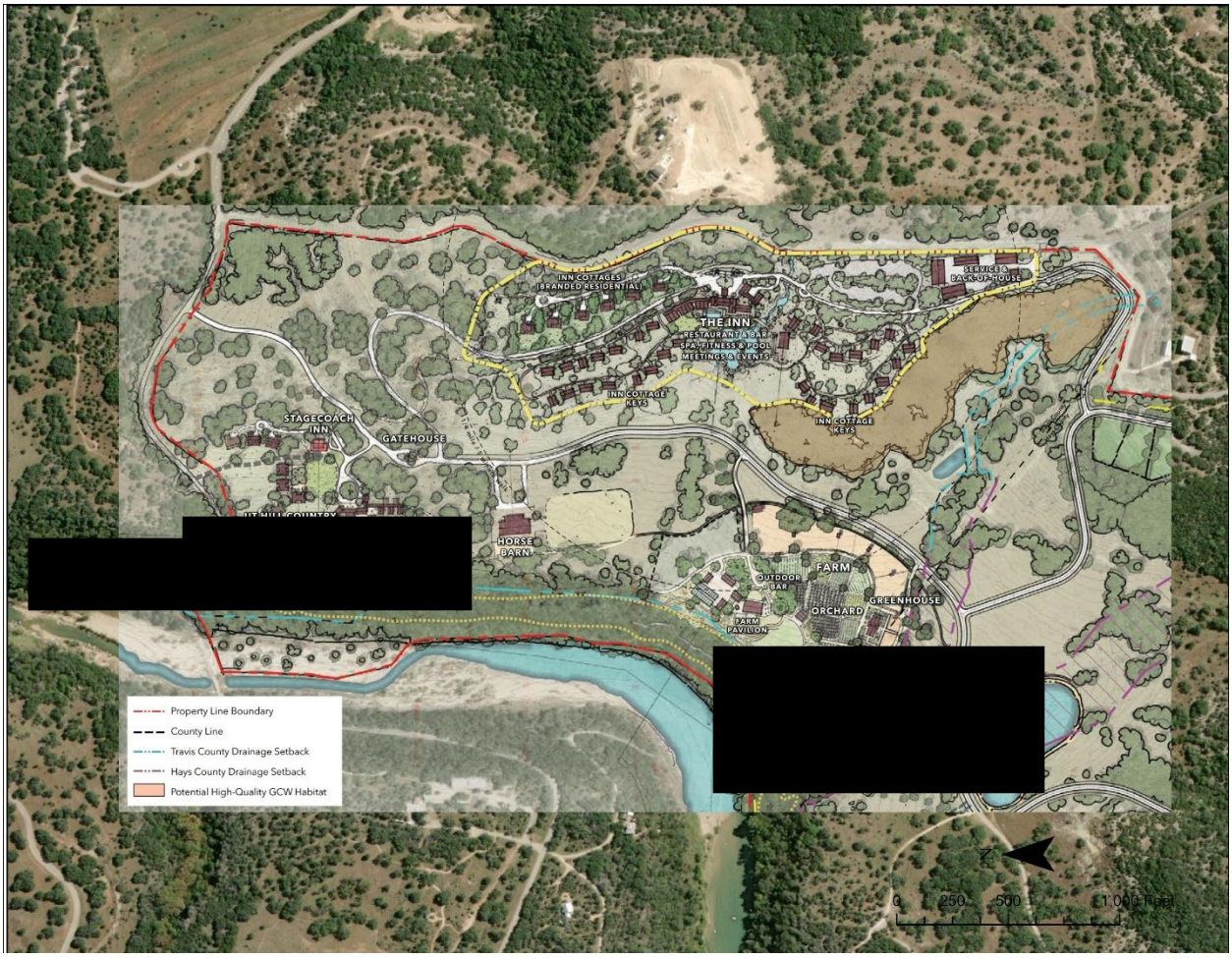

Figure 11. A portion of the scheduled development with known Pedernales River salamander locations superimposed. Two of the ten known sites (Bunkhouse Springs and Little Elder Spring) are located in a small watershed subject to urbanization as part of the Mirasol Springs development. A treehouse and public trail are within the immediate vicinity of these two locations. Additionally, Bunkhouse and Little Elder Springs are immediately downstream of a pond scheduled to be located in an ephemeral stream that contributes to Elder Canyon. The pond water will be pumped from the Pedernales River and used as storage for the water supply for the development. Adapted from https://mirasolsprings.com/vision/. Accessed June 24, 2021. A landscape view of this figure can be found in Appendix B.

Figure 12. Historical modification to the ephemeral stream morphology above Bunkhouse Springs. April 2020.

Figure 13. Poultry coop in immediate proximity to Bunkhouse Springs. July 2021.

Figure 14. This photo was taken from atop the largest impoundment in a series at Bunkhouse Springs. Note the lentic conditions in the pool formed by this impoundment. April 2020.

Figure 15. Historical modification to stream morphology at Little Elder Spring has created lentic conditions. April 2020.

Red's Spring is located on a mostly undeveloped private property that runs along one half of the downstream portion of Roy Creek to its confluence with the Pedernales River. The spring habitat is degraded due to modification for water diversion: the property owners use Red's Spring as the water source for a vacation home. The spring orifice was historically dug out to create a basin for a spring box constructed of treated lumber with a cast iron "cover". This artificially deepened area at the orifice has an accumulation of detritus. The first five meters of stream channel were dug to insert a pipe covered in mesh that captures the majority of spring flow at the spring box (Figure 16). The property owners dig

out the spring orifice 1-2 times per year to remove roots and detritus from the pipe and orifice area (Datri 2021 pers. comm.). The Mirasol Springs development area surrounds the majority of the currently undeveloped Roy Creek watershed, leaving Red's Spring vulnerable to further water quantity and quality degradation resulting from urbanization as well as increased human foot traffic from trespassing.

Figure 16. Red's Spring is degraded due to modfication for water diversion. May-July 2021

A salamander with signs of stress (pale white, lesions, and missing digits) covered with amphipods (*Hyallella* spp.) was observed at the privately owned Hope Springs, possibly due to recent habitat modification by the landowners as described by Norris (2009).

Urbanization is a significant source of water quality degradation affecting the future survival of central Texas *Eurycea* salamanders. In its listing decisions for other Central Texas *Eurycea*, the Service considered urbanization to be an ongoing threat of high impact expected to increase with expanding future development within the salamanders' range (USFWS 2013b, USFWS 2014). The majority of Pedernales River springs salamander habitat is degraded, in urbanized areas and/or in areas scheduled for development. Water quality and localized habitat degradation presents a severe level threat across the majority of the Pedernales River springs salamander range that will result in severe population-level impacts.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Three hundred sixty-three federally listed salamanders were stolen from the San Marcos National Fish Hatchery and Technology Center in 2016 (USFWS 2017). It has been speculated that these individuals were stolen for private collection or sell on the black market (Statesmen 2018). This case indicates that there is interest in the collection of central Texas *Eurycea* salamanders. Overutilization may pose a threat to the Pedernales River springs salamander due to its very small number of known locations and small numbers of individuals found at the surface at those locations.

C. Disease or Predation

In addition to the water quality and quantity threats that landscape changes can cause to *Eurycea* salamanders discussed in section *A.*, here we present how emerging disease can threaten *Eurycea* salamanders and how landscape changes can create and/or exacerbate threats from predation and disease.

A pond is scheduled to be constructed immediately upstream of two of the ten known Pedernales River springs salamander-occupied springs, Little Elder and Bunkhouse Springs (Mirasol Springs 2021, Figure 11). The developer advertises that this "fishing pond" will attract migrating birds (Mirasol Springs 2021). A commercially sized farm, orchard, and chicken coop have been constructed in the watershed, within 75 meters of these two salamander locations since 2018.

Central Texas *Eurycea* salamanders share similar predators, which include carnivorous freshwater fish (such as Centrarchidae), crawfish, and large aquatic insects (Pierce and Wall 2011, Bowles et al. 2006, Cole 1995, Owen et al. 2016, Owen & Devitt 2016). Jollyville Plateau salamander numbers have been negatively correlated to the abundance of centrarchid fish (City of Austin 2001). Austin blind and Jollyville Plateau salamanders have been observed retreating into gravel substrate after cover was moved, suggesting these salamanders display antipredation behavior (Bowles et al. 2006). San Marcos salamanders (*Eurycea nana*) have the ability to recognize and show significantly reduced activity (antipredator response) to the chemical cues of introduced and native centrarchid fish predators (Epp and Gabor 2008, Davis et al. 2012, USFWS 2013b). Introduced fish predators can decrease survivorship, reduce metamorph size and rate, and alter habitat and foraging behaviors in some

amphibians (Kats & Ferrer 2003). *Eurycea troglodytes* may have been extirpated from the type locality, the Valdina Farms Sinkhole, due to human-induced flooding and introduction of surface predators (Veni and Associates 1987, Chippindale et al. 2000, Chippindale & Price 2005).

Land-use changes drastically alter the distribution and abundance of wildlife (Sala 2000, Hooper et al 2005), which in turn, influences host-parasite relationships (McMichael 2004, Macdonald and Laurenson 2006). Anthropogenic landscape modifications, particularly those associated with agriculture, have been shown to influence the prevalence and diversity of digenetic trematode infections in aquatic amphibians (Johnson and Chase 2004, Koprivnikar et al. 2007, Gray et al. 2007, McKenzie 2007). Trematodes use birds and snails as intermediate hosts. Trematode infections are especially rare in species that inhabit headwater springs; however, Bonnett et al. (2011) documented two new host records for parasitic trematodes in salamanders that typically inhabit headwater springs: after construction of a human-made pond interrupted a native spring-fed stream, they documented the presence of trematodes in stream-dwelling salamanders downstream from the pond. They hypothesized that the human-made pond that partially impounded the natural spring changed the ecological situation by bringing lentic habitats and their associated host-parasite fauna (planorbid snails and *Clinostomum* sp.) in close contact with novel hosts, an otherwise lotic salamander species. Trematodes have been documented in Jollyville Plateau salamanders (McAllister et al. 2018), Salado salamanders (McAllister et al. 2021), and Barton Springs salamanders (Chamberlain and O'Donnell 2002).

Amphibians can be more susceptible to pathogens due to environmental changes from contaminants, even if the contaminants themselves do not directly impact amphibians. Contaminants can change the system to favor pathogens and increase infection rates: Johnson et al. (2007) found that trematode infections were increased in amphibians through eutrophication of systems via nutrient runoff. Contaminants can alter the environment through changes in abiotic conditions or physical structure, or in the biotic community that could alter host-pathogen systems. For example, if contaminants can alter the abundance of microscopic aquatic predators that feed on infective stages of trematode parasites or *Bd* (*Batrachochytrium dendrobatidis)* zoospores, they could influence infection prevalence and disease dynamics (Schmeller et al. 2014). Indirect effects of contaminant exposure can increase disease risk by increasing the abundances of intermediate hosts of pathogens in the environment (Halstead et al. 2014, Rumschlag et al. 2019). These interactions can be complex with outcomes mediated by host species, host and pathogen quality, and environmental properties.

Environment and stress are associated with altered immune defenses in amphibians (Rollins-Smith 2017, Bletz et al. 2017, Jani and Briggs 2018, Varela et al. 2018). Jollyville Plateau salamanders in disturbed habitats have greater stress levels than those in undisturbed habitats, as determined by measurements of water-borne stress hormones in urbanized and undisturbed streams (Gabor et al. 2018). Elevated stress hormones may have direct effects on Jollyville Plateau salamanders such as acting as an immunosuppressant. This factor may partially account for the decrease in abundance of salamanders in streams within disturbed environments (Bendik et al. 2014; Bowles et al. 2006).

The emerging infectious disease, chytridiomycosis, brought on by infection with the fungal pathogens, *Batrachochytrium dendrobatidis* (*Bd*) and *Batrachochytrium salamandrivorans* (*Bsal*), is causing substantial concern (Martel et al. 2013, 2014; Gray et al. 2015, Kolby & Daszak 2016). *Bsal* is one threat to amphibians likely to spread by human actions (Yuan et al. 2018), similar to the global

spread of *Bd* (O'Hanlon et al. 2018). Chytridiomycosis has been documented in Jollyville Plateau salamanders (O'Donnell et al. 2006, Gaertner et al. 2009) and Austin blind salamanders in captivity (Chamberlain 2011 pers. comm. as cited by USFWS 2013b). The potential for the introduction of virulent pathogens such as *Bsal* and members of the iridovirus family of viruses may exist (Gluesenkamp et al. 2018). Salamanders already stressed due to environmental degradation may be more susceptible to *Bd* infection (Fonner et al. 2017). Spotted salamanders do not appear susceptible to chytridiomycosis caused by *Bsal*, but may suffer sublethal growth reduction upon exposure to this pathogen early after metamorphosis (Barnhart et al. 2020). If the salamanders were exposed continually to a pathogen, they may suffer chronic stress, which could then impair the immune system. In the wild, stress from pathogen exposure can be compounded by other natural stressors (metamorphosis, breeding, competition, parasites, climate change, etc.), and immunoredistribution of resources at the expense of growth may present a significant sublethal impact (Barnhart et al. 2020).

D. Inadequacy of Existing Regulatory Mechanisms

The availability of an adequate supply of clean water is extremely important to the long-term conservation of closely related, listed *Eurycea* species; unfortunately, many of the regulatory mechanisms currently in place within the range of these salamanders were not developed with the protection and conservation of aquatic salamanders or the prey base in mind (USFWS 2013a). Data indicate that water quality and water quantity degradation continue to occur despite the existence of existing regulatory mechanisms. The same inadequacy of existing regulatory mechanisms described by the Service in listing other Central Texas *Eurycea* salamanders persists (USFWS 2013b, 2014), and the regulatory environment for the Pedernales River Springs salamander is arguably worse. "The US Endangered Species Act has been used to bring state regulation to unrestricted groundwater withdrawals in the Edwards Aquifer, where listed species are found. However, the Trinity and Edwards-Trinity (Plateau) aquifers harbor additional species with similarly small ranges that currently receive no protection from regulatory programs designed to prevent groundwater depletion" (Devitt et al. 2019). Further, its locations are outside of incorporated areas and their associated local ordinances (such as the City of Austin). In 2020, the Waters of the United States rule eliminated protections for intermittent and ephemeral streams, wetlands, and other small bodies of water that feed larger ones under the Clean Water Act. The ephemeral stream above Bunkhouse and Little Elder Springs is part of the project area of the Mirasol Springs development.

"….state law in Texas treats surface water and groundwater as separate resources (despite their functional interdependence), with groundwater considered private property (Houston & Texas Central Railroad Co. v. East 1904). Under this so-called rule of capture law, there is no enforceable legal mandate at the state or local level to maintain minimum aquifer levels (and hence springflow and stream baseflow) needed by endangered species (Wells 2014). Without joint management of surface and subsurface waters as a single common-pool resource, the aquifers, springs, and streams of the Edwards-Trinity and the regional ecosystems they sustain will become increasingly threatened" (Devitt et al. 2019). The locations of the Pedernales River springs salamander lie at the junction of three different Groundwater Conservation District (GCD) jurisdictions (Blanco-Pedernales GCD, Hays-Trinity

GCD, and Southwestern Travis County GCD, Figure 17). All three have independent jurisdiction over the same Trinity Aquifer and can each create their own water management rules. Theoretically there should be some coordination between the 3 GCDs since they are all within Groundwater Management Area 9, but this is not guaranteed, and it is not uncommon for GCDs to have conflict (Puig-Williams 2016). Additionally, the Southwestern Travis County GCD, whose boundaries are coincident with the Hunt et al. (2020) findings of water-level declines of 225 feet referenced above (see Water Quantity Degradation), was only very recently established (2019) with fledgling program rules that didn't take effect until October 2020.

The Hays Trinity Groundwater Conservation District (HTGCD) has limited authority and resources to monitor and restrict groundwater pumping from aquifer sources of Pedernales River springs salamander habitat originating within Hays County. The HTGCD is prohibited from regulating wells used for domestic use by a single private residential household and incapable of producing more than 25,000 gallons per day. The HTGCD is also prohibited from regulating wells used for "conventional farming and ranching activities, including such intensive operations as aquaculture, livestock feedlots, or poultry operations" (Texas Special District and Local Laws Code Chapter 8843).

The Southwest Travis County Groundwater Conservation District, created in 2017, has similarly limited authority to regulate pumping of groundwater in western Travis County. Domestic wells incapable of pumping more than 10,000 gallons per day of water are exempt from any regulation as are wells producing water for livestock or poultry limited to less than 25,000 gallons per day of production (Texas Special District and Local Laws Code Chapter 8871). The Southwest Travis County Groundwater Conservation District's recent establishment, and its very limited financial resources, also restricts its ability to monitor and take action to reduce to groundwater pumping that reduces spring flows to Pedernales River springs salamander-supporting springs.

The Blanco-Pedernales Groundwater Conservation District is subject to similar limits on its authority to regulate groundwater pumping within Blanco County and protect spring flows that the Pedernales River Springs salamander depends on for survival, as set out in Chapter 36 of the Texas Water Code.

Considering the limited legal authority of these three districts, and given the rapid population growth in the Austin metro-region, the recent and planned further subdivision and development of land in the immediate vicinity of the salamander's habitat, and the increasing drilling of new water wells and production of groundwater from new and existing wells for exempt domestic and agricultural purposes, the Pedernales River Springs salamander's spring habitat faces immediate and near-term dewatering.

There is no protection provided for the Pedernales River springs salamander given by Texas State Law. The species is not listed on the Texas State List of Species of Greatest Conservation Need (TPWD 2012), and even if it were State threatened and endangered species laws do not contain protective provisions for habitat (USFWS 2013a).

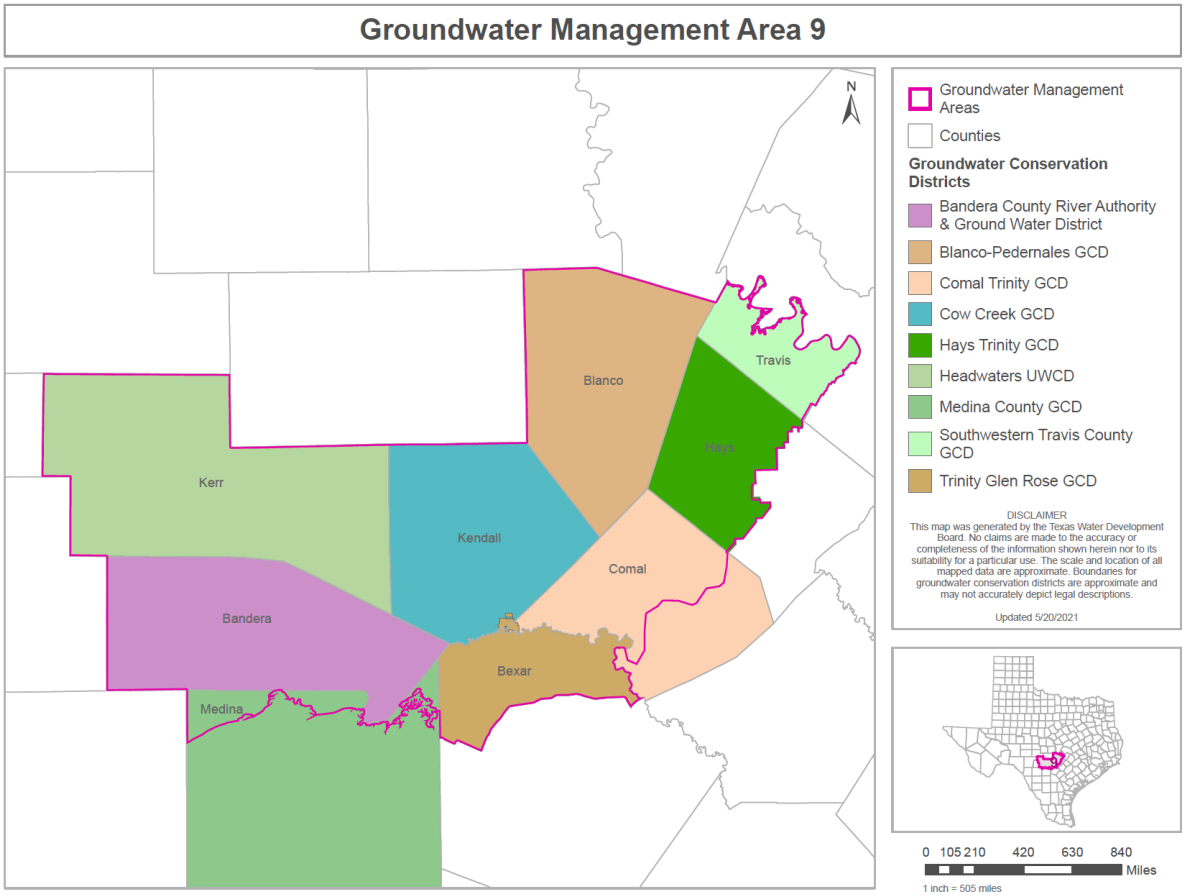

Figure 17. The Pedernales River springs salamander's range is across three groundwater districts within Groundwater Management Area 9.

A portion of sites (those in Travis Co.) are covered by the LCRA Highland Lakes Watershed Ordinance. However, some activities are exempt from the water quality requirements contained in the highland Lakes Watershed Ordinance (Lower Colorado River Authority 2005).

The Balcones Canyonlands Preserve system (BCP) offers some water quality benefits to a single site, Martin Spring, through preservation of open spaces over its recharge zones (USFWS 1996). However, sites occupied by the federally threatened Jollyville Plateau salamander within the BCP were affected by changes in land use and subsequent water quality degradation occurring in portions of contributing watersheds outside of the preserved tracts. Specifically, the preserved tracts within the BCP did not appear to be effective at reducing nutrient levels at some salamander sites (City of Austin 1999). In addition, *Eurycea* salamanders are not covered species under the section 10(a)(1)(B) permit under which the preserves were established (USFWS 1996).

In the absence of policies that reduce contaminant release, strategies exist that can diminish the likelihood of exposure or the concentration to which systems are exposed (e.g., Smith and Sutherland 2014) which influences the direct and indirect consequences experienced by organisms. Terrestrial buffers around aquatic habitats absorb nutrient and chemical contamination in runoff, and slow the rate of movement, which can reduce exposure risk. Policy that requires adequate habitat to surround aquatic environments could have a number of benefits including improved water quality and potentially

flood control, which would benefit amphibians and a host of other taxa, including humans; however, buffer characteristics will vary across systems and are difficult to standardize (Kuglerova et al. 2014; Luke et al. 2019) with more known about riparian buffers than pond buffers. Terrestrial amphibians and terrestrial life stages are also vulnerable to contaminants (James & Semlitsch 2011, Bruhl et al. 2011, 2013), and could benefit from terrestrial buffers.

The success of recovery for listed species is dependent upon the accurate recognition and protection of the full range of habitats necessary for species survival. The U.S. Fish and Wildlife Service has posited the creation of 300-m buffers around springs to protect critical habitat for federally endangered or threatened salamanders (USFWS 2013b). Bendik et al. (2016) showed that the Jollyville Plateau salamander occupies a wide range of headwater stream habitats, dramatically expanding the area this salamander may occupy compared to their limited critical habitat designations. Critical habitat based only on known localities in poorly searched areas may vastly underestimate species presence and actual habitat use, thus limiting the potential for recovery (Bendik et al. 2016). Further, the results of Diaz et al. (2020) suggest that a more catchment-wide approach is warranted, one that affords greater protection on a landscape scale because of the unknown flow paths of a karst system (Diaz et al. 2020). "Critical habitat should represent an acknowledgement of the habitat necessary for species recovery, rather than a smattering of disjunct areas based on occurrence records as is currently the case for *E. tonkawae* and related species" (Bendik et al. 2016).

"We can find no compelling reason to obviate the words of Gunnar Brune, who said, 'The story of Texas' springs is largely a story of the past. In the not very distant future most of Texas' springs will exist only in a legend of a glorious past…destroyed by pollution and overpopulation' (Brune 1981)." (Chippindale and Price 2005).

E. Other Natural or Manmade Factors Affecting the Species' Continued Existence

As presented under Factor A, the Pedernales River springs salamander has a very limited distribution of just 10 known locations within a 32 square mile area. The majority of known locations (7 of the 10) are clustered within a 0.5 square mile area (1.3 km^2) at the juncture of southwestern Travis and northern Hays Counties (Figure 3). These salamanders are observed to occur in very low numbers at the surface (Datri 2021 pers. comm.). Small populations are more vulnerable to extinction from demographic and environmental stochasticity (Sabo et al. 2002).

This species is likely very sensitive to water quality and quantity degradation as shown in closely related, federally listed *Eurycea* salamanders. Because of their porous skin, the development of their eggs and larvae in water, their position in the food web, and their dependence on freshwater, amphibians are sensitive to contaminants (Shoemaker & Nagy 1977). Amphibians are sensitive to many pollutants including heavy metals, insecticides, particularly cyclodienes (endosulfan, endrin, toxaphene, and dieldrin) and certain organophosphates (parathion, malathion), nitrite, salts, and petroleum hydrocarbons (USFWS 2002). Amphibians can be exposed to waterborne and airborne pollutants in their breeding and foraging habitats. The crustaceans, amphipods in particular, on which the Jollyville Plateau Salamander feeds are especially sensitive to water pollution. These toxic effects from pollutants

can either be lethal or sub lethal with such outcomes as morphological and developmental aberrations, lowered reproduction and survival, and changes in behavior. Being fully aquatic, the salamander is unable to escape the sources of pollution in the water surrounding it and in its prey items (Phipps et al. 1995; Burton and Ingerscoll 1994; USFWS 2002).

Conclusion

We, the petitioners, have presented substantial evidence that the Pedernales River springs salamander is a taxonomically distinct species with a highly limited distribution that is experiencing severe threat levels due to water quality and quantity degradation from growing urbanization across a majority of its range where existing regulatory mechanisms are inadequate. The Pedernales River springs salamander warrants the highest priority of U.S. Fish and Wildlife Service as it appears to be in danger of extinction now and needs immediate listing action in order to prevent extinction due to at least four of the factors in 50 C.F.R. § 424.11, any of which should be adequate to designate it as endangered.

"*The answer to 'How much is a species worth?' is 'What kind of a world do you want to live in'*" (Chippindale and Price 2005).

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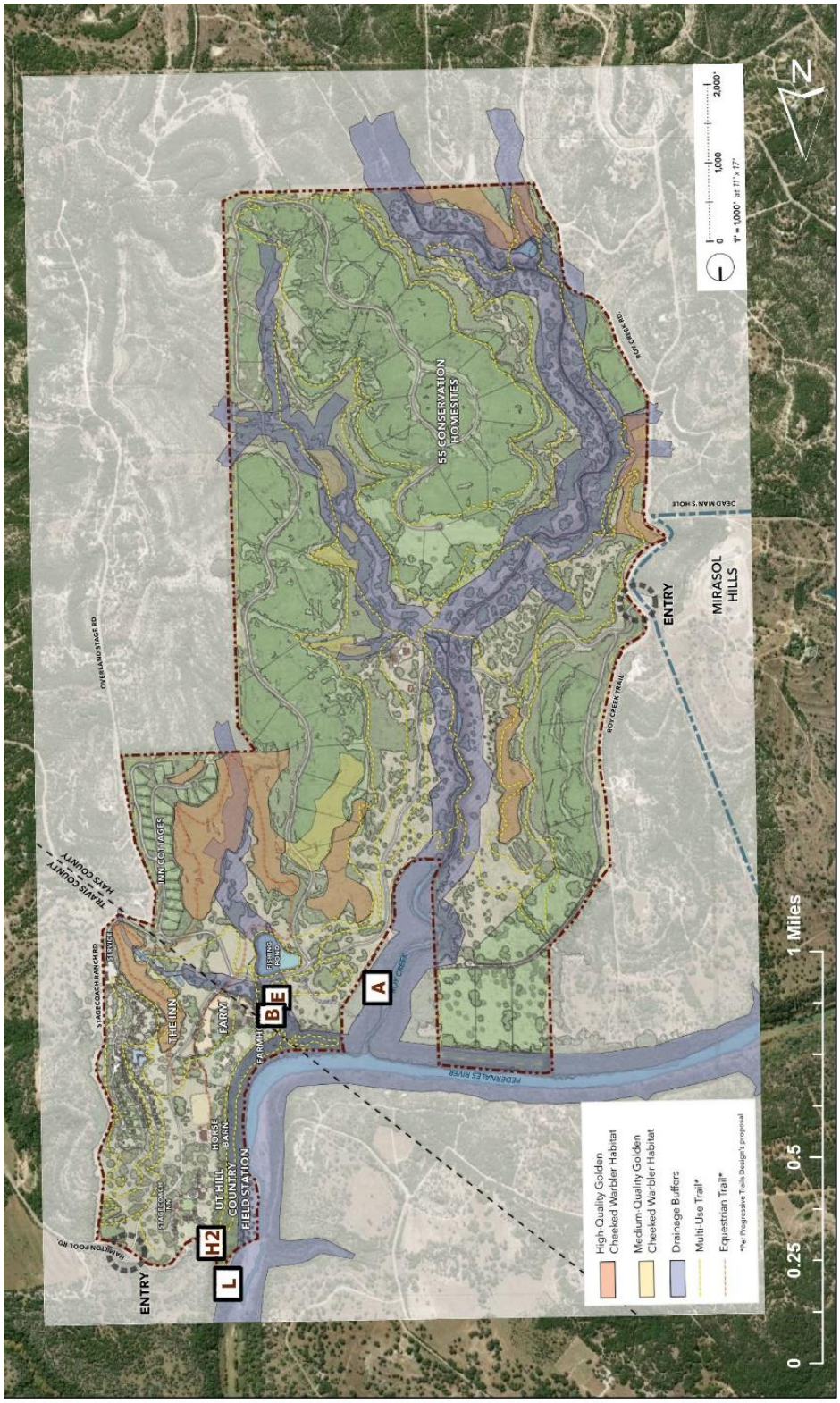
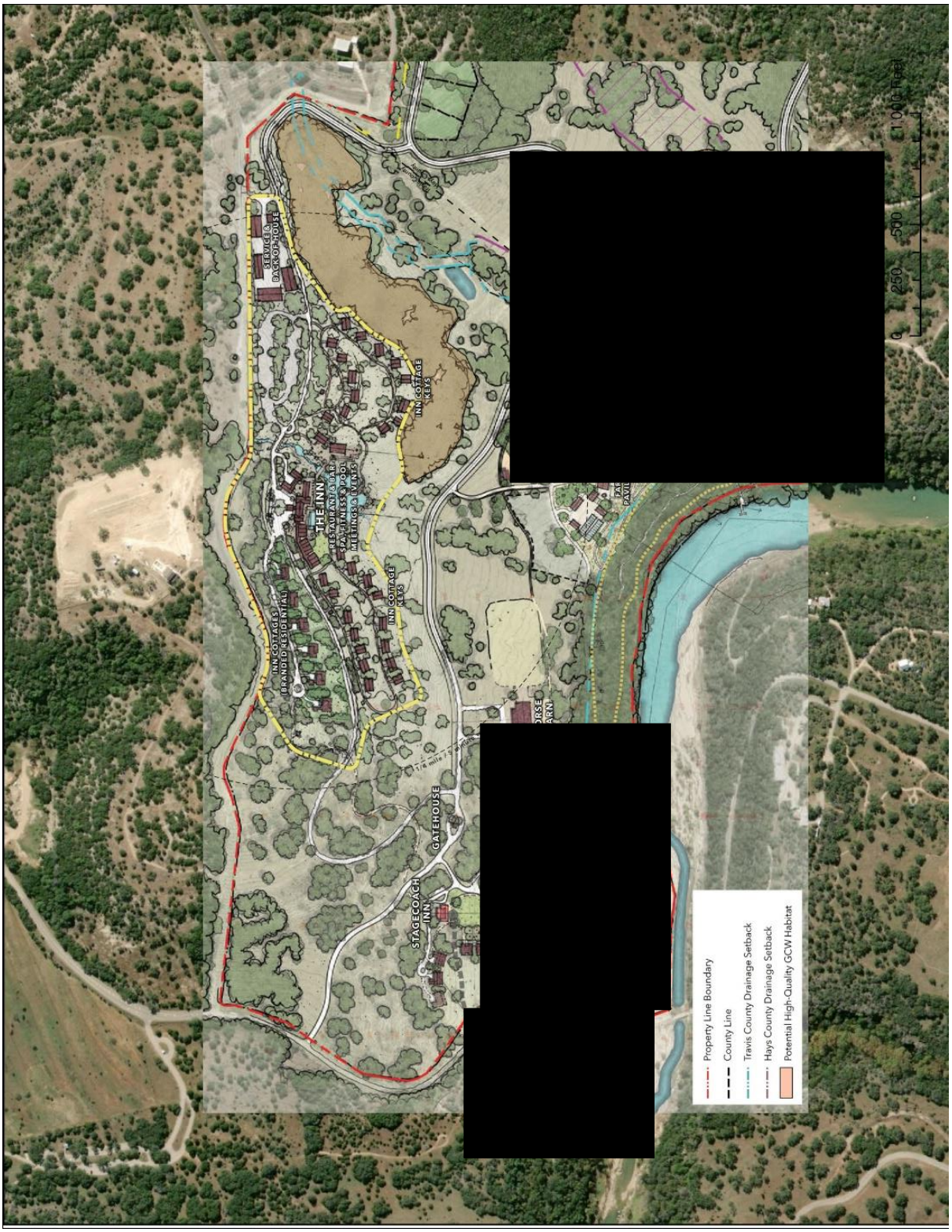
Appendix A. Landscape view of Figure 4. Five of the ten known locations for the Pedernales River springs salamander are located in the immediate vicinity of or directly within the scheduled Mirasol Springs development. L = Martin Spring, H2 = Hammett's Crossing Spring #2, E = Little Elder Spring, B = Bunkhouse Springs, A = Red's Spring. Adapted from https://mirasolsprings.com/vision/. Accessed June 24, 2021.



Appendix B. Landscape view of Figure 11. A portion of the scheduled development with known Pedernales River salamander locations superimposed. A treehouse and public trail are within the immediate vicinity of Bunkhouse and Little Elder Springs locations. Additionally, these two salamander locations are immediately downstream of a pond scheduled to be located in an ephemeral stream that contributes to Elder Canyon. The pond water will be pumped from the Pedernales River and used as storage for the water supply for the development. Adapted from https://mirasolsprings.com/vision/. Accessed June 24, 2021.



Appendix C. Firm water contract between Lower Colorado River Authority and Clancy Utility Holdings, LLC

FIRM WATER CONTRACT

By and Between

LOWER COLORADO RIVER AUTHORITY

And

CLANCY UTILITY HOLDINGS, LLC

FIRM WATER CONTRACT

This Contract is entered by and between the LOWER COLORADO RIVER AUTHORITY (hereinafter, together with its successors and assigns, "LCRA") and CLANCY UTILITY HOLDINGS, LLC (hereinafter, together with its successors and assigns as provided herein, "PURCHASER"), who, in mutual consideration of the provisions herein contained, agree as follows:

CONTRACT

1. PERMIT REQUIRED

PURCHASER may not impound, divert, or use water under this contract unless PURCHASER, in accordance with the substantive rules of the Texas Commission on Environmental Quality ("TCEQ") for upstream sales of water, obtains and maintains in effect a Water Rights Permit from the TCEQ that authorizes such impoundment, diversion, or use at the Point(s) of Availability consistent with the limitations set forth in Section 3.2 below.

2. STANDARD TERMS AND CONDITIONS

Except as expressly provided in Section 3 of this Contract, the Parties agree to the standard terms and conditions attached hereto as Exhibit A.

3. GENERAL TERMS, EXCEPTIONS & SPECIAL CONDITIONS

3.1 Incorporation of Exhibits.

All Exhibits attached to this Contract are incorporated herein by this reference in their entirety and made a part hereof for all purposes. In the event of a conflict between Exhibit A (Standard Terms and Conditions) and these General Terms, the General Terms will govern.

3.2 Maximum Annual Quantity

Subject to obtaining and maintaining a water right permit consistent with the authorizations in this section, PURCHASER shall have the right to divert from the Pedernales River, tributary to the Colorado River (Lake Travis) in Hays County, Texas up to 108 acre-feet of raw water per year. Following issuance of the permit contemplated in section 1, LCRA shall have the ability to amend this contract to reflect any relevant deviations between the authorization provided by LCRA herein, and the permit, including but not limited to any permit provisions related to the impoundment of water.

3.3 Points of Availability.

The Point of Availability is the Pedernales River, tributary to the Colorado River in Hays County, Texas, described and depicted in Exhibit B.

3.4 Maximum Diversion Rate.

The maximum diversion rate authorized under this contract is two (2) cubic feet per second.

3.5 Type of Use.

This Contract is authorized for Municipal use consistent with Section 1.F. of Exhibit A.

3.6 Service Area.

Water supplied under this contract shall only be used within that certain area of 1,401 acres in Hays and Travis Counties, as described in Exhibit "C" attached hereto and depicted in Exhibit "D" attached hereto, together hereinafter called the Service Area".

3.7 Term of Contract.

The term of this Contract is 40 years unless terminated earlier by either party consistent with Exhibit A.

3.8 Previous Contract.

There is no contractual relationship between the parties prior to the Effective Date.

3.9 Notice.

All notices and invoices to PURCHASER shall be addressed to:

Clancy Utility Holdings, LLC
4143 Maple Avenue Street, Suite 400
Dallas, Texas 75219

All payments to LCRA shall be made to the address on the invoices received by PURCHASER. All notices to LCRA shall be addressed to:

Lower Colorado River Authority
Attn: Raw Water Sales
P.O. Box 220
Austin, Texas 78767
(512) 473-3551 for facsimile transmission

and

Lower Colorado River Authority
Attn: River Operations
P.O. Box 220
Austin, Texas 78767
(512) 473-3551 for facsimile transmission

SIGNED BY:

Lower Colorado River Authority

By: Monica P. Masters
Monica Masters, P.E.
Vice President, Water Resources

Date: 12/10/2020

Clancy Utility Holdings, LLC

By:
James F. Adams
President

Date: 12/1/2020

EXHIBITS

A. Standard Contract Terms and Conditions
B. Description of Point(s) of Availability
C. Description of Service Area
D. Depiction of Service Area
E. Water Conservation Plan
F. Drought Contingency Plan
G. Demand Schedule
H. Arbitration Procedures

Exhibit A

Standard Contract Terms and Conditions

Exhibit A

STANDARD CONTRACT TERMS AND CONDITIONS

I. WATER SUPPLY

A. Permit(s) May Be Required

PURCHASER may not impound, divert, or use water under this Contract unless PURCHASER, in accordance with the substantive rules of the Texas Commission on Environmental Quality ("TCEQ"), U.S. Corps of Engineers, or any other local, state, or federal regulatory authority, obtains and maintains any water rights permit, wastewater discharge permit, dredge and fill permits, or any other similar permit, that is necessary to authorize PURCHASER'S impoundment, diversion and/or consumptive use, and subsequent discharge, of water consistent with this Contract.

B. Maximum Annual Quantity & Loss Factor

From and after the Effective Date hereof, PURCHASER shall have the right to a Maximum Annual Quantity (MAQ) of raw or untreated water per annum made available by LCRA as set forth in the terms of the Contract. For purposes of this Contract, the term "made available" refers to the greatest of: (i) the amount of water released from LCRA firm supplies to allow for diversions by or on behalf of PURCHASER; or (ii) the amount of water diverted by or on behalf of PURCHASER at the Point(s) of Availability plus, if applicable, the Loss Factor (defined below) times the amount of water diverted.

Notwithstanding the foregoing, in the event that PURCHASER's Point(s) of Availability are located downstream of Lake Travis, PURCHASER and LCRA agree that calculations of Maximum Annual Quantity and the amount of water made available under this Contract will be based on the amount of water which LCRA makes available for diversion by or on behalf of PURCHASER at the Point(s) of Availability plus the Loss Factor as set forth in this Contract.

In the event that PURCHASER'S Point(s) of Availability are located downstream of Lake Travis, the Contract will specify a Loss Factor. The Loss Factor represents LCRA's best available estimate of the conveyance, delivery, or system loss incurred to provide water under this Contract. LCRA hereby reserves the right to modify the Loss Factor and make any associated changes to the MAQ, at any time, based on any revised estimates of conveyance, delivery, or system loss associated with the delivery of water to PURCHASER, including but not limited to changes in the source of supply LCRA uses to make water available to PURCHASER or updated and substantiated information related to river or canal losses.

PURCHASER may, at its option, conduct its own investigation of conveyance, delivery, or system losses, associated with the delivery of water by LCRA under this Contract. If PURCHASER conducts such study in accordance with LCRA's then-current Water Contract Rules, it shall provide to LCRA in a written report the results of any such investigation within sixty (60) calendar days of completion and LCRA agrees to consider whether any adjustment to the Loss Factor is appropriate under this Contract. If LCRA determines that an adjustment to the Loss Factor is appropriate, it shall provide PURCHASER written notice, by certified mail, of any change to the Loss Factor and resulting change to the Contract MAQ, within fifteen (15) business days of adopting such change. A change to the Loss Factor that results in an increase in the MAQ of 500 acre-feet per year or more shall not take effect until approved by the LCRA Board as an amendment to this Contract. Notwithstanding the foregoing or any provision in LCRA's raw water contract rules, LCRA will not require PURCHASER to obtain a new contract on the most current standard form water contract where the change to the MAQ is based solely on a change to the Loss Factor.

PURCHASER shall designate a point or points of availability for such water as described and depicted in Exhibit "B" attached hereto (the "Point(s) of Availability"), said Exhibit depicting the location by reference to a corner of an original land survey and/or other survey point, giving course and distance and providing the latitude and longitude. Such Points of Availability may be located on the Colorado River or a LCRA-operated canal. In the event that the Point(s) of Availability are located on a LCRA operated-canal, PURCHASER shall also identify a point or points of diversion for such water on the Colorado River ("Point(s) of Diversion"). Such Point(s) of Diversion, if any, shall be described and depicted in Exhibit "B" in the same manner described for Point(s) of Availability.

C. EXCEEDANCE OF MAXIMUM ANNUAL QUANTITY.

If the amount of water made available to PURCHASER for any reason exceeds the Maximum Annual Quantity stated in PURCHASER's Contract during two (2) consecutive years, or two (2) out of any four (4) consecutive years, PURCHASER shall submit an application (including the application fee) for a new standard form water contract for an adjusted MAQ, the reasonableness of which shall be determined consistent with LCRA's then effective Water Contract Rules, to the extent LCRA has water supplies available.

D. MAXIMUM DIVERSION RATE

PURCHASER may not divert water made available by LCRA under this Contract at a rate greater than as set forth in this Contract ("Maximum Diversion Rate").

E. SOURCE OF WATER SUPPLY.

1. The water made available for impoundment, diversion and/or use under this Contract will be water provided from any source available to LCRA at the time PURCHASER uses

water under this Contract.

2. LCRA may make water available under this Contract in accordance with LCRA's Water Management Plan, as may be amended in accordance with state law from time to time, from storage in Lakes Buchanan and/or Travis in accordance with water rights held by LCRA as set forth in Certificates of Adjudication No. 14-5478, as amended, and 14-5482, as amended.

3. LCRA may make water available under this Contract from water rights owned by LCRA based on that certain water right previously owned by the Garwood Irrigation Company and identified as Certificate of Adjudication No. 14-5434 issued by the Texas Water Commission on June 28, 1989, as amended (herein, "Garwood's Right"). That portion of Garwood's Right that is owned by LCRA (and for which reference is made to Certificate of Adjudication No. 14-5434C issued by the Texas Natural Resource Conservation Commission) is referred to herein as "Garwood's Remaining Right."

   a) PURCHASER acknowledges and agrees that LCRA may make water available for impoundment, diversion and/or use under this Contract from Garwood's Remaining Right only following approval by the Texas Commission on Environmental Quality or its successors (hereafter, "TCEQ"), of amendments to allow use of Garwood's Remaining Right for the type of use authorized by this Contract at the Point of Diversion and/or Point of Availability.

   b) In this event, this Contract is subject to the commitments and conditions set forth in Section 7.08 of that certain Purchase Agreement, dated July 20, 1998, between Garwood Irrigation Company, as seller, and the Lower Colorado River Authority, as buyer (the "LCRA-Garwood Purchase Agreement"), and is further subject to all terms, provisions and special conditions contained within Garwood's Remaining Right, as amended. Copies of the LCRA-Garwood Purchase Agreement and Garwood's Remaining Right, as amended, are available at the following internet web-site address:

      http://www.lcra.org/water/contracts.html

      PURCHASER also may obtain copies of the LCRA Purchase Agreement and Garwood's Remaining Right, as amended, by request to LCRA's address for notices herein. By executing this Contract, PURCHASER hereby acknowledges receipt of copies of the LCRA Purchase Agreement and Garwood's Remaining Right, as amended.

F. TYPE OF USE.

PURCHASER represents to LCRA and LCRA relies on such representation that all water made available under this Contract will be impounded, diverted, and/or used by PURCHASER for the type of use as described in this Contract, as such use is defined by the substantive rules for water rights of the TCEQ. In accordance with state law, any part of the water that PURCHASER impounds or diverts but does not use or consume for such use in accordance with this Contract shall be returned to the Colorado River or a tributary of the Colorado River.

G. SERVICE AREA.

Water made available under this Contract shall only be used within that certain area, as described in Exhibit "C" attached hereto and depicted in Exhibit "D," attached hereto, together hereinafter called the "Service Area."

H. WATER CONSERVATION AND DROUGHT CONTINGENCY MEASURES.

1. PURCHASER agrees to implement the water conservation program contained in the water conservation plan (the "Water Conservation Plan") described in Exhibit "E" attached hereto. PURCHASER further agrees that the water impounded and/or diverted by PURCHASER pursuant to this Contract will be used in accordance with such Water Conservation Plan. LCRA, in accordance with applicable law, may from time to time adopt reasonable rules and regulations relating to water conservation measures. PURCHASER shall update its Water Conservation Plan every five years, or on such schedule as may be required by LCRA or other state law. PURCHASER further agrees to amend its Water Conservation Plan, as necessary, to reflect amendments in state law, regulations or LCRA's water conservation rules and regulations. PURCHASER further agrees to do so within 180 days of the effective date of such amendments, provided that, if the amendments are adopted by LCRA (rather than, for example, TCEQ), the deadline for PURCHASER to make corresponding amendments to its Water Conservation Plan shall run from the date LCRA provides written notice of the amendments to PURCHASER. PURCHASER further agrees to submit its amended Water Conservation Plan to LCRA within 30 days after its adoption. Revisions to PURCHASER's Water Conservation Plan are not required under this section if PURCHASER has not initiated diversions; however, PURCHASER shall update its Water Conservation Plan to be consistent with LCRA's rules and regulations related to water conservation at least sixty (60) days prior to initiating diversions under this Contract. In the event that PURCHASER agrees to furnish water or water services to a third party, who in turn will furnish the water or water services to an ultimate consumer, PURCHASER agrees to include in its agreement with the third party provisions that obligate the third party to: a) develop and implement a water conservation program consistent with PURCHASER's Water Conservation Plan; and, b) amend its water conservation program to reflect amendments in state law, regulations or LCRA's water conservation rules and regulations within the same timelines that apply to PURCHASER.

2. PURCHASER agrees to implement the drought contingency program contained in the drought contingency plan (the "Drought Contingency Plan") described in Exhibit "F" attached hereto. PURCHASER further agrees that the water impounded and/or diverted by PURCHASER pursuant to this Contract will be used in accordance with such Drought Contingency Plan. PURCHASER shall review and update the Drought Contingency Plan not less than once every five (5) years or following written request by LCRA consistent with any other schedule required by LCRA's Water Contract Rules. PURCHASER further agrees to submit any amended Drought Contingency Plan to LCRA within 30 days after its adoption. LCRA, in accordance with applicable law, may from time to time adopt reasonable rules and regulations relating to drought contingency measures, including LCRA's Water Management Plan. PURCHASER agrees to amend its Drought Contingency Plan, as necessary, to reflect amendments in state law or regulations or LCRA's rules, regulations or Water Management Plan. PURCHASER further agrees to do so within 180 days of the effective date of such amendments, provided that, if the amendments are adopted by LCRA (rather than, for example, TCEQ), the deadline for PURCHASER to make corresponding amendments to its Drought Contingency Plan shall run from the date LCRA provides written notice of the amendments to PURCHASER. Revisions to PURCHASER's Drought Contingency Plan are not required under this section if PURCHASER has not initiated diversions; however, PURCHASER shall update its Drought Contingency Plan to be consistent with LCRA's rules and regulations related to water conservation at least sixty (60) days prior to initiating diversions under this Contract. In the event that PURCHASER agrees to furnish water or water services to a third party, who in turn will furnish the water or water services to an ultimate consumer, PURCHASER agrees to include in its agreement with the third party provisions that obligate the third party to: a) develop and implement a drought contingency program consistent with PURCHASER's Drought Contingency Plan; and b) amend its drought

contingency program to reflect amendments in state law, regulations, or LCRA's rules, regulations, or Water Management Plan within the same timelines that apply to PURCHASER.

I. AVAILABILITY OF WATER.

LCRA is committing to make available to PURCHASER under this Contract a portion of LCRA's firm water supply, as defined in LCRA's Water Contract Rules; provided, however, LCRA may interrupt or curtail the water supplied under this Contract as required by state law or in accordance with LCRA's Water Management Plan or Drought Contingency Plan, as such Plans and any amendments thereto have been approved and may be approved in the future by the TCEQ.

J. DELIVERY OF WATER.

LCRA is responsible for making water available under this Contract only up to the MAQ. LCRA makes no guarantee that the water made available under this Contract will be available at any particular time or place or that any LCRA owned/operated reservoir or the Colorado River will be maintained at any specific elevation or flow at any particular time. Furthermore, PURCHASER acknowledges and agrees that LCRA's obligations under this Contract shall not require LCRA to make additional releases of water from LCRA firm water supplies beyond the MAQ or to make releases to raise the water elevations or flows at the Point(s) of Availability at a particular time sufficient for PURCHASER's intake and/or diversion facilities to operate.

K. DEMAND SCHEDULE.

PURCHASER has provided a Demand Schedule (Exhibit G) that reflects PURCHASER's best estimate of the scheduled initiation of diversions, initial usage, annual water usage, and any increases of usage over time, of the water to be made available by LCRA under this Contract, consistent with LCRA's Water Contract Rules. PURCHASER shall review, update if needed, and provide to LCRA an updated Demand Schedule not less than once every five (5) years coincident with any updated Water Conservation Plans required by this Contract or LCRA's Water Contract Rules, or following written request by LCRA consistent with any other schedule that may be required by LCRA's Water Contract Rules.

L. REDUCTION IN MAQ FOR NON-USE.

Upon sixty (60) days' written notice to PURCHASER, LCRA may consider reducing the MAQ under this Contract at any time after ten year(s) after the Effective Date of this Contact if PURCHASER's maximum annual use has not been at least ten percent of the MAQ on an annual basis within the first ten years. Within thirty (30) days of LCRA's written notice that it is considering reduction of the MAQ, PURCHASER shall provide LCRA with a written assurance and updated Demand Schedule that demonstrates PURCHASER's intent to increase its diversions under this Contract within the next two (2) years to an amount that will be at least ten percent (10%) of the original MAQ secured by this Contract. If PURCHASER fails to or is unable provide such written assurance, or if at least ten percent (10%) of the MAQ is not put to use on an annual basis within the two year period, LCRA may thereafter, at its sole option, terminate the contract or reduce the MAQ to any amount LCRA deems appropriate and reasonable under LCRA's raw water contract rules in effect at the time. An adjustment to the MAQ of this Contract under this section does not require PURCHASER to obtain a new contract on the most current standard form contract.

M. STATE REGULATION OF LCRA WATER SUPPLIES.

PURCHASER acknowledges and agrees that the water LCRA makes available under this Contract may be regulated in whole or in part by the State of Texas or local regulatory authorities. PURCHASER further acknowledges and agrees that LCRA's water rights are subject to regulation by the State of Texas, including but not limited to periodic review and amendment of LCRA's Water Management Plan by

the TCEQ. LCRA and PURCHASER acknowledge and agree that LCRA shall be obligated to exercise due diligence to manage its water supplies within such regulatory regimes to make water available to PURCHASER in accordance with the terms of this Contract. PURCHASER acknowledges and agrees, however, that LCRA's obligations under this Contract may be affected by orders of the State of Texas, its agencies or local regulatory authorities. Orders of the State of Texas, its agencies or local regulatory authorities may constitute a "force majeure" event in accordance with this Contract.

N. OPERATIONS OF DAMS AND RESERVOIRS.

The right of LCRA to maintain and operate its several dams and their appurtenances on the Colorado River and its associated tributaries and at any and all times in the future to impound and release waters thereby in any lawful manner and to any lawful extent LCRA may see fit is recognized by PURCHASER; and, except as otherwise provided herein, there shall be no obligation upon LCRA to release or not to release any impounded waters at any time or to maintain any waters at any specified elevation or flow. PURCHASER acknowledges that the elevations of said reservoirs and the Colorado River will vary as a result of hydrologic events, or lack thereof, (e.g. floods or droughts) in the watershed and LCRA's operations of its dams on the Colorado River.

PURCHASER acknowledges that Longhorn Dam, which is owned and operated by the City of Austin, may lie upstream of the Point(s) of Availability and/or Point(s) of Diversion, if any, and downstream of Lake Travis. PURCHASER agrees to hold LCRA harmless for any claims that PURCHASER has against LCRA for any action or inaction by the City of Austin relating to its ownership and operation of Longhorn Dam.

O. QUALITY OF WATER.

LCRA makes no representation as to the quality of the water made available under this Contract, and PURCHASER hereby releases LCRA and agrees to hold it harmless from any and all claims that PURCHASER or PURCHASER's customers or users have or may have against LCRA for any diminution in or impairment of the quality of water made available under this Contract.

P. INTERBASIN TRANSFER.

Any surface water made available under this Contract may not be transferred or used outside of the Colorado River basin unless such transfer or use is within LCRA's water service area or is otherwise in strict compliance with LCRA Board Policies, LCRA water rights and a final permit for interbasin transfer ("IBT") issued by the TCEQ. In the event that PURCHASER intends to transfer or use surface water made available under this Contract outside of the Colorado River basin in accordance with this section, PURCHASER, by executing this Contract, authorizes LCRA to apply to the TCEQ for the necessary authorization pursuant to Texas Water Code § 11.085 and 11.122 within forty-five (45) days of the Effective Date of this Contract. LCRA shall diligently pursue such authorization after it is filed. PURCHASER shall pay for any filing and notice fees related to such application after LCRA bills PURCHASER for such fees in accordance with this Contract.

Q. REQUIRED NOTICES.

1. PURCHASER shall notify LCRA in writing of its intention to initiate diversions of water under this Contract not more than eight (8) weeks, nor less than four (4) weeks, prior to PURCHASER's initiation of diversions. Such notice shall include PURCHASER's anticipated diversion rate, not to exceed the Maximum Diversion Rate. If impoundments or diversions of water are being continued from a previous contract or other right to divert, and no change in diversion rate is anticipated, no notice is necessary.

2. PURCHASER shall notify LCRA in writing not more than two (2) weeks prior to making any change in its planned diversion rate, not to exceed the Maximum Diversion Rate specified in this Contract.

3. If PURCHASER's Point(s) of Availability and/or Point(s) of Diversion, if any, are located downstream of Lake Travis or on a tributary which flows into the Colorado River downstream of Lake Travis, PURCHASER shall notify LCRA's River Operations Center (ROC) of its intent to impound and/or divert water under this Contract and shall either: (1) develop with the ROC a written process or mechanism for notifying the ROC of its intent to divert water under this Contract; or (2) notify the ROC prior to making any impoundment and/or diversion under this Contract in accordance with any requirements set forth in the Special Conditions in the Contract.

4. In the event the PURCHASER is required by state law to obtain a water right permit or water right permit amendment – including but not limited to contractual, term, or temporary water right permits – from TCEQ related to water that is reserved or purchased pursuant to an LCRA water contract, PURCHASER shall provide LCRA: (i) a copy of the application for the water right permit or water right permit amendment within five (5) business days of its filing with TCEQ; (ii) a copy of any proposed notice related to the application; and (iii) a copy of the water right permit or water right permit amendment promptly following the issuance of the water right permit or water right permit amendment. PURCHASER shall incorporate LCRA's reasonable comments into the application notice provided that: (i) LCRA provides its comments to PURCHASER within ten (10) business days of LCRA's receipt of the draft notice, unless a shorter response period is required by the TCEQ; and (ii) TCEQ accepts LCRA's comments in the final version of the notice. Applicant also shall provide LCRA two copies of any notice or action by TCEQ of a violation or termination of the water right permit or water right permit amendment within ten (10) days of Applicant receiving notice from TCEQ.

5. PURCHASER shall notify LCRA in writing not more than eight (8) weeks, nor less than four (4) weeks, prior to implementing a program for reuse of water that is reserved or purchased pursuant to this Contract and that falls within the type of use and Service Area provided in this Contract. PURCHASER will make available to LCRA non-privileged documents regarding PURCHASER's reuse program within a reasonable amount of time, not to exceed fifteen (15) business days, following a written request by LCRA staff. For all purposes of this Contract, the term "reuse" means the authorized use of water, which water was diverted and used pursuant to this Contract, but which water remains unconsumed and has yet to be either disposed of or discharged or otherwise allowed to flow into a watercourse, lake or other body of state-owned water.

6. PURCHASER shall notify LCRA in writing of its intentions to divert or deliver water for a Secondary Purchaser at least thirty (30) days prior to any diversions or deliveries from PURCHASER to the Secondary Purchaser.

7. Prior to the Effective Date of this Contract, PURCHASER shall provide to LCRA a demand or use schedule that estimates PURCHASER's annual usage, and any increases to it over time, of the water to be made available by LCRA under this Contract (the "Demand Schedule"). PURCHASER shall review, update if needed, and provide to LCRA the Demand Schedule not less than once every five (5) years or following written request by LCRA consistent with any other schedule required by LCRA's Water Contract Rules.

II. CONTRACT ADMINISTRATION

A. TERM OF CONTRACT.

This Contract shall be for the term of years as set forth in this Contract, which shall commence on the Effective Date and end on the anniversary of the Effective Date in the last year of the contract term as set forth in this Contract, unless terminated earlier by either party as provided below.

B. PAYMENT.

1. The "Water Rate" is the rate determined by the Board of Directors of LCRA to then be in effect for all sales of firm water for the same use as provided in this Contract. The "Reservation Rate" is the rate determined by the Board of Directors of LCRA to then be in effect for the reservation of firm water for the same use as provided in this Contract. The "Inverted Block Rate" is the rate determined by the Board of Directors of LCRA to then be in effect for diversion or use of water in amounts in excess of the Maximum Annual Quantity.

2. The Water Rate presently in effect is $145 per acre-foot ($0.44 per 1,000 gallons) of water. The Reservation Rate presently in effect is $72.50 per acre-foot. The Inverted Block Rate presently in effect is $290 per acre-foot of water. LCRA reserves all rights that it may have under law to modify the Water Rate, the Reservation Rate, or the Inverted Block Rate. PURCHASER understands and acknowledges that the Water Rate, Reservation Rate, and the Inverted Block Rate set forth in this Contract have been approved by LCRA's Board of Directors, and that the Board may change all rates, fees and charges under the Contract from time to time.

3. PURCHASER agrees and covenants to pay LCRA – on a monthly basis beginning with the first billing period after the Effective Date of this contract – an amount of money (the "Use Charge") equal to the Water Rate less the Reservation Rate multiplied by the amount of water made available to PURCHASER during the previous billing period ("Monthly Use").

   In the event that PURCHASER'S Point(s) of Availability are located on Lake Buchanan, Inks Lake, Lake LBJ, Lake Marble Falls or Lake Travis, the Monthly Use shall be amount of water diverted by or on behalf of PURCHASER.

   In the event that PURCHASER'S Point(s) of Availability are located downstream of Lake Travis the Monthly Use shall be the sum of i) the Monthly Diversion, plus ii) the Loss Factor, times the Monthly Diversion, as such Loss Factor is established under this Contract. In the event the amount diverted at the Point(s) of Availability is less than the amount LCRA made available (through releases from storage and/or pumping into LCRA canals) at the Point(s) of Availability at PURCHASER's request, for purposes of this Section II.B, the Monthly Diversion shall be the amount of water made available at the Point(s) of Availability. Otherwise the Monthly Diversion shall be calculated from the actual amount diverted at the Point(s) of Availability.

4. PURCHASER agrees and covenants to pay – on a monthly basis beginning with the first billing period after the Effective Date of this Contract – the "Monthly Reservation Charge," which shall be an amount equal to the Reservation Rate multiplied by one-twelfth (1/12) of the MAQ.

5. PURCHASER further agrees and covenants to pay LCRA – on a calendar year basis – an amount of money (the "Excess Use Charge") equal to the Inverted Block Rate multiplied by any amount of water made available to PURCHASER in excess of the Maximum Annual Quantity during the previous calendar year, less any amount PURCHASER has previously paid for the same water through the Use Charge and/or Reservation Charge. In the event the amount of water made available to PURCHASER is limited because of a curtailment imposed by LCRA or state law in accordance with this Contract to an amount less than the MAQ, then PURCHASER shall pay a surcharge, in excess of any Use or Reservation Charges, to be set by LCRA's Board of Directors, multiplied by any amount of water made available to PURCHASER in excess of the amount PURCHASER is authorized to have available during the curtailment (the "Curtailment Surcharge").

6. The term "billing period," as used for purposes of metering and billing in this Contract, shall refer to each period between readings of the Meter(s), which readings typically are performed on a monthly basis. All charges under this Contract shall be pro-rated as necessary to reflect the Effective Date or date of termination of this Contract; in other words, LCRA may include in an invoice up to thirty (30) additional days in a billing period to account for water reserved, released, diverted or impounded during days following execution or prior to termination of this Contract. For purposes of metering and billing, the "calendar year" may be based upon the 12-month period from the December meter reading date to the next December reading date.

7. Each month, LCRA will mail an invoice to PURCHASER showing the Monthly Use. Such invoice shall also show the amount of money owed by PURCHASER to LCRA in accordance with the Monthly Reservation Charge and/or Use Charge and any late payment charges, as specified herein.

8. The invoice mailed by LCRA to PURCHASER in the month of January each year, in addition to showing the amount of money owed by PURCHASER to LCRA in accordance with the Monthly Reservation Charge, and/or Use Charge, shall also show any amount of water that PURCHASER had made available to it in excess of the Maximum Annual Quantity during the previous calendar year, as well as the corresponding Excess Use Charge.

9. PURCHASER shall pay LCRA for water provided under this Contract in the amount of each invoice submitted to PURCHASER by LCRA on or before thirty (30) days from the date of the invoice. PURCHASER shall mail checks for payments to the address indicated on the invoice. PURCHASER may pay by hand-delivery of checks or cash to LCRA's headquarters in Austin, Travis County, Texas, or by bank-wire if PURCHASER obtains LCRA's approval and makes arrangements for doing so prior to the due date. Payment must be received at the address provided on the invoice, or, if approved, at LCRA's headquarters or bank, not later than thirty (30) days from the invoice date in order not to be considered past due or late. In the event PURCHASER fails to make payment of that invoice within thirty (30) days of the invoice date, PURCHASER shall then pay a late payment charge of five percent (5%) of the unpaid amount of the invoice. For each calendar month or fraction thereof that the invoice remains unpaid, PURCHASER shall pay interest at the rate of one and one-half percent (1.5%) per month on the unpaid portion of the invoice. In the event PURCHASER attempts to pay LCRA by check, draft, credit card or any other similar instrument and the instrument is returned or refused by the bank or other similar institution as insufficient or non-negotiable for any reason, PURCHASER shall be assessed and must pay to LCRA, per each returned instrument, the LCRA's current returned instrument fee. If the invoice has not been paid within thirty (30) days of the invoice date, PURCHASER further agrees to pay all costs of collection and reasonable attorney's fees, regardless of whether suit is filed, as authorized by Chapter 271, Texas Local Government Code.

C. MEASURING WATER.

1. To measure the amount of water diverted by PURCHASER hereunder, PURCHASER agrees at PURCHASER's expense to install such measuring and recording devices or methods as are approved by LCRA (the "Meter"), such Meter to permit, within five percent (5%) accuracy, determination of quantities of raw water diverted from the reservoir or stream hereunder in units of 1,000 gallons. LCRA shall have the right to approve both the design of the meter as well as the location of its installation. PURCHASER must repair, replace or make necessary improvements to a meter that is not in compliance with this Contract or LCRA's Water Contract Rules promptly after PURCHASER becomes aware of the deficiency that causes the meter to not comply with this Contract or LCRA's Water Contract Rules.

a) PURCHASER agrees to read Meter and submit meter readings to LCRA via electronic mail, online portal or other format as specified by LCRA, on a monthly basis, on or about the 15th day of each month or on such date as specified by LCRA.

b) PURCHASER agrees to provide LCRA's representatives access across PURCHASER's property for inspection, testing and reading of the Meter. PURCHASER shall locate the meter in a manner that provides LCRA with reasonably safe access to the Meter for the purpose of making meter readings, testing, and/or periodic inspections.

c) PURCHASER agrees that the Meter shall be tested for accuracy by qualified personnel as approved by LCRA and at the expense of PURCHASER once each calendar year at intervals of approximately twelve (12) months if the MAQ is greater than 20 acre-feet per year and at intervals of approximately (24) months if the MAQ is less than or equal to 20 acre-feet per year.

d) PURCHASER shall furnish to LCRA a report of such test results. Readings within five percent (5%) of accuracy shall be considered correct.

e) In the event PURCHASER fails to test the Meter for a period of fifteen (15) consecutive months for contracts with a MAQ greater than 20 acre-feet per year or fails to test the Meter for a period of 25 consecutive months for contracts with a MAQ of 20 acre-feet per year or less, PURCHASER agrees to pay LCRA for the actual cost of testing the Meter plus a fifty dollar ($50) administrative fee. LCRA will provide PURCHASER a written invoice of the cost of testing the Meter, and said invoice will be subject to the payment terms provided in section II.B of this Contract.

f) If, at any time, LCRA provides PURCHASER a written notice that questions the accuracy of the Meter, PURCHASER promptly shall test the Meter and, in this event, the expense of such test will be paid by LCRA if the Meter is found to be correct and by PURCHASER if it is found to be incorrect.

g) Any party that tests the Meter shall provide written notice of the test to the other party at least five (5) business days in advance of the test and shall allow the other party to observe the test.

h) PURCHASER shall be required to take necessary steps to correct any inaccuracy in the Meter discovered during any test. LCRA may install, at its expense, check meters in or to any of PURCHASER's Meters at any time and may leave such check meters installed for such periods as is reasonably necessary to determine the accuracy of PURCHASER's Meters.

i) If, as a result of any test, the Meter is found to be registering inaccurately (i.e., in excess of five percent (5%) of accuracy), the readings of the Meter shall be corrected at the rate of its inaccuracy for any period which is definitely known and agreed upon or, if no such period is known and agreed upon, the shorter of the following periods shall be used as the basis for correction:

   (1) a period extended back either sixty (60) days from the date of demand for the test or, if no demand for the test was made, sixty (60) days from the date of the test; or

(2) a period extending back half of the time elapsed since the last previous test; and the records of reading shall be adjusted accordingly.

2. In the event PURCHASER is charged based on water released from LCRA firm water supplies under this Contract rather than the actual amount withdrawn from the reservoir or stream by PURCHASER, LCRA shall include the amount of such releases in the monthly invoice provided to PURCHASER. LCRA shall make available information regarding its calculation of the amount of water released attributable to PURCHASER's actual diversions under this Contract within a reasonable period following PURCHASER's written request.

D. TERMINATION OF CONTRACT OR REDUCTION IN MAXIMUM ANNUAL QUANTITY.

This Contract may be terminated as follows:

1. If PURCHASER is current on all payments due to LCRA under this Contract and the MAQ is less than 500 acre-feet, PURCHASER may terminate this Contract or reduce the MAQ as set forth in this section at any time following the expiration of five (5) years, measured from the Effective Date, by providing at least one year's prior written notice to LCRA. If the MAQ is 500 acre-feet or more, Purchaser's ability to terminate or reduce the MAQ is limited as follows: beginning with the five-year anniversary of the Effective Date of the contract, Purchaser may: (a) reduce its MAQ by up to 25 percent of the original contract quantity once every five years; or (b) if LCRA's other firm, non-temporary commitments have increased in an amount greater than projected under LCRA's Water Supply Resource Plan, Purchaser may terminate the contract or reduce the MAQ by a quantity greater than 25 percent.

2. LCRA at its sole option, in accordance with the terms and conditions set forth in Section II.E, "Non-Payment," may terminate this Contract without recourse should PURCHASER fail to comply with the terms and conditions of this Contract for the payment of moneys owed to LCRA pursuant to Section II.B. "Payment."

3. If PURCHASER fails to comply with its Water Conservation Plan, its Drought Contingency Plan, or any applicable LCRA nonpoint source water pollution abatement ordinance, or if PURCHASER fails to amend its Water Conservation Plan or its Drought Contingency Plan to reflect changes in LCRA's Water Conservation Plan Rules, LCRA's Drought Contingency Plan Rules, or state law or rules, LCRA may terminate, at its sole option, this Contract without recourse unless such default is cured within thirty (30) days of the date LCRA provides written notice to PURCHASER (or, if the nature of such default is not susceptible of being cured within such thirty (30) day period, such longer period of time during which PURCHASER diligently prosecutes the cure of such default, not to exceed one hundred eighty (180) days of PURCHASER's receipt of written notice of such default.

4. If PURCHASER fails to comply with the requirements of Sections III.A, "Nonpoint Source Pollution Abatement," III.B, "Sewage Regulations," or III.C, "Documentation of Compliance; right of Entry," LCRA may, at its sole option, terminate this Contract without recourse unless such default is cured within thirty (30) days of the date LCRA provides written notice to PURCHASER (or if the nature of such default is not susceptible of being cured within such thirty (30) day period, such longer period of time during which PURCHASER diligently prosecutes the cure of such default, not to exceed one hundred eighty (180) days of PURCHASER's receipt of written notice of such default. For purposes of this section, LCRA shall not deem PURCHASER to be in default for so long as PURCHASER is in compliance with any remedial or enforcement agreement authorized by an agency of appropriate jurisdiction.

5. If PURCHASER fails to comply with other requirements of this Contract not specifically stated above, LCRA may, at its sole option, terminate this Contract without recourse unless such default is cured within thirty (30) days (or, if the nature of such default is not susceptible of being cured within such thirty (30) day period, such longer period of time during which PURCHASER diligently prosecutes the cure of such default, not to exceed one hundred eighty (180) days of PURCHASER's receipt of written notice of such default.

6. Subject to the requirements of applicable bankruptcy laws, including the rights of a trustee to assume contracts under applicable bankruptcy laws, this Contract may be terminated immediately by LCRA upon the declaration of bankruptcy by PURCHASER.

7. In the event TCEQ or any other local, state, or federal regulatory agency denies to PURCHASER, or terminates for any reason, a permit required by this Contract, PURCHASER shall notify LCRA within three (3) business days and immediately cease diversions under this Contract. LCRA, at its sole option, may this Contract terminate on or after the denial or termination of any permit required by this Contract..

PURCHASER shall remain liable for all fees and charges, including any non-refundable Pre-paid Reservation Charges, accruing under the Contract through the date the Contract is terminated, including but not limited to a pro-rated Reservation Charge, which shall be calculated based upon the excess of the Maximum Annual Quantity, pro-rated to the date of termination, over the amount of water made available to PURCHASER through the date of termination. In the event LCRA terminates this Contract as provided herein, PURCHASER shall suspend immediately upon such termination all withdrawal of water from the Colorado River, or any tributaries thereof, under this Contract. LCRA may exercise any rights that it may have at law or in equity to prevent unauthorized withdrawals by PURCHASER or enforce the requirements of PURCHASER's Water Permit, if any. In the event that the contract is terminated based upon the denial or termination of a permit required by this Contract, PURCHASER shall be required to pay an early termination fee equal to the Reservation Rate times the MAQ.

E. NON-PAYMENT.

1. If LCRA determines that PURCHASER has not paid the full amount owed for any payment due under Section II.B, "Payment", hereof within the time provided therefore, LCRA shall give written notice to PURCHASER stating the amount LCRA has determined is due and unpaid. If LCRA gives notice as provided herein and PURCHASER fails to pay within thirty (30) days the amounts claimed in such notice to be due and unpaid, LCRA may, at its sole option: (1) upon giving ten (10) days written notice to PURCHASER terminate this Contract without recourse; and/or, (2) request injunctive relief from a court of competent jurisdiction to prevent PURCHASER from impounding and/or diverting additional water pursuant to this Contract.

2. If PURCHASER should dispute PURCHASER's obligation to pay all or any part of the amount stated in any invoice or notice, PURCHASER may, in addition to all other rights that PURCHASER may have under law, pay such amount under protest in which case such amount shall be deposited by LCRA in an interest bearing account mutually acceptable to both LCRA and PURCHASER pending final resolution of such dispute in accordance with Section IV.H, "Dispute Resolution." LCRA may not terminate this Contract, or request injunctive relief to prevent additional impoundments and/or diversions, for failure to pay the amount stated in any invoice or notice if PURCHASER pays such amount under protest and until there is a final resolution of such dispute in accordance with Section IV.H, "Dispute Resolution," favorable to LCRA.

F. EQUITABLE REMEDIES.

PURCHASER agrees that diversions or impoundments of water by PURCHASER without the authorization provided by this Contract will result in damages to LCRA that cannot be adequately

compensated by money alone. As a result, PURCHASER agrees that LCRA shall have available to it equitable remedies, including injunctive relief against additional diversions or impoundments by PURCHASER unless PURCHASER demonstrates that it is otherwise authorized to divert or impound water. In addition, PURCHASER agrees that the provisions of Section IV.H, "DISPUTE RESOLUTION," will not apply to any legal action brought by LCRA seeking equitable remedies under this Contract except as expressly provided by Section II.E.2 regarding "NON-PAYMENT."

G. NOTICE.

Any notice under this Contract may be delivered by facsimile transmission or by certified mail, return receipt requested. If delivered by facsimile transmission, notice shall be deemed effective as of the facsimile send date, provided that any notice sent by facsimile must also be sent the same date by first-class mail. If delivered by certified mail, return receipt requested, notice shall be deemed effective five (5) days after the date on which the notice is post-marked.

All notices and invoices to PURCHASER shall be addressed as set forth in the General Terms of this Contract.

All notices and payments to LCRA shall be addressed as set forth in the General Terms of this Contract.

Either party may change its address by giving written notice of such change to the other party. PURCHASER is required to provide notice of change in address or contact person within ten (10) days of such change. PURCHASER shall maintain a physical address on file with LCRA.

H. ASSIGNMENT OF CONTRACT.

PURCHASER shall have the right to assign this Contract provided that: i) there is no change to the MAQ, source, type of use or Service Area provided in this Contract; ii) prior to such assignment, this Contract is amended to be consistent with all terms of LCRA's then-current standard form contract for purchase of firm water from Lake Travis and LCRA's then-current Water Contract Rules as determined by LCRA; iii) the Water Conservation Plan and Drought Contingency Plan are updated as may be necessary in accordance with this Contract as determined by LCRA; iv) PURCHASER provides LCRA at least sixty (60) days prior written notice of such assignment; and, v) PURCHASER is not in default under this Contract at the time of such assignment.

I. COMPLIANCE WITH FILING REQUIREMENTS.

LCRA agrees to file a copy of this Contract with the Executive Director of the TCEQ, P.O. Box 13087, Capitol Station, Austin, Texas 78711, it being fully recognized by PURCHASER hereunder that the effectiveness of this Contract is dependent upon compliance with the substantive rules and procedural rules for water rights of the TCEQ.

III. ENVIRONMENTAL, PERMITTING AND OTHER ISSUES RELATED TO WATER SUPPLY

A. NONPOINT SOURCE WATER POLLUTION ABATEMENT.

If PURCHASER will use water under this Contract to serve areas located within the jurisdictional area of LCRA Lake Travis Nonpoint Source Pollution Control Ordinance, the Upper Highland Lakes Nonpoint Source Pollution Control Ordinance, or any other LCRA water quality ordinance that has been adopted by the LCRA Board, PURCHASER agrees to comply with and shall comply with the provisions of that respective ordinance, which ordinance may require a permit and compliance with other applicable local, state, and federal rules and regulations pertaining to water quality protection. If PURCHASER will use water under this Contract to serve areas wholly outside the jurisdiction of an LCRA water quality ordinance, PURCHASER agrees to comply with and shall comply with any applicable local, state, and federal rules and regulations pertaining to water quality protection. PURCHASER further agrees to

distribute to its customers in its service area water quality protection educational materials that LCRA provides to PURCHASER.

B. SEWAGE REGULATIONS.

PURCHASER agrees to obtain, or cause to be obtained, all approvals required by all applicable local, state or federal agencies for any sanitary sewage system or systems that collect sewage derived from water diverted herein or any sanitary sewage system whose effluent is discharged within the boundaries of LCRA's statutory district. Failure of PURCHASER to meet any standards imposed by such agencies for sanitary sewage systems, including on-site systems, shall subject PURCHASER under this Contract to all remedies allowed by law including, without limitation, termination or suspension of this Contract by LCRA. PURCHASER further agrees that if a sewage treatment plant is located within the Service Area, LCRA shall have reasonable access to such plant for the purpose of taking samples of sewage effluent from such plant for testing by LCRA to determine whether PURCHASER is in compliance with regulatory standards imposed by such agencies.

C. DOCUMENTATION OF COMPLIANCE; RIGHT OF ENTRY.

1. In addition to notices required by Section I.Q of this Contract, PURCHASER shall provide LCRA copies of any approvals that PURCHASER has received from federal, state, or local agencies that relate to water reserved or purchased pursuant to PURCHASER's Contract or to facilities intended to impound, divert, transport, or use water provided under PURCHASER's Contract within a reasonable amount of time, not to exceed fifteen (15) business days, following a written request by LCRA staff.

2. PURCHASER agrees that LCRA employees and agents shall be entitled to enter any property where facilities impound or deliver water to the service area of PURCHASER at any reasonable time following a reasonable attempt at prior notification for the purpose of inspecting and investigating conditions relating to the quality of water; the compliance by PURCHASER with any rule, regulation, permit or other order of the state, its agencies, local regulatory authorities or LCRA; compliance by PURCHASER with the requirements of this Contract; or, inspection of any of PURCHASER's facilities related to the use, diversion or impoundment of water under this Contract. LCRA employees or agents acting under this Contract who enter PURCHASER's property shall observe rules and regulations concerning safety, internal security, and fire protection, and shall notify any occupant or management of their presence and shall exhibit proper credentials.

D. ANNUAL REPORTS OF DUE DILIGENCE; AS-BUILT PLANS.

1. PURCHASER shall report to LCRA, on a yearly basis, progress made toward obtaining any and all necessary authorizations (e.g. TCEQ permits, Army Corps of Engineers permits, etc.) as well as progress towards commencing and completing construction of facilities which will be used to divert, impound, and/or convey water under PURCHASER's Contract.

2. PURCHASER shall provide to LCRA "as-built" drawings and plans (including GPS coordinates of any intakes or impoundments) for facilities which will be used to divert, impound, and/or convey water under PURCHASER's Contract were actually built within thirty (30) days of completion of construction.

IV. GENERAL PROVISIONS

A. EFFECTIVE DATE.

"Effective Date" means the last date of execution of this Contract by the Parties; provided all of the Parties must execute this Contract for it to be effective.

B. PREVIOUS CONTRACT.

In the event of a previous contract between the Parties related to the Service Area of this Contract prior to the Effective Date, this Contract replaces such prior contract unless specified otherwise hereunder.

C. INDEMNIFICATION.

PURCHASER will indemnify and hold LCRA harmless from any and all claims and demands whatsoever to which LCRA may be subjected by reason of any injury to any person or damage to any property resulting from any and all actions and activities (or failure to act) of PURCHASER under this Contract except to the extent caused by LCRA's gross negligence or willful misconduct. PURCHASER's pumping and related facilities shall be installed, operated and maintained by PURCHASER at PURCHASER's sole risk. Nothing in this Contract shall be construed as authorizing PURCHASER, or recognizing that PURCHASER has any right, to install any equipment or improvements on property owned by LCRA or third parties.

LCRA will hold PURCHASER harmless from any and all claims or demands whatsoever to which LCRA may be subjected by reason of any injury to any person or damage to any property resulting from or in any way connected with any and all actions and activities (or failure to act) of LCRA under this Contract.

D. FORCE MAJEURE.

The term "Force Majeure" as used herein, shall mean those situations or conditions that are beyond the control of LCRA or PURCHASER and that, after the exercise of due diligence to remedy such situation or condition, render LCRA or PURCHASER unable, wholly or in part, to carry out the covenants contained herein. Such force majeure includes, but is not limited to acts of God, strikes, lockouts, acts of the public enemy, orders of any kind of the government or agencies of the United States or of the State of Texas, excluding LCRA, or any civil or military authority, insurrections, riots epidemics, landslides, lightning, earthquakes, fires, hurricanes, storms, floods, washouts, droughts, civil disturbances, explosions, breakage or accidents to machinery, pipelines, canals, or dams, partial or entire failure of water supply insofar as each of the foregoing are beyond the reasonable control of the party in question. LCRA shall not be held liable or responsible for any damage that may be caused by its inability, after the exercise of due diligence, to make the supply of water available to PURCHASER due to any force majeure. LCRA shall use reasonable and timely diligence to repair or recondition LCRA's machinery, canals, or dams in the event such machinery, canals or dams are damaged or made unserviceable from any force majeure.

E. NO THIRD-PARTY BENEFICIARY.

The Parties hereto are entering into this Contract solely for the benefit of themselves and agree that nothing herein shall be construed to confer any right, privilege or benefit on any person or entity other than the Parties hereto.

F. NO RIGHTS OR TITLE ACQUIRED.

PURCHASER agrees and acknowledges that it acquires by this Contract no rights or title to the water that is the subject of this Contract other than those rights explicitly set forth herein.

G. REPRESENTATIONS AND WARRANTIES.

Each of LCRA and PURCHASER represents and warrants to the other that this Contract has been duly executed by an authorized officer and constitutes a valid and binding Contract, enforceable against it in accordance with its terms (except as such enforceability may be limited by bankruptcy laws or other similar laws relating to the enforcement of creditors' rights generally and by general equitable principles).

H. DISPUTE RESOLUTION.

1. Settlement by Mutual Agreement.

In the event any dispute, controversy or claim between or among the Parties arises under this Contract or is connected with or related in any way to this Contract or any right, duty or obligation arising hereunder or the relationship of the Parties hereunder (a "Dispute or Controversy"), including, but not limited to, a Dispute or Controversy relating to the effectiveness, validity, interpretation, implementation, termination, cancellation, or enforcement of this Contract, the Parties shall first attempt in good faith to settle and resolve such Dispute or Controversy by mutual agreement in accordance with the terms of this subsection (1). In the event a Dispute or Controversy arises, any party shall have the right to notify the other party to such Dispute or Controversy that it has elected to implement the procedures set forth in this subsection (1). Within thirty (30) days after delivery of any such notice by one party to the other regarding a Dispute or Controversy, the designated representatives of the Parties shall meet at a mutually agreed time and place to attempt, with diligence and good faith, to resolve and settle such Dispute or Controversy. Should a mutual resolution and settlement not be obtained at the meeting of the Parties' designated representatives for such purpose or should no such meeting take place within such thirty (30) day period, then any party may by notice to the other party, as the case may be, refer the Dispute or Controversy to senior management of the Parties for resolution. Within thirty (30) days after delivery of any such notice by one party to the other referring such Dispute or Controversy to senior management of the Parties for resolution, representatives of senior management of each of the Parties shall meet at a mutually agreed upon time and place to attempt, with diligence and good faith, to resolve and settle such Dispute or Controversy. Should mutual resolution and settlement not be obtained at the meeting of representatives of senior management of each of the Parties for such purposes or should no such meeting take place within such thirty (30) day period (unless extended by mutual agreement), then any party may by notice to the other party, as the case may be, submit the Dispute or Controversy to binding arbitration in accordance with the provisions of subsection (2) and Exhibit H. Upon the receipt of notice of referral to arbitration hereunder, and except as otherwise expressly provided by this Contract, the Parties shall be compelled to arbitrate the Dispute or Controversy in accordance with the terms of this Section IV.H and Exhibit H without regard to the justiciable character or executory nature of such Dispute or Controversy.

2. Arbitration.

Except as otherwise expressly provided by this Contract, each party hereby agrees that any Dispute or Controversy that is not resolved pursuant to the provisions of subsection (1) may be submitted to binding arbitration hereunder and, if submitted timely according to this Contract, shall be resolved exclusively and finally through such binding arbitration. Except as otherwise expressly provided by this Contract, this Section IV.H and Exhibit H constitute a written agreement by the Parties to submit to arbitration any Dispute or Controversy arising under or in connection with this Contract within the meaning of Section 171.001 of the Texas Civil Practice and Remedies Code.

3. Emergency Relief.

Notwithstanding the Parties' agreement to arbitrate Dispute and Controversies, either party may seek injunctive relief or other form of emergency relief at any time from any state court of competent jurisdiction in Austin, Texas, the federal court for such district, or any state or federal regulatory agency of competent jurisdiction.

4. Survival.

The provisions of this Section IV.H shall survive expiration or earlier termination of this Contract.

I. ACTUAL DAMAGES.

NEITHER PARTY SHALL BE LIABLE OR HAVE ANY RESPONSIBILITY TO THE OTHER FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, PUNITIVE OR DELAY-RELATED OR PERFORMANCE-RELATED DAMAGES INCLUDING, WITHOUT LIMITATION, LOST EARNINGS OR PROFITS. SUCH LIMITATION ON LIABILITY SHALL APPLY TO ANY CLAIM OR ACTION, WHETHER IT IS BASED IN WHOLE OR IN PART ON CONTRACT, NEGLIGENCE, STRICT LIABILITY, TORT, STATUTE OR ANY OTHER THEORY OF LIABILITY. THE PROVISIONS OF THIS SECTION IV.I SHALL HAVE NO EFFECT ON THE PARTY'S INDEMNITY OBLIGATIONS UNDER SECTION IV.C.

J. AMENDMENT.

This Contract may not be modified or amended except by an instrument in writing signed by authorized representatives of the Parties.

K. BINDING EFFECT.

The terms of this Contract shall be binding upon, and inure to the benefit of, the Parties and their permitted successors and assigns.

L. COMPLETE CONTRACT.

This Contract, together with all Exhibits attached hereto, constitutes the entire agreement of the Parties relating to the subject matter of this Contract and supersedes all prior contracts, agreements or understandings with respect to the subject matter hereof, both oral or written.

Each party agrees that the other party (and its agents and representatives) has not made, and has not relied upon, any representation, warranty, covenant or agreement relating to the transactions contemplated hereunder other than those expressly set forth herein.

M. COUNTERPARTS.

This Contract may be executed by the Parties in any number of separate counterparts, each of which when so executed and delivered shall be deemed an original, but all such counterparts shall together constitute one and the same agreement. All signatures need not be on the same counterpart.

N. FURTHER ASSURANCES.

Each party agrees to do all acts and things and to execute and deliver such further written instruments, as may be from time to time reasonably required to carry out the terms and provisions of this Contract.

O. GOVERNING LAW.

This Contract and the rights and duties of the Parties arising out of this Contract shall be governed by, and construed in accordance with, the laws of the State of Texas, without reference to the conflict of laws rules thereof.

P. HEADINGS; TABLE OF CONTENTS.

The headings of the Articles and Sections of this Contract and the Table of Contents are included for convenience only and shall not be deemed to constitute a part of this Contract.

Q. INCORPORATION OF WATER CONTRACT RULES.

PURCHASER acknowledges receipt of LCRA's Water Contract Rules ("Rules"), and further acknowledges that, unless expressly stated otherwise in this Contract, such Rules, as may be amended by LCRA's Board of Directors from time to time, are incorporated herein by reference in their entirety and made a part hereof for all purposes.

R. INTERPRETATION AND RELIANCE.

No presumption will apply in favor of any party in the interpretation of this Contract or in the resolution of any ambiguity of any provisions thereof.

S. RELATIONSHIP OF PARTIES.

This Contract and the transactions contemplated hereunder are based upon the active participation of all Parties.

Neither the execution nor delivery of this Contract, nor the consummation of the transactions contemplated hereunder, shall create or constitute a partnership, joint venture, or any other form of business organization or arrangement between the Parties, except for the contractual arrangements specifically set forth in this Contract. Except as is expressly agreed to in writing in this Contract, no party (or any of its agents, officers or employees) shall be an agent or employee of the other party, nor shall a party (or any of its agents, officers or employees) have any power to assume or create any obligation on behalf of the other party. Nothing contained in this Contract shall create or constitute a partnership, joint venture, or any other form of business organization or arrangement among LCRA on the one hand and the PURCHASER on the other hand, except for the contractual arrangements specifically set forth herein.

T. SEVERABILITY.

In the event that any provision of this Contract is held to be unenforceable or invalid by any court of competent jurisdiction, the Parties shall negotiate an equitable adjustment to the provisions of this Contract with the view to effecting, to the extent possible, the original purpose and intent of this Contract, and the validity and enforceability of the remaining provisions shall not be affected thereby.

U. NO ADDITIONAL WAIVER IMPLIED.

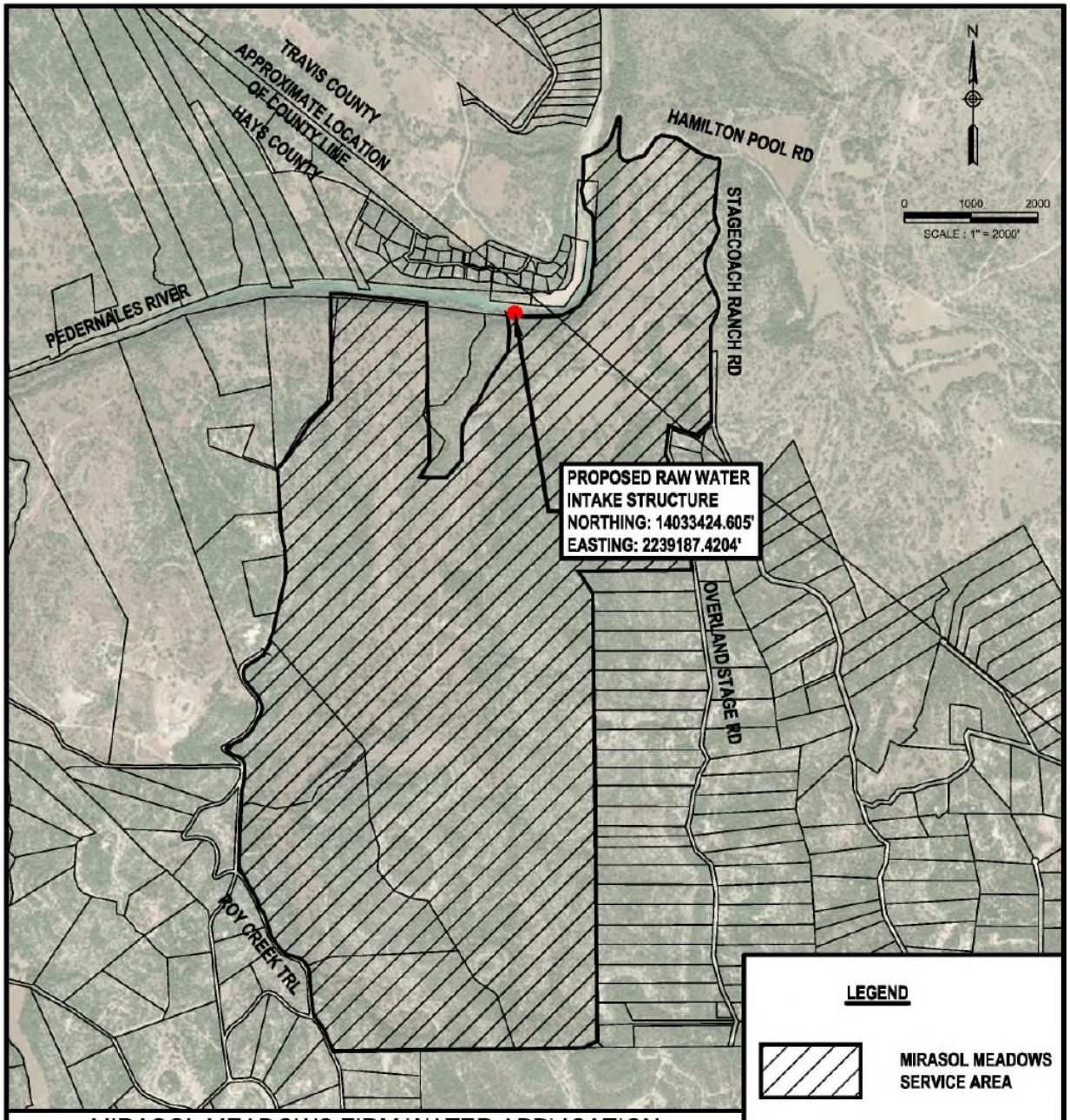
No waiver or waivers of any breach or default (or any breaches or defaults) of any term, covenant, condition or liability under this Contract, or of performance by the other party of any duty or obligation under this Contract, shall be deemed or construed to be a waiver of subsequent breaches or defaults of any kind, under any circumstances.

V. SHORT TERM SALES OF FIRM WATER TO THIRD PARTIES.

In accordance with LCRA Board Policy 501, Water Resources Management, LCRA and PURCHASER agree that LCRA may market and re-sell any portion of PURCHASER's Reserved Water to third parties on a limited term basis for a management fee and under terms mutually acceptable to LCRA and PURCHASER and in accordance with LCRA Board Policies.

Exhibit B

Description of Point(s) of Availability



MIRASOL MEADOWS FIRM WATER APPLICATION

TRAVIS/HAYS COUNTY, TEXAS

EXHIBIT B
FUTURE POINT OF DIVERSION

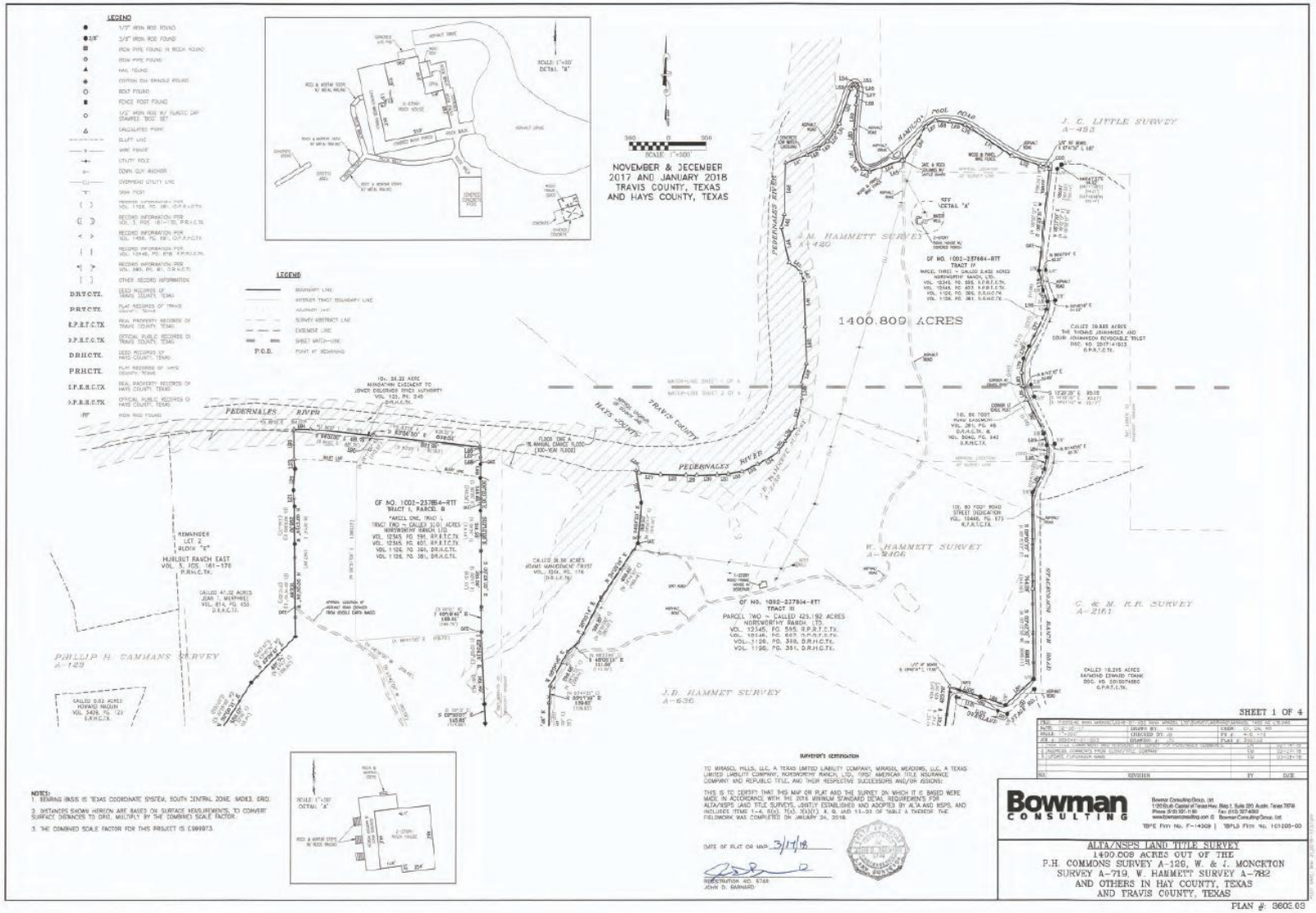
DESIGNED BY:
DRAWN BY: SJA
CHECKED BY: DL
APPROVED BY:
DATE: August 4, 2020

MEC
MURFEE ENGINEERING COMPANY
1101 CAPITAL OF TEXAS HIGHWAY SOUTH
BUILDING D, SUITE 110
AUSTIN, TEXAS 78746
(512) 327-9204
Texas Registered Engineering Firm F-353

PLOT DATE: 8/4/2020 9:41 AM sanderson
FILE PATH: W:\Mirasol\Facilities\Water\Raw Water Contracts\CAD\Exhibit-Firm Water Application-Mirasol.dwg

Exhibit C

Description of Service Area


LEGEND
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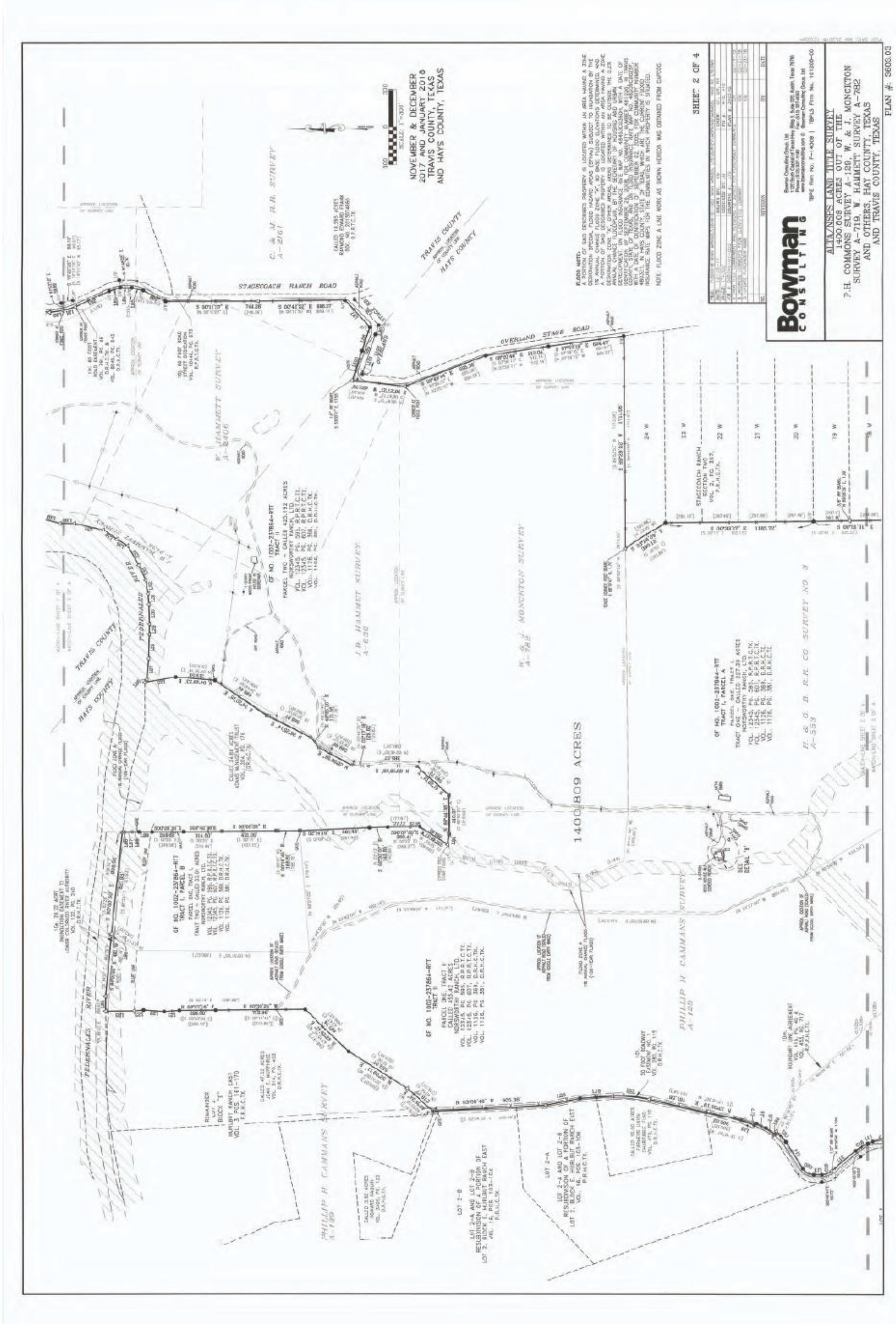
J. C. LITTLE SURVEY A-483
J.M. HAMMETT SURVEY A-420
W. HAMMETT SURVEY A-2406
C. & M. K.R. SURVEY A-2161
J.D. HAMMETT SURVEY A-636
PHILLIP H. CAMMANS SURVEY A-129
PEDERNALES RIVER
HAMILTON POOL ROAD
HAYS COUNTY
TRAVIS COUNTY
SURVEYOR'S CERTIFICATION
ALTA/NSPS LAND TITLE SURVEY
1400.809 ACRES OUT OF THE P.H. COMMONS SURVEY A-129, W. & J. MONCRIEF SURVEY A-719, W. HAMMETT SURVEY A-782 AND OTHERS IN HAY COUNTY, TEXAS AND TRAVIS COUNTY, TEXAS
SHEET 1 OF 4
PLAN #: 3605.03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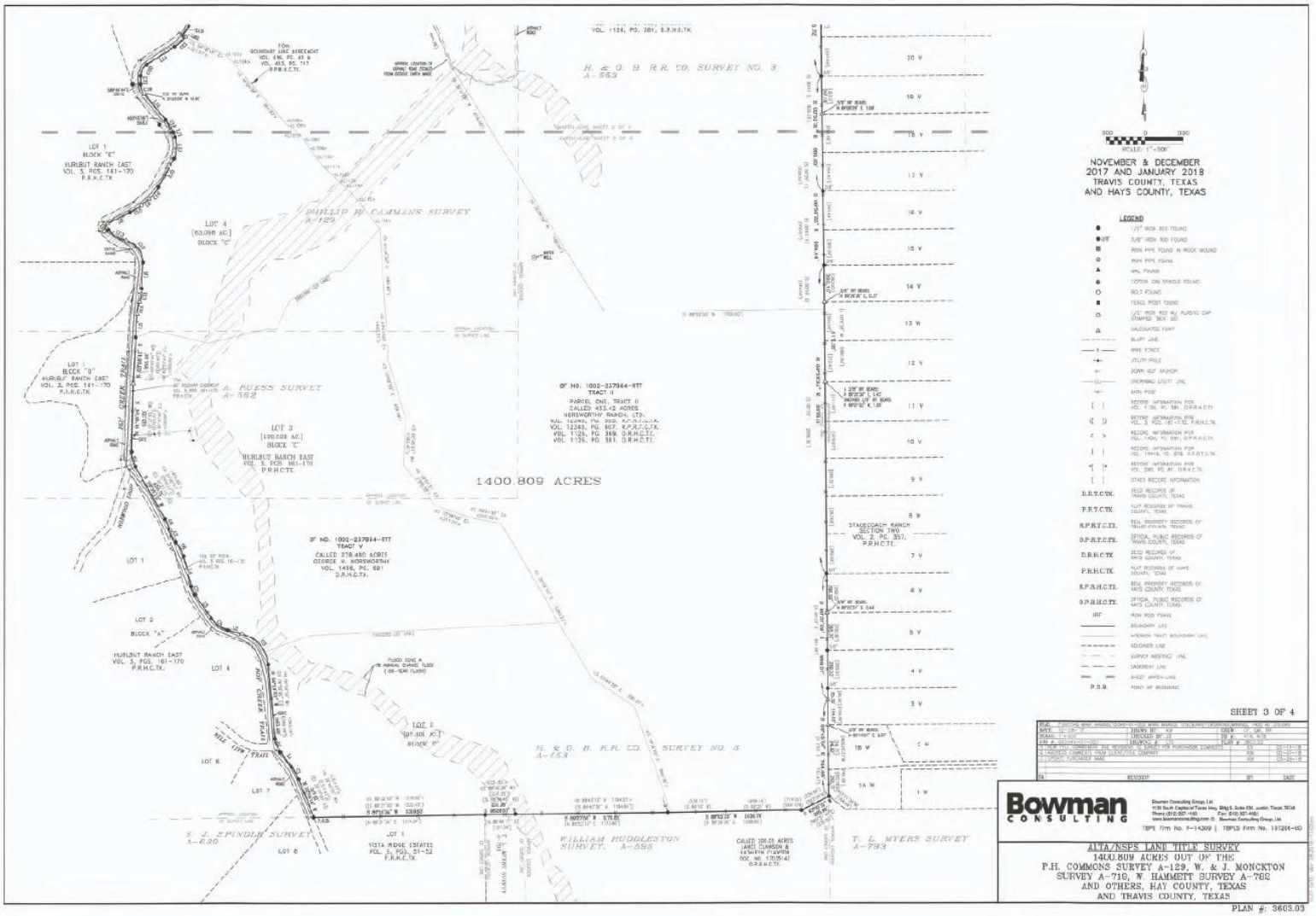
STAGECOACH RANCH ROAD
OVERLAND STAGE ROAD
PEDERNALES RIVER
TRAVIS COUNTY
HAYS COUNTY
NOVEMBER & DECEMBER 2017 AND JANUARY 2018 TRAVIS COUNTY, TEXAS AND HAYS COUNTY, TEXAS
SHEET 2 OF 4
Bowman CONSULTING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A-553
PHILLIP W. CAMMANS SURVEY
A-129
A. HUESS SURVEY
A-562
H. & O. B. R.R. CO. SURVEY NO. 3
A-554
WILLIAM HUDDLESTON
SURVEY, A-595
T. L. MYERS SURVEY
A-793
S. J. SPINDLE SURVEY
A-628
NOVEMBER & DECEMBER
2017 AND JANUARY 2018
TRAVIS COUNTY, TEXAS
AND HAYS COUNTY, TEXAS
SHEET 3 OF 4
Bowman
CONSULTING
ALTA/NSPS LAND TITLE SURVEY
1400.809 ACRES OUT OF THE
P.H. COMMONS SURVEY A-129, W. & J. MONCKTON
SURVEY A-716, W. HAMMETT SURVEY A-782
AND OTHERS, HAY COUNTY, TEXAS
AND TRAVIS COUNTY, TEXAS
PLAN #: 3603.03

LINE TABLE

LINE #	BEARING	DISTANCE
L1	N 37°21'04" W (S 36°40'07" E)	146.11 (146.20')
L2	N 70°07'09" W (S 71°31'30" E)	114.56 (114.80')
L3	N 24°30'35" W (S 23°49'36" E)	217.64 (217.43')
L4	N 18°57'45" W (S 18°04'39" E)	229.65 (229.40')
L5	N 69°08'41" E (S 69°53'44" W)	177.26 (177.34')
L6	N 62°28'44" E (S 62°42'27" W)	196.78 (196.24')
L7	N 39°23'28" W (S 38°36'54" E)	20.59 (20.46')
L8	N 64°27'41" E (S 64°54'02" W)	189.43 (189.61')
L9	N 51°01'26" E (S 51°16'24" W)	70.20 (70.20')
L10	N 69°28'48" E (S 69°44'09" W)	147.42 (147.08')
L11	N 29°01'44" W (S 29°11'37" E)	51.67 (51.80')
L12	N 39°17'08" W (S 39°01'16" E)	254.17 (254.16')
L13	N 69°12'26" E (S 69°22'40" W)	64.82 (64.82')
L14	N 87°44'09" E (S 88°00'40" W)	235.35 (235.39')
L15	N 83°00'06" E (S 83°15'19" W)	91.40 (91.86')
L16	N 86°56'03" E (S 87°10'32" W)	84.27 (84.27')
L17	N 41°54'01" W (S 41°11'09" E)	21.18 (21.90')
L18	N 21°51'13" E (S 22°09'46" W)	111.91 (111.80')
L19	N 03°40'11" W (S 03°29'28" E)	381.51 (381.51')
L20	N 11°08'12" E (S 10°54'05" E)	278.26 (278.51')
L21	N 03°56'06" W (S 03°37'00" E)	181.86 (181.77')
L22	N 09°51'07" E (S 09°38'26" W)	181.88 (184.91')
L23	N 05°16'04" W (S 05°30'11" E)	76.13 (76.10')
L24	S 80°23'37" E (S 80°13'54" E)	67.31 (68.25')
L25	N 09°06'26" W (S 08°47'42" W)	149.10 (149.39')
L26	S 49°35'45" E (S 49°19'24" E)	89.11 (89.12')
L27	S 89°26'55" E (S 89°08'38" E)	188.06 (188.01')
L28	S 89°37'06" E (S 89°18'24" E)	199.82 (199.81')
L29	S 89°04'40" E (S 88°46'58" E)	60.90 (60.89')
L30	N 89°56'18" E (N 89°38'06" E)	157.74 (157.71')
L31	N 89°47'50" E (N 89°31'17" E)	85.56 (85.62')
L32	N 89°40'05" E (N 89°24'37" E)	106.62 (106.61')
L33	N 89°56'04" E (N 89°39'16" E)	152.14 (152.11')
L34	N 89°36'14" E (N 89°19'58" E)	160.72 (160.77')
L35	N 31°55'25" E (N 31°38'07" E)	99.30 (99.30')
L36	N 13°51'13" E (N 13°34'54" E)	206.17 (206.17')
L37	N 09°08'39" E (N 08°52'10" E)	114.13 (114.13')
L38	N 14°19'41" E (N 14°03'22" E)	186.06 (186.06')
L39	N 09°05'39" W (N 09°21'58" E)	261.76 (261.77')

LINE TABLE

LINE #	BEARING	DISTANCE
L41	N 01°42'46" W (S 01°58'05" E)	390.78 (390.78')
L42	N 01°59'00" W (S 01°42'46" E)	67.15 (67.11')
L43	N 60°04'38" W (S 59°47'44" E)	169.75' (169.73')
L44	N 12°48'20" W (S 12°31'26" E)	274.04 (274.05')
L45	N 12°42'26" E (S 12°59'18" E)	192.49' (192.49')
L46	N 31°54'05" E (S 31°37'20" E)	493.75' (493.61')
L47	N 69°33'58" E (N 69°50'59" E)	162.85' (162.82')
L48	N 61°43'32" E (N 62°04'38" E)	160.56' (160.53')
L49	N 38°16'07" E (S 38°01'26" E)	67.43' (67.44')
L50	N 59°05'04" E (N 59°16'07" E)	70.69' (70.69')
L51	N 29°05'27" E (N 28°49'26" E)	64.05' (64.02')
L52	N 18°23'20" E (N 18°07'21" E)	283.11' (283.11')
L53	N 27°20'00" E (S 27°36'29" W)	60.26' (60.26')
L54	N 76°04'48" E (S 75°48'50" W)	18.06' (18.02')
L55	S 49°55'26" E (S 49°40'17" E)	10.36' (10.37')
L56	S 18°16'35" E (S 18°34'11" E)	17.23' (17.23')
L57	S 01°46'03" W (S 01°29'55" E)	60.84' (60.83')
L58	S 05°03'16" W (S 05°19'17" W)	70.04' (70.03')
L59	S 84°37'55" W (S 84°56'55" W)	155.53' (155.53')
L60	S 01°52'09" W (S 01°36'23" W)	113.84' (113.84')
L61	S 07°58'07" E (S 07°39'09" E)	130.01' (129.81')
L62	S 39°43'39" E (S 39°27'05" E)	58.10' (58.10')
L63	S 70°48'22" E (S 70°29'31" E)	55.48' (55.48')
L64	N 71°39'05" E (N 71°39'28" E)	282.99' (282.98')
L65	N 59°49'16" E (N 59°32'06" E)	152.05' (152.06')
L66	N 34°37'10" E (N 34°19'17" E)	39.53' (39.53')
L67	S 84°02'29" E (S 83°45'58" E)	85.58' (85.58')
L68	S 02°46'41" E (S 02°31'40" E)	104.60' (104.60')
L69	S 78°54'39" E (S 78°37'48" E)	121.13' (121.13')
L70	S 59°09'45" E (S 58°51'15" E)	57.06' (57.06')
L71	S 04°52'11" E (S 04°35'22" E)	371.67' (371.82')
L72	S 76°54'37" E (S 76°37'48" E)	430.70' (431.79')
L73	S 07°50'24" E (S 07°34'26" E)	52.06' (52.04')
L74	S 14°17'08" E (S 13°58'58" E)	163.11' (163.11')
L75	S 22°28'53" E (S 22°08'38" E)	94.85' (95.82')
L76	S 04°34'28" W (S 04°49'30" E)	66.09' (66.11')
L77	S 04°52'11" E (S 05°07'09" E)	310.09' (310.84')
L78	S 23°17'27" W (S 23°32'58" W)	194.43' (194.50')
L79	S 09°42'27" W (S 10°01'00" W)	147.98' (147.98')
L80	S 18°01'10" E (S 17°42'07" E)	165.05' (165.04')
L81	S 15°11'15" E (S 14°52'26" E)	165.03' (165.03')
L82	S 28°46'43" E (S 28°28'34" E)	269.98' (270.23')
L83	S 19°45'09" E (S 19°26'08" E)	93.13' (93.17')
L84	S 00°06'43" W (S 00°07'16" W)	81.46' (81.44')
L85	S 13°37'43" E (S 13°57'16" E)	91.12' (90.94')
L86	S 28°08'26" W (S 28°27'08" E)	202.56' (202.61')
L87	S 42°25'20" W (S 42°44'02" E)	230.87' (231.10')
L88	N 71°46'03" E (N 71°27'46" E)	200.35' (200.20')

LINE TABLE

LINE #	BEARING	DISTANCE
L89	S 06°06'56" E (S 05°49'39" E)	169.62' (169.82')
L90	N 72°00'10" E (N 71°42'49" E)	70.09' (70.09')
L91	S 47°33'17" E (S 47°16'09" E)	270.09' (269.64')
L92	N 07°51'54" E (N 08°10'44" W)	83.99' (83.84')
L93	N 09°23'25" W (N 09°06'08" W)	127.97'
L94	N 89°28'15" E (N 89°13' E)	128.44' (128.42')
L95	S 81°32'08" E (S 81°16'25" E)	17.28' (17.28')
L96	S 84°00'00" E (S 83°43'51" E)	66.84' (66.84')
L97	S 01°49'54" E (S 02°05'57" E)	58.85' (58.84')
L98	S 00°31'13" W (S 00°15' W)	53.88' (53.90')
L99	S 29°53'34" W (S 29°37'35" W)	104.35' (104.37')
L100	S 71°36'18" W (S 71°19'54" W)	950.63' (950.40')
L101	S 73°36'18" W (S 73°36'11" E) (N 71°19'54" W)	338.06' (334.97') (335.07')
L102	N 73°36'18" W (S 73°36'11" E) (N 71°19'54" W)	401.90' (411.84')
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<L113	<S 47°26'31" E>	<48.28'>
<L114	<S 48°47'32" E>	<85.83'>
<L115	<S 48°17'50" E>	<160.46'>
<L116	<S 57°04'13" E>	<199.92'>
<L117	<S 72°48'55" E>	<100.00'>
L118	N 88°53'38" E	(101.64')
L119	N 14°16'26" E	(284.18')
L120	N 02°46'29" E	(146.80')
L121	N 09°33'39" E	(170.00')
L122	N 37°17'07" E	(199.62')
L123	N 18°37'04" E	(83.90')
L124	N 12°28'14" E	(148.80')
L125	N 30°31'56" E	(284.00')
L126	N 27°43'46" E	(191.91')
L127	N 04°50'12" E	(223.48')

CURVE TABLE

CURVE #	RADIUS	ARC DISTANCE	CHORD BEARING	CHORD DISTANCE
C1	430.75' (430.76')	185.31' (185.83')	N 29°29'16" W (N 29°34'35" W)	184.95' (184.97')
C2	225.00' (225.00')	183.93' (184.27')	N 30°53'29" W (N 30°58'00" W)	132.37' (132.79')
C3	275.00' (275.00')	329.85' (330.55')	N 59°56'47" W (N 59°56'38" W)	309.56' (310.52')
C4	225.00' (225.00')	159.77' (159.40')	N 64°00'55" W (N 64°13'55" W)	165.04' (164.69')
C5	225.00' (225.00')	71.68' (71.87')	N 25°31'11" W (N 25°46'31" W)	71.38' (71.47')
C6	275.00' (275.00')	185.10' (185.10')	N 09°16'34" W (N 09°16'38" W)	182.17' (182.17')
C7	226.16' (226.16')	117.53' (117.88')	N 28°52'21" W (N 28°52'05" W)	116.56' (116.89')
C8	275.00' (275.00')	88.41' (88.41')	N 23°45'42" W (N 23°45'47" W)	88.05' (88.05')
C9	223.63' (223.63')	180.51' (180.51')	N 14°12'41" W (N 14°00'10" W)	139.06' (139.06')
C10	400.00' (400.00')	100.31' (100.31')	N 19°26'09" E (N 19°34'48" W)	100.06' (100.06')
C11	400.00' (400.00')	180.10' (180.12')	N 06°58'03" E (N 07°14'00" W)	178.54' (178.54')
C12	181.94' (181.94')	206.84' (206.84')	N 39°10'45" W (S 39°04'03" E)	195.75' (195.75')
C13	310.94' (310.94')	169.95' (169.95')	N 69°48'03" W (S 69°31'00" E)	169.84' (169.84')
C14	21.90' (21.90')	39.58' (39.58')	N 13°40'54" E (S 13°57'14" W)	34.41' (34.41')
C15	435.04' (435.04')	304.73' (304.73')	N 57°13'46" E (N 57°30'15" W)	298.46' (298.46')
C16	330.00' (330.00')	118.35' (118.35')	N 39°10'51" E (N 39°42'39" E)	117.69' (117.69')
C17	191.31' (187.31')	168.33' (169.86')	N 08°59'05" E (N 09°16'11" W) (N 33°33'09" E)	162.90' (161.23') (161.23')
C18	360.04' (360.00')	113.93' (113.93')	N 39°16'54" W (S 39°16'54" E)	113.51' (113.51')
C19	136.68' (136.68')	87.05' (91.91')	N 19°55'34" W (S 19°14'17" E)	85.58' (85.58')
C20	101.53' (101.53')	101.85' (101.85')	N 29°54'16" E (S 29°11'44" W) (N 29°11'26" E)	97.51' (97.97') (97.54')
C21	343.68' (343.68')	114.09' (114.09')	N 49°41'17" E (S 49°30'09" W) (N 49°30'09" E)	113.57' (113.57') (113.57')
C22	101.53' (101.53')	297.49' (297.91')	N 04°30'07" E (S 04°54'38" W)	296.43' (296.85')
C23	25.01' (25.00')	43.23' (43.23')	S 43°04'11" E (N 42°43'12" E)	38.05' (38.05')
(C24)	(101.53')	(102.04')	(S 08°32'47" W)	(102.09')
(C25)	(144.53')	(192.94')	(S 08°28'37" W)	(178.98')
(C26)	(183.50')	(282.71')	(S 07°58'58" E)	(218.90')
(C27)	(1461.99')	(178.84')	(N 19°17'58" E)	(178.73')

SURVEY NOTES:

1. NO ZONING REPORT OR LETTER WAS PROVIDED TO THE SURVEYOR BY THE CLIENT, FOR THE SUBJECT TRACT SHOWN HEREON. (TABLE A, ITEM 6(b), ALTA/NSPS)

2. THERE WERE NO OBSERVED STRIPED PARKING SPACES ON THE SUBJECT TRACT AS SHOWN HEREON. (TABLE A, ITEM 9, ALTA/NSPS)

3. AT THE TIME OF SURVEY, THERE WAS NO EVIDENCE OF RECENT EARTH MOVING WORK OBSERVED, AS SHOWN HEREON. (TABLE A, ITEM 16, ALTA/NSPS)

4. AT THE TIME OF SURVEY, THERE WAS NO KNOWLEDGE OF ANY CHANGES IN STREET RIGHT-OF-WAY LINES. (TABLE A, ITEM 17, ALTA/NSPS)

5. NO INFORMATION REGARDING A FIELD DELINEATION OF WETLANDS CONDUCTED BY A QUALIFIED SPECIALIST HIRED BY THE CLIENT HAS BEEN PROVIDED TO THE SURVEYOR. NO MARKERS DELINEATING WETLANDS WERE OBSERVED IN THE PROCESS OF CONDUCTING THE FIELDWORK. (TABLE A, ITEM 18, ALTA/NSPS)

6. THE THREE WELLS LOCATED AND SHOWN ON THIS SURVEY ARE WATER WELLS.

7. METES AND BOUNDS DESCRIPTION R62110 WAS PREPARED TO ACCOMPANY THE SURVEY AS SHOWN HEREON.

GF NO.: 1002-237864-RTT
EFFECTIVE DATE: JANUARY 11, 2018
ISSUED JANUARY 23, 2018

LEGAL DESCRIPTION:

TRACT I
CALLED 280.40 ACRES OF LAND SITUATED IN THE H. & G.N. R.R. SURVEY NO. 3, PHILLIP CAMMINS SURVEY AND THE A. REISE SURVEY IN HAYS COUNTY, TEXAS, BEING ALL OF THAT CALLED 280.40 ACRES DESCRIBED AS PARCEL ONE, TRACT I AND COMPRISED OF THAT CALLED 227.29 ACRES DESIGNATED AS TRACT ONE AND THAT CALLED 53.01 ACRES DESIGNATED AS TRACT TWO DESCRIBED IN THE DEED WITH GENERAL WARRANTY TO NORTHCROFT RANCH, LTD. IN VOLUME 12345, PAGE 595 AND VOLUME 12345, PAGE 607, REAL PROPERTY RECORDS OF TRAVIS COUNTY, TEXAS AND VOLUME 1126, PAGE 389 AND VOLUME 1126, PAGE 381, OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS.

TRACT II
CALLED 433.42 ACRES OF LAND SITUATED IN THE H. & G. N. R.R. SURVEY NO. 3, PHILLIP CAMMINS SURVEY AND THE A. REISE SURVEY IN HAYS COUNTY, TEXAS, BEING ALL OF THAT CALLED 433.42 ACRES IDENTIFIED AS PARCEL TWO, TRACT II AND DESCRIBED IN THE DEED WITH GENERAL WARRANTY TO NORTHCROFT RANCH, LTD. IN VOLUME 12345, PAGE 595 AND VOLUME 12345, PAGE 607, REAL PROPERTY RECORDS OF TRAVIS COUNTY, TEXAS AND VOLUME 1126, PAGE 389 AND VOLUME 1126, PAGE 381, OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS.

TRACT III
CALLED 625.192 ACRES OF LAND SITUATED IN THE C. & W. R.R. SURVEY NO. 171, C. & W. R.R. SURVEY NO. 177, P. H. COMMONS SURVEY, J. & HAMMITT SURVEY NO. 156, J.M. HAMMITT SURVEY NO. 534, J.J. LITTLE SURVEY NO. 426, IN HAYS AND TRAVIS COUNTY, BEING ALL OF THAT CALLED 625.192 ACRES IDENTIFIED AS PARCEL TWO, 625.197 ACRES AND DESCRIBED IN THE DEED WITH GENERAL WARRANTY TO NORTHCROFT RANCH, LTD. IN VOLUME 12345, PAGE 595 AND VOLUME 12345, PAGE 607, REAL PROPERTY RECORDS OF TRAVIS COUNTY, TEXAS AND VOLUME 1126, PAGE 389 AND VOLUME 1126, PAGE 381, OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS.

TRACT IV
CALLED 3.450 ACRES OF LAND SITUATED IN THE C. & W. R.R. SURVEY NO. 171 AND THE J.M. HAMMETT SURVEY NO. 534, IN HAYS COUNTY, BEING ALL OF THAT CALLED 3.450 ACRES IDENTIFIED AS PARCEL THREE AND DESCRIBED IN THE DEED WITH GENERAL WARRANTY TO NORTHCROFT RANCH, LTD. IN VOLUME 12345, PAGE 595 AND VOLUME 12345, PAGE 607, REAL PROPERTY RECORDS OF TRAVIS COUNTY, TEXAS AND VOLUME 1158, PAGE 368 AND VOLUME 1126, PAGE 381, OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS.

TRACT V
CALLED 376.480 ACRES OF LAND SITUATED IN THE H & G.B. R.R. SURVEY NO. 3, PHILLIP CAMMINS SURVEY AND THE A. REISE SURVEY IN HAYS COUNTY, TEXAS, BEING ALL OF THAT CERTAIN CALLED 376.480 ACRES DESCRIBED IN THE GENERAL WARRANTY DEED TO DEDMAN 4, NORTHCROFT IN VOLUME 1464, PAGE 601, OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS. SAID 376.480 ACRES BEING ALL OF LOTS 2, 3 AND 4, BLOCK C, HURLBUT RANCH EAST A SUBDIVISION IN HAYS COUNTY, TEXAS ACCORDING TO THE PLAT OF RECORD IN VOLUME 3, PAGES 181 THRU 190, PLAT RECORDS OF HAYS COUNTY, TEXAS.

RESTRICTIVE COVENANTS:
THE RESTRICTIVE COVENANTS OF RECORD IN VOLUME 280, PAGE 130, DEED RECORDS OF HAYS COUNTY, TEXAS (AS TO TRACTS I AND IV) AND IN VOLUME 1, PAGE 161 THRU 170, PLAT RECORDS OF HAYS COUNTY, TEXAS (AS TO TRACT V), AS LISTED IN TITLE COMMITMENT OF NO. 1002-237864-RTT, DO AFFECT THE SUBJECT TRACTS. NO OTHER RECORD RESTRICTIVE COVENANT RESEARCH WAS PERFORMED BY BOWMAN CONSULTING.

TITLE COMMITMENT SCHEDULE "B" NOTES:
ONLY THOSE EASEMENTS LISTED IN TITLE COMMITMENT OF NO. 1002-237864-RTT AND RECITED BELOW WERE EVALUATED FOR THIS SURVEY. NO OTHER EASEMENT RECORD RESEARCH WAS PERFORMED BY BOWMAN CONSULTING.

10a ANY AND ALL EASEMENTS, BUILDING LINES AND CONDITIONS, COVENANTS AND RESTRICTIONS AS SET FORTH IN PLAT RECORDED IN VOLUME 3, PAGES 181 THRU 190, PLAT RECORDS OF HAYS COUNTY, TEXAS
DOES AFFECT SUBJECT TRACT V AS SHOWN HEREON.

10e TERM, CONDITIONS AND STIPULATIONS SET FORTH IN THAT OVERFLOW RIGHT-OF-WAY AND EASEMENT AGREEMENT GRANTED IN FAVOR OF THE LOWER COLORADO RIVER AUTHORITY, RECORDED JUNE 2, 1941 IN VOLUME 122, PAGE 240, DEED RECORDS OF HAYS COUNTY, TEXAS.
DOES AFFECT SUBJECT TRACT I AND SUBJECT TRACT II AS SHOWN HEREON.

10f ROADWAY DEDICATION SET FORTH IN THAT INSTRUMENT RECORDED DECEMBER 9, 1976 IN VOLUME 280, PAGE 119 DEED RECORDS OF HAYS COUNTY, TEXAS AS RATIFIED BY THAT INSTRUMENT RECORDED IN VOLUME 240, PAGE 122, DEED RECORDS OF HAYS COUNTY, TEXAS.
DOES AFFECT SUBJECT TRACT II AS SHOWN HEREON.

10g INGRESS AND EGRESS RIGHT-OF-WAY AND EASEMENT AS SET FORTH IN THAT INSTRUMENT RECORDED APRIL 6, 1977 IN VOLUME 671, PAGE 597, DEED RECORDS OF TRAVIS COUNTY, TEXAS AND VOLUME 264, PAGE 813, DEED RECORDS OF HAYS COUNTY, TEXAS.
MAY AFFECT ALL SUBJECT TRACTS. INSTRUMENT INDICATES AN "EASEMENT OF PASSING IN AND ALONG A CERTAIN WAY OR ROAD...SAID ROAD EXTENDING FROM THE SAID LIT ADAMS TRACT OVER AND ACROSS ALL OF THE SAID HUNNICUTT RANCH", NO LOCATION OR MEASUREMENT OF ROAD GIVEN.

10h INGRESS AND EGRESS RIGHT-OF-WAY AND EASEMENT AS SET FORTH IN THAT INSTRUMENT RECORDED JULY 12, 1985, IN VOLUME 7717, PAGE 654, DEED RECORDS OF TRAVIS COUNTY, TEXAS AND VOLUME 379, PAGE 617, DEED RECORDS OF HAYS COUNTY, TEXAS.
MAY AFFECT ALL SUBJECT TRACTS. AMBIGUOUS DESCRIPTION CANNOT BE PLOTTED.

10i INGRESS AND EGRESS RIGHT-OF-WAY AND EASEMENT AS SET FORTH IN THAT INSTRUMENT RECORDED APRIL 4, 1983, IN VOLUME 6340, PAGE 643, DEED RECORDS OF TRAVIS COUNTY, TEXAS AND VOLUME 291, PAGE 44, DEED RECORDS OF HAYS COUNTY, TEXAS.
DOES AFFECT SUBJECT TRACT IV AS SHOWN HEREON.

10j STREET AND ROADWAY DEDICATION AS SET FORTH IN THAT INSTRUMENT RECORDED OCTOBER 8, 1987, IN VOLUME 10445, PAGE 873, REAL PROPERTY RECORDS OF TRAVIS COUNTY, TEXAS.
DOES AFFECT SUBJECT TRACT IV AS SHOWN HEREON.

10k COMMUNICATIONS LINES RIGHT-OF-WAY AND EASEMENT BEING TEN (10') FEET IN WIDTH AS GRANTED IN FAVOR OF GTE SOUTHWEST INCORPORATED IN THAT INSTRUMENT RECORDED MARCH 9, 1983, IN VOLUME 278, PAGE 62, OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS.
BLANKET-TYPE EASEMENT. DOES AFFECT A PORTION OF SUBJECT TRACT V, BEING LOT 4, BLOCK C, HURLBUT RANCH EAST.

10l TERMS, CONDITIONS AND STIPULATIONS CONTAINED IN THE AGREEMENT FOR RIGHT-OF-WAY RECORDED IN VOLUME 8024, PAGE 421, DEED RECORDS OF TRAVIS COUNTY, TEXAS AND IN VOLUME 391, PAGE 9, DEED RECORDS OF HAYS COUNTY, TEXAS
DOES AFFECT SUBJECT PROPERTY. SAID INSTRUMENTS CONTAIN A ROUGH SKETCH SHOWING A MEANDERING LINE CALLED PROPOSED ROAD CROSSING SUBJECT TRACT I, TRACT II, TRACT III AND TRACT IV. NO METES AND BOUNDS DESCRIPTION WAS PROVIDED.

10m TERMS, CONDITIONS AND STIPULATIONS CONTAINED IN THE BOUNDARY LINE AGREEMENT RECORDED IN VOLUME 416, PAGE 43 AND RE-RECORDED IN VOLUME 453, 717 REAL PROPERTY OF HAYS COUNTY, TEXAS.
DOES AFFECT SUBJECT TRACTS 4 AND 5 AS SHOWN HEREON.

SHEET 4 OF 4

DESIGNED BY: NG	CHECK: CC, DS, MS		
DRAWN BY: JC	CHECKED BY: JS	FB 1: 916, 918	
FB 2: 1000, 1001, 1002	SURVEYED ON: 01/23/2018	PAGE 1: 000000	

NO.	REVISION	BY	DATE
1	ADDED TITLE COMMITMENT INFORMATION	KH	02/27/18
2	INCORPORATED COMMENTS FROM SURVEYING DEPARTMENT	RMC	04/27/18
3	UPDATED TITLECOMMITMENT INFO	KH	05/29/18

Bowman CONSULTING

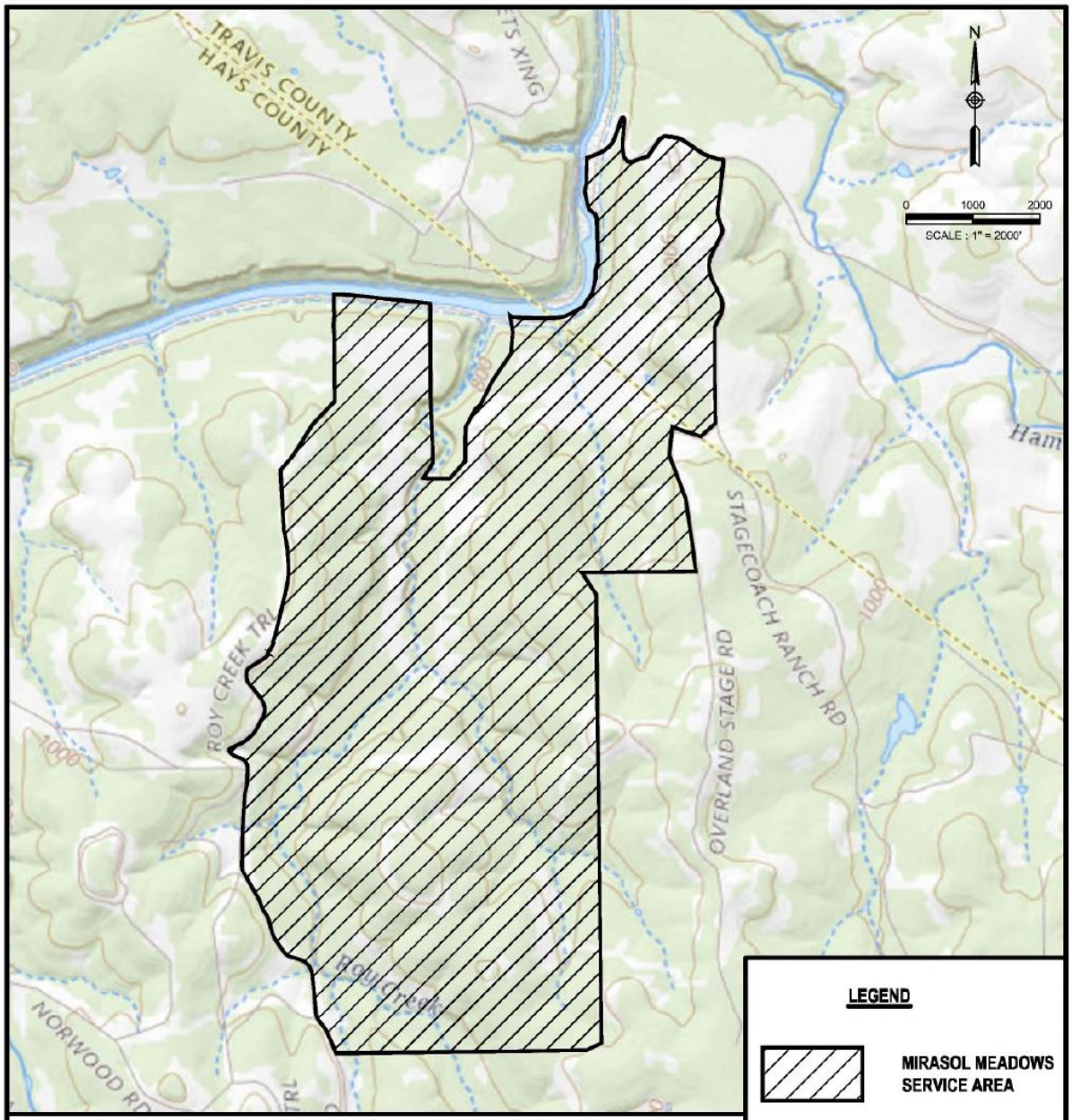
Bowman Consulting Group, Ltd.
1100 South Capital of Texas Hwy, Bldg C, Suite 220, Austin, Texas 78746
Phone (512) 327-1180 Fax (512) 327-4062
www.bowmanconsulting.com © Bowman Consulting Group, Ltd
TBPE Firm No. F-14309 | TBPLS Firm No. 101206-03

ALTA/NSPS LAND TITLE SURVEY
1400.609 ACRES OUT OF THE
P.H. COMMONS SURVEY A-129, W. & J. MONCKTON
SURVEY A-719, W. HAMMETT SURVEY A-732
AND OTHERS, HAY COUNTY, TEXAS
AND TRAVIS COUNTY, TEXAS

PLAN #: 3803.03

Exhibit D

Depiction of Service Area



MIRASOL MEADOWS FIRM WATER APPLICATION

TRAVIS/HAYS COUNTY, TEXAS

EXHIBIT D
MIRASOL MEADOWS SERVICE AREA

DESIGNED BY:	
DRAWN BY:	SJA
CHECKED BY:	DL
APPROVED BY:	
DATE:	August 4, 2020

MURFEE ENGINEERING COMPANY
1101 CAPITAL OF TEXAS HIGHWAY SOUTH
BUILDING D, SUITE 110
AUSTIN, TEXAS 78746
(512) 327-9204
Texas Registered Engineering Firm F-353

PLOT DATE: 8/4/2020 9:41 AM sanderson
FILE PATH: W:\Mirasol\Facilities\Water\Raw Water Contracts\CAD\Exhibit-Firm Water Application-Mirasol.dwg

Exhibit E

Water Conservation Plan

WATER CONSERVATION PLAN

for

Mirasol
Firm Water Contract

September, 2020

Prepared for:

Clancy Utility Holdings, LLC
4143 Maple Avenue Street, Suite 400
Dallas, Texas 75219

Prepared by:

Murfee Engineering Company, Inc.
Texas Registered Firm No. F-353
1101 Capital of Texas Hwy., South, Building D
Austin, Texas 78746

TABLE OF CONTENTS

APPLICANT INFORMATION

Applicant Name: Clancy Utility Holdings, LLC

Address: 4143 Maple Avenue Street, Suite 400 Dallas, Texas 75219

Telephone Number: (214)301-4253

Application Prepared by: Dennis Lozano, P.E.

Title: Engineer

Signature:  Date: 4-2-20

UTILITY PROFILE

The proposed Mirasol service area is an approximately 1,400-acre (2.19 square mile) mixed used development located in southwestern Travis County and northern Hays County approximately 25 miles west of downtown Austin. The development is proposed to have single-family residential connections along with supporting and associated recreational, research, and conservation amenity uses for a total living unit equivalent (LUE) count of 216.

Please note that Table A is not applicable and has not been included due to the fact that the development has not been constructed and has no connections and therefore has no historical use.

Due to the mixed-use nature of this development, Living Unit Equivalents (LUEs) have been used to estimate the projected water demand in lieu of population since water demand will be generated by more than just the permanent population. An LUE is defined as a single-family residence inhabited by 3.5 persons. By using conversion factors, water usage by entities such as restaurants and hotels can be directly combined and projected with single-family residences. It is estimated that there will be approximately 216 LUEs at full build-out. The development is expected to grow at 9% per year with a projected completion year of 2030.

Table 1 provides developer-projected estimates of population.

Table 1: Projected Population

Year	Estimated LUEs
2020	20
2030 (full build-out)	216

According to the American Water Works Association Manual of Water Supply Practice, M22, 2014 the per capita water use is expected to be 39 gallons per person per day and 175 gallons per LUE per day. However, the State of Texas has regulatory authority over public water systems (PWSs) which is administrated by the Texas Commission on Environmental Quality (TCEQ). Minimum criteria for PWSs require a minimum water supply of 0.6 gpm/connection. Balancing guidance and regulation and factoring in the seasonal nature of water system demands, the projected full built out demand recommends a contractual Maximum Annual Quantity (MAQ) of 108 ac-ft.

The water distribution system will consist of typical pipes, valves, fire hydrants, and connections designed and specified in accordance with TCEQ rules for PWSs as well as standard engineering practice.

A portion of the entire service area will be provided wastewater service by the District via a wastewater treatment plant designed for 30,000 gallons per day.

WATER CONSERVATION GOALS

Water conservation goals will be established once baseline data is available for comparison.

WATER CONSERVATION MEASURES

1. Mirasol Meadows will test and calibrate production (master) meters to within the accuracy of plus or minus 5%, as well as all meters over 1" in size at intervals not to exceed one year. Meters smaller than 1" will be tested and replaced according to manufacturer recommendations.
2. All connections, including any temporary connections, to the water distribution system shall be metered. All meters will be tested and replaced as necessary, in accordance with manufacturer recommendations.
3. The contracted water system operator shall be required to conduct water loss audits in accordance with all applicable laws.
4. Continuing education and information on water conservation will be provided by Mirasol Meadows to its customers primarily via informational material included in monthly retail billings.
5. The rate structure includes a base monthly cost and graduated volumetric rates that increase with usage in order to encourage conservation. The billing system is capable of separating water-use per customer type into the following categories: residential, commercial, hydrant, tracking, and reclaimed.
6. The primary means of implementation and enforcement shall be contractual, via the retail water service agreement each customer will be required to execute prior to service. Additionally, the Water Conservation Plan will be adopted by the Board of Directors and established as official policy along with the service rates and impact fees.
7. Mirasol will coordinate with the Lower Colorado Region (Region K) of the Lower Colorado Regional Water Planning Group to ensure consistency with the letter and intent of the regional water plans. Once this Water Conservation Plan is approved by the LCRA and adopted by Mirasol Meadows, a copy will be made available to the Region K Planning Group.

CONSERVATION LANDSCAPE BEST MANAGEMENT PRACTICES

Planting Specifications:

1. Landscape Option: Builders shall offer homeowners a conservation landscape package such as the LCRA Hill Country Landscape Option (HCLO) which includes only plants selected from Central Texas native and adapted plant list such as the Grow Green Native and Adapted Landscape Plants Guide (available at www.austintexas.gov/department/grow-green) or other native plant source.
2. Turf Selection: Turf that is used as part of the landscape package shall be the appropriate variety for the site location and intended use (see below).

Variety	Drought Tolerance	Shade Tolerance	Heat Tolerance	Wear Tolerance	Water Tolerance	Growing Height
Bermuda (Common and Hybrid)	Good	Poor	Good	Excellent	Medium	½ - 2 inches
Zoysia (Japonica)	Fair	Fair (JaMur)	Good	Good	Medium	¾ - 2 inches
Buffalo (Prairie or 609)	Excellent	Poor	Excellent	Good	Low	3 – 8 inches
St. Augustine	Fair	Good	Fair	Fair	High	2 – 3 inches

3. Invasive Plants: Plants considered to be invasive or environmentally detrimental shall not be used. For a list of invasive plants to Central Texas and their alternatives, reference the Grow Green Native and Adapted Landscape Plants Guide.
4. Turf Limitation: In new homes, no more than 50 percent of the landscape may be planted in turf.

Soil Specifications:

1. Soil Depth: All irrigated and newly planted turf areas will have a minimum settled soil depth of at least 6 - 8 inches:
    a. builders and owners will import soil if needed to achieve sufficient soil depth;
    b. soil in these areas may be either native soil from the site or imported, improved soil;
    c. improved soil shall have a minimum organic content of 5 percent or will be an amended mix of no less than twenty percent compost blended with sand and loam (caliche shall not be considered as soil);
    d. undisturbed, non-irrigated natural areas are exempt from these requirements.

2. Soil in new developments:
    a. native soil shall be stockpiled and reused on site;

b. topsoil that is added to the site shall be incorporated in a 2 to 3 inch scarified transition layer to improve drainage.

Irrigation System Installation, Design, and Maintenance Specifications:

1. Irrigation systems: Landscape irrigation systems shall not be mandatory.
2. Installation: Irrigation systems, if installed, shall be designed, installed, inspected, and maintained according to TCEQ Chapter 344 Landscape Irrigation rules, as well as the following additional criteria:
    a. New irrigation systems utilizing an automatic controller must be capable of (at minimum) the following functions:
        i. Multiple irrigation programs, with at least three (3) start times per program; and
        ii. The ability to limit irrigation frequency to a weekly schedule as well as once every seven (7) days and once every fourteen (14) days.
3. Spray Irrigation: Spray irrigation for each home/business shall be limited to 2.5 times the foundation footprint, with a 12,000 sq foot maximum. The footprint may include both the house and the garage, but not the driveway or patio.
4. Common areas: Irrigation systems for entryways and common areas shall incorporate design and conservation features applicable to lots within the subdivision. Drip irrigation in common areas will be used where feasible. Color-bed changes and turfgrass overseeding in common areas is prohibited

Irrigation System Maintenance Specifications:

1. Watering Schedule: The developer, builder and/or homeowner association shall promote a watering schedule for both residences and common areas which conserves water and reduces run-off, as follows:
    June, July, August and September – ½ inch of water no more than twice per week
    March, April, May and October – ½ inch of water once per week
    November through February – turn off irrigation system
2. Monitoring: Irrigation systems in common areas shall be monitored once per month, and any repairs will be made in a timely manner.
3. Time of Day Irrigation: Watering of common areas and residential landscapes shall be limited to the recommended time of day watering schedule (no watering between 10:00 AM and 7:00 PM) unless irrigation of reclaimed water during the day is necessary to meet regulatory requirements.

Exhibit F

Drought Contingency Plan

DROUGHT CONTINGENCY PLAN

for

Mirasol
Firm Water Contract

September 2020

Prepared for:

Clancy Utility Holdings, LLC
4143 Maple Avenue Street, Suite 400
Dallas, Texas 75219

Prepared by:

Murfee Engineering Company, Inc.
Texas Registered Firm No. F-353
1101 Capital of Texas Hwy., South, Building D
Austin, Texas 78746

Table of Contents

1.0 Declaration of Policy, Purpose, and Intent

In order to conserve the available water supply and/or to protect the integrity of water supply facilities, with particular regard for domestic water use, sanitation, and fire protection, and to protect and preserve public health, welfare, and safety and minimize the adverse impacts of water supply shortage or other water supply emergency conditions, Mirasol (the "District") adopts the following Drought Contingency Plan (the "Plan").

2.0 Authorization

The designated manager or official of Mirasol is hereby authorized and directed to implement the applicable provisions of this plan upon determination that such implementation is necessary to protect public health, safety, and welfare. The designated manager or official of Mirasol shall have the authority to initiate or terminate drought or other water supply emergency response measures as described in this Plan. This authorization was designated as part of the plan's approval by the Mirasol Board of Directors.

3.0 Public Education

The general manager of Mirasol will periodically provide its employees, members, and the general public with information about this Plan, including the importance of the Plan, information about the conditions under which each stage of the Plan is to be initiated, processes used to reduce water use, and impending or current drought conditions.

4.0 Coordination with Regional Planning Groups

Mirasol has provided a copy of this Plan to the Lower Colorado Regional Planning Group (Region K).

5.0 Notice Requirements

Mirasol shall notify the executive director of the Texas Commission on Environmental Quality and LCRA General Manager in writing within five (5) business days of the implementation of any mandatory provisions of the Drought Contingency Plan.

6.0 Permanent Water Use Restrictions

The following restrictions apply to all of Mirasol water utility system on a year-round basis, regardless of water supply or water treatment plant production conditions. According to the restrictions, a water user must not:

1) Fail to repair a controllable leak, including a broken sprinkler head, a leaking valve, leaking or broken pipes, or a leaking faucet;

2) Operate an irrigation system with:
   - a broken head;
   - a head that is out of adjustment and the arc of the spray head is over a street or parking area; or
   - a head that is fogging or misting because of excessive water pressure.

3) During irrigation, allow water:
   - to run off a property and form a stream of water in a street for a distance of 50 feet or greater; or
   - to pool in a street or parking lot to a depth greater than one-quarter of an inch.

7.0 Initiation and Termination of Response Stages

The Mirasol general manager shall monitor water supply and demand conditions on a regular basis and shall determine when conditions warrant initiation and termination of each stage of this Plan in accordance with LCRA's Water Management Plan. Water supply conditions will be determined by the source of supply, system capacity, and weather conditions. Water demand will be measured by the peak daily demands on the system.

Public notification of the initiation or termination of drought response stages shall be by a variety of means, examples include: bill inserts, e-mail and automated telephone calls, signs posted at entry points to the service area or a combination of these methods.

The following triggering criteria shall apply to the Mirasol water utility system(s) and customer service area:

7.1 Triggering Criteria for Initiation and Termination of Drought Response Stages

(1) STAGE 1 - Mild Water Shortage Conditions (Voluntary Measures)

A. **Requirements for initiation** - Customers shall be requested to adhere to the Stage 1 Drought Response Measures when one or a combination of such triggering criteria occurs:

1. Treatment Capacity:
   - When total daily water demand equals or exceeds 80 percent of the total operating system treatment capacity for three consecutive days, or 85 percent on a single day.

2. Water Supply:

- Combined storage of Lakes Travis and Buchanan reaches 1.4 million acre-feet in accordance with the LCRA Drought Contingency Plan for Firm Water Customers (DCP).

B. **Requirements for termination** - Stage 1 of the plan may be rescinded when:

1. Treatment Capacity:
   - The water treatment plant capacity condition listed above as a triggering event for Stage 1 has ceased to exist for five consecutive days.

2. Water Supply:
   - LCRA announces that voluntary restrictions by its firm raw water customers are no longer needed in accordance with the LCRA DCP.

(2) STAGE 2 - Moderate Water Shortage Conditions (Mandatory Measures)

A. **Requirements for initiation** - Customers shall be required to adhere to the Stage 2 Drought Response Measures when one or a combination of such triggering criteria occurs:

1. Treatment Capacity:
   - For surface water systems, when total daily water demand equals or exceeds 93 percent of the total operating system treatment capacity for three consecutive days, or 95 percent on a single day.

2. Water Supply:
   - Combined storage of Lakes Travis and Buchanan reaches 900,000 acre-feet in accordance with the LCRA DCP.

B. **Requirements for termination** - Stage 2 of the Plan may be rescinded when:

1. Treatment Capacity:
   - The water treatment plant capacity condition listed above as a triggering event for Stage 2 has ceased to exist for five consecutive days.

2. Water Supply:
   - LCRA announces that voluntary compliance to implement a utility's mandatory water restrictions are no longer needed in accordance with the LCRA DCP.

Upon termination of Stage 2, Stage 1 becomes operative.

(3) STAGE 3 - Severe Water Shortage Conditions (Mandatory Measures)

A. **Requirements for initiation** - Customers shall be required to adhere to the Stage 3 Drought Response Measures when one or a combination of such triggering criteria occurs:

1. Treatment Capacity:
   - For surface water systems, when total daily water demand equals or exceeds 95 percent of the total operating system treatment capacity for three consecutive days, or 97 percent on a single day.

2. Water Supply:
   - Combined storage of Lakes Travis and Buchanan reaches 600,000 acre-feet, in accordance with the LCRA DCP, or
   - The LCRA Board declares a drought worse than the Drought of Record or other water supply emergency and orders the mandatory curtailment of firm water supplies.

B. **Requirements for termination** - Stage 3 of the Plan may be rescinded when:

1. Treatment Capacity:
   - The water treatment plant capacity condition listed above as a triggering event for Stage 3 has ceased to exist for five consecutive days.

2. Water Supply:
   - LCRA announces that mandatory water restrictions for firm water customers are no longer required in accordance with the LCRA DCP.

Upon termination of Stage 3, Stage 2 becomes operative.

(4) STAGE 4- Emergency Water Conditions

A. **Requirements for initiation** - Customers shall be required to adhere to the Stage 4 Drought Response Measures when one or a combination of such triggering criteria occurs:

1. Treatment Capacity:
   - Major water line breaks, loss of distribution pressure, or pump system failures that cause substantial loss in its ability to provide water service.

2. Water Supply:
   - Natural or man-made contamination of the water supply source; or
   - Any other emergency water supply or demand conditions that the LCRA general manager or the LCRA Board determines that either constitutes a water supply emergency or is associated with the LCRA Board declaration of a drought worse than the drought of record.

B. **Requirements for termination** - Stage 4 of the Plan may be rescinded when:

1. Treatment Capacity:
   - The water treatment plant capacity condition listed above as a triggering event for Stage 4 has ceased to exist for five consecutive days; or

2. Water Supply:
   - LCRA announces that mandatory water restrictions for firm water customers are no longer required in accordance with the LCRA DCP.

Upon termination of Stage 4, Stage 3 becomes operative.

8.0 Drought Response Measures

8.1 Targets for Water-Use Reductions

(1) STAGE 1 - Mild Water Shortage Conditions (Voluntary Measures)

System Capacity Reduction Target: Limit daily water demand to no more than 80% capacity for three days or 85% for one day.

Water Supply Reduction Target: Achieve a 5% reduction in water use.

(2) STAGE 2 - Moderate Water Shortage Conditions (Mandatory Measures)

System Capacity Reduction Target: Limit daily water demand to no more than 80% capacity for three days or 85% for one day.

Water Supply Reduction Target: Achieve a 10-20% reduction in water use.

(3) STAGE 3 - Severe Water Shortage Conditions (Mandatory Measures)

System Capacity Reduction Target: Limit daily water demand to no more than 80% capacity for three days or 85% for one day.

Water Supply Reduction Target: Achieve a minimum 20% reduction in water use.

(4) STAGE 4 - Severe Water Shortage Conditions (Mandatory Measures)

System Capacity Reduction Target: Achieve a minimum 30% reduction in water use.

Water Supply Reduction Target: As determined by the LCRA Board.

8.2 Retail Customers Measures

(1) STAGE 1 - Mild Water Shortage Conditions (Voluntary Measures)

A. Supply Management Measures: Mirasol will review system operations and identify ways to improve system efficiency and accountability.

B. Demand Management Measures:

1. Ask customers to voluntarily comply with the water-use restrictions outlined in Stage 2 of this plan, including watering landscapes no more than twice per week; and

2. Actively promote drought related issues and the need to conserve.

(2) STAGE 2 - Moderate Water Shortage Conditions (Mandatory Measures)

A. Supply Management Measures:

1. Apply all water-use restrictions prescribed for Stage 2 of the plan for Mirasol's utility owned facilities and properties;

2. Discontinue water main and line flushing unless necessary for public health reasons; and

3. Keep customers informed about issues regarding current and projected water supply and demand conditions.

B. Demand Management Measures: Under threat of penalty, the following water-use restrictions shall apply to all retail water customers:

1. Irrigation of Landscaped Areas:

a. **If the combined water storage of lakes Buchanan and Travis are less than 900,000 AF but greater than 750,000 AF** - Irrigation of landscaped areas with hose-end sprinklers or in-ground irrigation systems shall be limited to a no more than a TWICE weekly watering schedule determined by Mirasol and based on the nature of the current drought or water emergency. Irrigation of commercial landscapes and recreational areas may apply for a variance but must still develop a schedule where no part of the landscape is watered more than twice per week. *See Appendix A - Mirasol Water System - Watering Schedules.*

b. **If the combined water storage of lakes Buchanan and Travis are less than or equal to 750,000 AF** - Irrigation of landscaped areas with hose-end sprinklers or in-ground irrigation systems shall be limited to a no more than a TWICE weekly watering schedule with restricted hours as determined by Mirasol and based on the nature of the current drought or water emergency. *See Appendix A - Mirasol Water System - Watering Schedules.*

c. Outdoor watering hours will be limited to between midnight and 10 a.m. and between 7 p.m. and midnight on designated days. This prohibition does not apply to irrigation of landscaped areas if it is by means of:
   i. a hand-held hose; or
   ii. a faucet-filled bucket or watering can of five gallons or less; or
   iii. sub-surface drip irrigation.

d. New landscapes may be installed and re-vegetation seeding performed under these specific criteria:
   i. A completed variance form for new landscapes has been submitted to the Mirasol and has been approved prior to the installation of the landscape, or re-vegetation seed application
   ii. Irrigation of the new landscape follows the schedule identified in the new landscape variance. The schedule will be developed to minimize water waste.
   iii. Areas being re-vegetated for soil stabilization must also comply with the (i) and (ii) specific criteria above. Options for re-vegetation may be available in times of low water supply. Specific information regarding options is available in the LCRA Highland Lakes Watershed Ordinance Technical Manual.
   iv. Variances for new landscapes may be issued for a period of no more than 30 days from the day of issuance. A variance is not an exemption from compliance with the permanent water use restrictions under Section 6.0 of this plan. Variances will not be granted for seasonal "color bed" or temporary grass installation (overseeding).

2. Vehicle Washing:

Use of water to wash any motor vehicle, such as a motorbike, boat, trailer, or airplane is prohibited except on designated watering days between the hours of midnight and 10 a.m. and between 7 p.m. and midnight. Such activity, when allowed, shall be done with a hand-held bucket or a hand-held hose equipped with a positive shutoff nozzle. A vehicle may be washed any time at a commercial car wash facility or commercial service station. Further, this activity is exempt from these regulations if the health, safety, and welfare of the public are served by washing the vehicle, such as a truck used to collect garbage or used to transport food and perishables.

3. Pools:

a. Filling of existing swimming pools, hot tubs, and wading pools, shall be discouraged and subject to a variance. Replenishing to maintenance level is permitted. Draining is permitted only onto pervious surfaces or onto a surface where water will be transmitted directly to a pervious surface, and only if:
   i. Draining excess water from pool due to rain in order to lower water to maintenance level;
   ii. Repairing, maintaining or replacing pool components that have become hazardous; or
   iii. Repair of a pool leak.

b. Refilling of public/community swimming pools permitted only if pool has been drained for repairs, maintenance, or replacement as outlined in items above.

4. Outside Water Features:

Operation of outside water features, such as, but not limited to, fountains, splash pad type fountains or outdoor misting systems, is prohibited, except where such features are used to sustain aquatic life or maintain water quality. (This provision includes fountains associated with aesthetic ponds and swimming pools).

5. Ponds:

Ponds used for aesthetic, amenity, and/or storm water purposes may maintain water levels only necessary to preserve the integrity of the liner and operating system. Mirasol may request specific design documentation regarding a pond and the intended purpose.

6. Events:

Events involving the use of water such as: car washes, festivals, parties, water slides, and other activities involving the use of water are permitted, if the water being used drains to a recirculating device, or onto a pervious surface to prevent water waste.

7. Fire Hydrants:

Use of water from fire hydrants shall be limited to firefighting and activities necessary to maintain public health, safety, and welfare. Use of water from designated fire hydrants for construction purposes may be allowed under special conditions and requires a meter; a variance application must be submitted with an explanation of the special conditions.

8. Recreational areas (includes parks and athletic fields):

The areas can only be used for designated or scheduled events or activities. Unnecessary foot traffic must be discouraged. Watering must follow a no more than twice per week schedule. A variance can be obtained if watering cannot be completed on the designated two day schedule.

11. Water Waste:

The following non-essential uses of water are prohibited at all times during periods in which restrictions have gone into effect:

a. Washing sidewalks, walkways, driveways, parking lots, street, tennis courts, and other impervious surfaces is prohibited except for immediate health and safety;

b. Washing buildings, houses or structures with a pressure washer or garden hose is prohibited for aesthetic purposes but allowable for surface preparation of maintenance work to be performed;

c. Flushing gutters or flooding gutters is prohibited except for immediate health and safety; and

d. Controlling dust is prohibited, unless there is a demonstrated need to do so for reasons of public health and safety, or as part of an approved construction plan.

(3) STAGE 3 - Severe Water Shortage Conditions (Mandatory Measures)

A. Supply Management Measures: In addition to measures implemented in the preceding stages of the plan, affected Mirasol water utility systems will explore additional emergency water supply options.

B. Demand Management Measures: Under threat of penalty, all retail customers are required to further reduce non-essential water uses as follows. All requirements of Stage 2 shall remain in effect during Stage 3, with the following modifications and additions.

1. Irrigation of Landscaped Areas:

a. Irrigation of landscaped areas, except with hand-held hoses, hand-held buckets, or sub-surface drip irrigation, is restricted to once per week. *See Appendix A - Mirasol Water System - Watering Schedules*

b. New landscapes may be installed and re-vegetation seeding performed under these specific criteria:

i. A completed variance form for new landscapes has been submitted to the Mirasol and has been approved prior to the installation of the landscape, or re-vegetation seed application

ii. Irrigation of the new landscape follows the schedule identified in the new landscape variance. The schedule will be developed to minimize water waste.

iii. Areas being re-vegetated for soil stabilization must also comply with the (i) and (ii) specific criteria above. Options for re-vegetation may be available in times of low water supply. Specific information regarding options is available in the LCRA Highland Lakes Watershed Ordinance Technical Manual.

iv. Variances for new landscapes may be issued for a period of no more than 30 days from the day of issuance. A variance is not an exemption from compliance with the permanent water use restrictions under Section 6.0 of this plan. Variances will not be granted for seasonal "color bed" or temporary grass installation (overseeding).

2. Vehicle Washing:

Use of water to wash any motor vehicle, motorbike, boat, trailer, airplane, or other vehicle is prohibited. A vehicle can be washed at any time at a commercial car wash facility or commercial service station that recycles its water. Further, this activity is exempt from these regulations if the health, safety, and welfare of the public are served by washing the vehicle, such as a truck used to collect garbage or used to transport food and perishables.

3. Pools:

Installation of swimming pools is prohibited. The filling or replenishing of water to swimming pools, hot tubs, wading pools, and other types of pools is prohibited. Public/community swimming pools may be exempt from this prohibition to maintain safe levels of water quality for human contact.

4. Events:

Events involving the use of water such as: car washes; festivals; parties; water slides; and other activities involving the use of water are prohibited.

5. Recreational areas (includes parks and athletic fields):

The areas can only be used for designated or scheduled events or activities. Unnecessary foot traffic must be discouraged. Watering is prohibited except with a hand-held hose.

(4) STAGE 4 - Emergency Water Conditions

Under threat of penalty for violation, all retail customers are required to reduce nonessential water uses during an emergency. All requirements of Stages 1 through 3 are also in effect during stage 4, with the following modifications and additions:

A. Irrigation of landscaped areas is prohibited.

B. Use of water from fire hydrants shall be limited to firefighting and activities necessary to maintain public health, safety, and welfare only.

C. No applications for new, additional, expanded, or larger water service connections, meters, service lines, pipeline extensions, mains, or water service facilities of any kind shall be allowed or approved.

Upon declaration of Stage 4 - Emergency Water Conditions, water use restrictions outlined in Stage 4 Emergency Response Measures shall immediately apply.

9.0 Enforcement

9.1 Enforcement Provisions

Appendix C contains the enforcement provisions applicable to all Mirasol water customers.

9.2 Variances

(1) Mirasol General Manager may grant variances:

A. From specific applications of the outdoor water schedule, providing that the variances do not increase the time allowed for watering but rather alter the schedule for watering; and

B. Allowing the use of alternative water sources (*i.e.*, ground water, reclaimed wastewater) that do not increase demand on potable water sources for outdoor use. Variance requests may be submitted to the General Manager and need not meet the requirements of subsection below.

(2) The general manager, or his designee, may grant in writing temporary variances for existing water uses otherwise prohibited under this plan if it is determined that failure to do so would cause an emergency adversely affecting the public health, sanitation, or fire protection, and if one or more of the following conditions are met:

A. Compliance with this plan cannot be accomplished during the duration of the time the plan is in effect; or

B. Alternative methods can be implemented that will achieve the same level of reduction in water use.

(3) Persons requesting a variance from the provisions of this plan shall file a petition for variance with the Mirasol water utility system any time the plan or a particular drought response stage is in effect. The general manager or his designee will review petitions for variances. The petitions shall include the following:

- Name and address of the petitioner
- Purpose of water use
- Specific provision of the plan from which the petitioner is requesting relief.
- Detailed statement as to how the specific provision of the plan adversely affects the petitioner or what damage or harm the petitioner or others will sustain if petitioner complies with this plan
- Description of the relief requested
- Period of time for which the variance is sought
- Alternative water use restrictions or other measures the petitioner is taking or proposes to take to meet the intent of this plan and the compliance date
- Other pertinent information

(4) Variances granted by a Mirasol water utility system shall be subject to the following conditions, unless waived or modified by the general manager, or his designee:

A. Variances granted shall include a timetable for compliance.

B. Variances granted shall expire when the plan, or its requirements, is no longer in effect, unless the petitioner has failed to meet specified requirements.

(5) No variance shall be retroactive or otherwise excuse any violation occurring before the variance was issued.

9.3 Plan Updates

The plan will be reviewed and updated as needed to meet both TCEQ and LCRA drought contingency plan rules.

10 Appendices

Appendix A – Watering Schedules

Mirasol Water System

Irrigate outdoors using an in-ground irrigation system or hose-end sprinkler no more than **TWICE per week** and only during scheduled days and times as indicated below:

Residential
Odd number addresses: Wednesdays and Saturdays
Even number addresses: Thursdays and Sundays

Commercial (including large landscapes such as HOA common areas)
Tuesdays and Fridays

Watering Hours:
Midnight to 10 a.m. and 7 p.m. to midnight

Irrigate outdoors using an in-ground irrigation system or hose-end sprinkler no more than **TWICE per week with restricted hours** and only during scheduled days and times as indicated below:

Residential
Odd number addresses: Wednesdays and Saturdays
Even number addresses: Thursdays and Sundays

Commercial (including large landscapes such as HOA common areas)
Tuesdays and Fridays

Watering Hours:
7 p.m. to midnight

Irrigate outdoors using an in-ground irrigation system or hose-end sprinkler no more than **ONCE per week** and only during scheduled days and times as indicated below:

Residential
Odd number addresses: Wednesdays
Even number addresses: Thursdays

Commercial (including large landscapes such as HOA common areas)
Tuesdays

Watering Hours:
Midnight to 10 a.m. and 7 p.m. to midnight

Appendix B – Enforcement Provisions

Enforcement for Retail Customers

The following enforcement provisions shall apply to all Mirasol retail water customers:

(1) No person shall knowingly or intentionally allow the use of water from the Mirasol water utility system for residential, commercial, industrial, agricultural, governmental, or any other purpose in a manner contrary to any provision of this plan, or in an amount in excess of that permitted by the drought response stage in effect at the time.

(2) Any person who violates this plan shall be subject to the following surcharges and conditions of service:

A. Following the first documented violation, the violator shall be given a notice specifying the type of violation and the date and time it was observed. Surcharges and restrictions on service that may result from additional violations;

B. Following the second documented violation, the violator shall be sent by certified mail a notice of violation and shall be assessed a surcharge of $50.00;

C. Following the third documented violation, the violator shall be sent by certified mail a notice of violation and shall be assessed a surcharge of $75.00;

D. Following the fourth documented violation, Mirasol shall, upon due notice to the customer, discontinue water service to the premises where such violations occur. Services discontinued under such circumstances shall be restored only upon payment of a reconnection charge, hereby established at $50.00, and any outstanding charges including late payment fees or penalties. In addition, suitable assurance must be given to Mirasol so that the same action shall not be repeated while the plan is in effect. Mirasol may apply the deposit to any surcharges or penalties subsequently assessed under this plan against a customer. The deposit, if any, shall be returned to the customer at the time of the customer's voluntary disconnection from the utility system.

(3) Each day that one or more of the provisions in this plan is violated shall constitute a separate violation. Any person, including one classified as a water customer of Mirasol, in apparent control of the property where a violation occurs or originates, shall be presumed to be the violator. Any such person, however, shall have the right to show that they did not commit the violation. *See enforcement process diagram in Appendix C - Drought Response Retail Enforcement Process.*

Legal Authority applicable to Water Districts in Regard to Drought Contingency Plan Enforcement

Please note that the following list is not intended to be exhaustive and statutes listed below may not apply to all Water Districts. Citations below may change following the publication date of this Drought Contingency Plan Model. Each Water District is encouraged to consult with legal counsel in regard to enforcement of drought contingency plans and specific enforcement authority available to each Water District.

Texas Water Code sec. 49.004
Texas Water Code sec. 49.2.12
Texas Water Code sec. 5.1.122
Texas Water Code sec. 54.205
Texas Water Code sec. 65.205

Appendix C – Drought Response Retail Enforcement

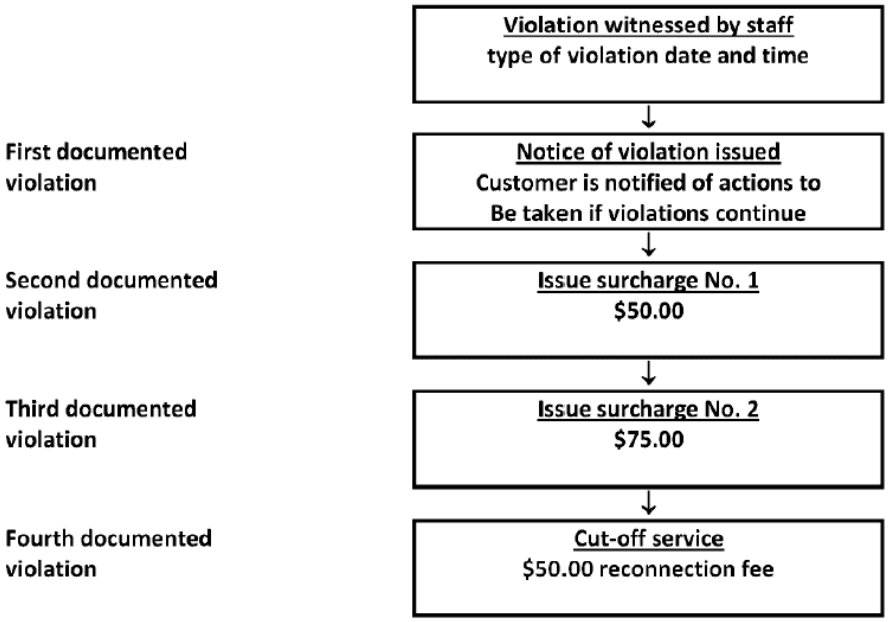


Exhibit G

Demand Schedule

Demand Schedule

Year	Percent Building (at end of year)	Demand (afy)
2020	9%	10
2021	18%	20
2022	27%	29
2023	36%	39
2024	45%	49
2025	55%	59
2026	64%	69
2027	73%	79
2028	82%	88
2029	91%	98
2030	100%	108

Exhibit H

Arbitration Procedures

EXHIBIT H

ARBITRATION PROCEDURES

Section 1. Arbitration.

1.1. Binding Arbitration. Binding arbitration shall be conducted in accordance with the following procedures:

(a) The party seeking arbitration hereunder shall request such arbitration in writing, which writing shall be delivered to the opposing party or parties and include a clear statement of the matter(s) in dispute. If a legal proceeding relating to the matter(s) in dispute has previously been filed in a court of competent jurisdiction (other than a proceeding for injunctive or ancillary relief) then such notice of election under this section shall be delivered within ninety (90) days of the date the electing party receives service of process in such legal proceeding. Otherwise, the legal proceeding shall be allowed to continue and binding arbitration shall not apply to the matter(s) in dispute in that legal proceeding.

(b) Except to the extent provided in this Exhibit, the arbitration shall be conducted in accordance with the commercial rules of the American Arbitration Association by a single arbitrator to be appointed as follows: (i) upon the issuance and receipt of a request for arbitration, the requesting and receiving party each shall designate a representative for the sole purpose of selecting, by mutual agreement with the other party's designee, the individual who shall arbitrate the Dispute or Controversy referred to arbitration hereunder; (ii) within twenty (20) days of their appointment, the two representatives shall designate a third individual who shall be the arbitrator to conduct the arbitration of the Dispute or Controversy; (iii) said individual shall be qualified to arbitrate the Dispute or Controversy referred to arbitration hereunder and have a schedule that permits him or her to serve as arbitrator within the time periods set forth herein. In order to facilitate any such appointment, the party seeking arbitration shall submit a brief description (no longer than two (2) pages) of the Dispute or Controversy to the opposing party. In the event the parties' two representatives are unable to agree on a single arbitrator of the Dispute or Controversy within the twenty (20) day period, then the arbitrator shall be appointed by the then-serving chief administrative district judge of Travis County, Texas, or any successor thereto within the next ten (10) day period. The party seeking arbitration shall make the parties' request for appointment of an arbitrator and furnish a copy of the aforesaid description of the Dispute or Controversy to said judge. Each party may, but shall not be required to, submit to said judge a list of up to three (3) qualified individuals as candidates for appointment as the arbitrator whose schedules permit their service as arbitrator within the time periods set forth herein. The arbitrator appointed by the judge need not be from such lists.

(c) Within thirty (30) days of the date the arbitrator is appointed, the arbitrator shall notify the parties in writing of the date of the arbitration hearing, which hearing date shall be not less than one-hundred twenty (120) days from the date of the arbitrator's appointment. The arbitration hearing shall be held in Austin, Texas. Except as otherwise provided

herein, the proceedings shall be conducted in accordance with the procedures of the Texas General Arbitration Act, Tex. Civ. Prac. & Remedies Code § 171.001 et seq. (the "Texas General Arbitration Act"). Depositions may be taken and other discovery may be made in accordance with the Texas Rules of Civil Procedure, provided that (i) depositions and other discovery shall be completed within ninety (90) days of the appointment of the arbitrator, (ii) there shall be no evidence by affidavit allowed, and (iii) each party shall disclose a list of all documentary evidence to be used and a list of all witnesses and experts to be called by the party in the arbitration hearing at least twenty (20) days prior to the arbitration hearing. The arbitrator shall issue a final ruling within thirty (30) days after the arbitration hearing. Any decision of the arbitrator shall state the basis of the award and shall include both findings of fact and conclusions of law. Any award rendered pursuant to the foregoing, which may include an award or decree of specific performance hereunder, shall be final and binding on, and not appealable by, the parties, and judgment thereon may be entered or enforcement thereof sought by either party in a court of competent jurisdiction. The foregoing deadlines shall be tolled during the period that no arbitrator is serving until a replacement is appointed in accordance with this Exhibit.

(d) Notwithstanding the foregoing, nothing contained herein shall be deemed to give the arbitrator appointed hereunder any authority, power or right to alter, change, amend, modify, waive, add to or delete from any of the provisions of the contract.

Section 2. Further Qualifications of Arbitrators; Conduct. All arbitrators shall be and remain at all times wholly impartial and, upon written request by any party, shall provide the parties with a statement that they can and shall decide any Dispute or Controversy referred to them impartially. No arbitrator shall be employed by any party, the State of Texas, or have any material financial dependence upon a party, the State of Texas, nor shall any arbitrator have any material financial interest in the Dispute or Controversy.

Section 3. Applicable Law and Arbitration Act. The agreement to arbitrate set forth in this Exhibit shall be enforceable in either federal or state court. The enforcement of such agreement and all procedural aspects thereof, including the construction and interpretation of this agreement to arbitrate, the scope of the arbitrable issues, allegations of waiver, delay or defenses as to arbitrability and the rules (except as otherwise expressly provided herein) governing the conduct of the arbitration, shall be governed by and construed pursuant to the Texas General Arbitration Act. In deciding the substance of any such Dispute or Controversy, the arbitrator shall apply the substantive laws of the State of Texas. The arbitrator shall have authority, power and right to award damages and provide for other remedies as are available at law or in equity in accordance with the laws of the State of Texas, except that the arbitrator shall have no authority to award incidental or punitive damages under any circumstances (whether they be exemplary damages, treble damages or any other penalty or punitive type of damages) regardless of whether such damages may be available under the laws of the State of Texas. The parties hereby waive their right, if any, to recover punitive damages in connection with any arbitrated Dispute or Controversy.

Section 4. Consolidation. If the parties initiate multiple arbitration proceedings, the subject matters of which are related by common questions of law or fact and which could result in conflicting awards or obligations, then the parties hereby agree that all such proceedings may be consolidated into a single arbitration proceeding.

Section 5. Pendency of Dispute; Interim Measures. The existence of any Dispute or Controversy eligible for referral or referred to arbitration hereunder, or the pendency of the dispute settlement or resolution procedures set forth herein, shall not in and of themselves relieve or excuse either party from its ongoing duties and obligations under the contract or any right, duty or obligation arising therefrom; provided, however, that during the pendency of arbitration proceedings and prior to a final award, upon written request by a party, the arbitrator may issue interim measures for preservation or protection of the status quo.

Section 6. Complete Defense. The parties agree that compliance by a party with the provisions of this Exhibit shall be a complete defense to any Action or Proceeding instituted in any federal or state court, or before any administrative tribunal by any other party with respect to any Dispute or Controversy that is subject to arbitration as set forth herein, other than a suit or action alleging non-compliance with a final and binding arbitration award rendered hereunder.

Section 7. Costs. Each party shall bear the costs of its appointed representative to select the arbitrator of the Dispute or Controversy and its own attorneys' fees, while the costs of the arbitrator of the Dispute or Controversy incurred in accordance with the foregoing shall be shared equally by the parties. Additional incidental costs of arbitration shall be paid for by the nonprevailing party in the arbitration; provided, however, that where the final decision of the arbitrator is not clearly in favor of either party, such incidental costs shall be shared equally by the parties.