

**UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
SAN ANTONIO DIVISION**

**AQUIFER GUARDIANS IN URBAN)
AREAS and PEOPLE FOR EFFICIENT)
TRANSPORTATION, INC.,)**

Plaintiffs

v.

**UNITED STATES FEDERAL)
HIGHWAY ADMINISTRATION, and)
TEXAS DEPARTMENT OF)
TRANSPORTATION,)**

Defendants.

No. Civ. SA-05-CA-1170-XR

**Appendix of Facts, Supporting
Declarations, and Other
Exhibits In Support of Plaintiffs’
Motion for Preliminary Injunction**

INTRODUCTION

In this action, Plaintiffs, Aquifer Guardians in Urban Areas, and People for Efficient Transportation, Inc. (collectively “AGUA”), seek relief from the failure of the Federal Highway Administration and the Texas Department of Transportation (collectively “Highway Agencies”) to comply with the requirements of the National Environmental Policy Act (“NEPA”) for the proposed expansions of United States Highway 281 (“US 281”) and Loop 1604. US 281 bisects the Edwards Aquifer recharge zone from north to south as it extends north of Loop 1604. Plaintiff Exhibit (“Pl. Ex.”) A (map of recharge zone showing US 281 and Loop 1604). Loop 1604 in this vicinity runs east to west through the recharge zone. *Id.* These projects are “being proposed as . . . part of the ‘starter toll system’ for Bexar County.”

Plaintiffs allege that the highway expansions will injure their members by contributing to the ongoing degradation of the Edwards Aquifer, the region’s primary

water supply, as well as subjecting nearby residents to noise pollution above federal standards, exacerbating harmful air pollution levels that already exceed federal standards for ground level ozone, diminishing community cohesion, increasing the cost of travel, increasing congestion and travel times during the construction phase, and through urbanization contributing to the ongoing fragmentation of wildlife habitat, including for endangered species such as the golden-cheeked warbler.¹

Local communities are being overwhelmed by uncontrollable and unplanned residential growth, which is largely out of governmental control because of grandfathering legislation. “Law Lets Developers Ignore Growth Controls,” San Antonio Express News (10/16/2005) (Pl. Ex. E). As the San Antonio Express News recently editorialized, the “Aquifer faces peril as a city grows wrong way.” Pl. Ex. F.

FACTUAL BACKGROUND

I. THE PROPOSED PROJECT AND PIECEMEAL NEPA DOCUMENTS

A. The 1984 Environmental Assessment

The initial environmental documentation for the expansion of U.S. 281 consisted of an environmental assessment and a finding of no significant impact issued on August 8, 1984 (“1984 EA”) (Pl. Ex. G). The 1984 EA covered the expansion of a 4.9 mile stretch of U.S. 281 “from 0.8 miles north of Bitters Road to 2.5 miles north of Loop 1604” into a “six lane divided freeway with access roads and grade separations.” 1984 EA at 2. The 1984 EA identifies the “Purpose And Need For The Proposed Project” as resulting from “[s]evere congestion [that] has been caused by traffic back-ups at

¹ Plaintiffs’ members will be harmed by the construction and operation of this 15-lane highway. Pl. Ex. B (Standing declarations of some of plaintiffs’ members). This motion is also supported by the expert testimony of George Veni, Ph.D. and William Barker, MA, AICP, Pl. Exs. C and D, and other documentary evidence attached as Pl. Ex. E-S.

signalized intersections which provide movement across this expressway.” Id. at 4 (emphasis added).

The initial heading in the 1984 EA is entitled “I. Description of Project and Reasonable Alternatives,” however there is no mention of any other alternatives that were identified, considered or analyzed. 1984 EA at 2-4. The 1984 EA contains slightly over two pages of “Discussion of the Potential Social, Economic and Environmental Effects” and summarily dismisses any environmental and socioeconomic concerns. Id. at 4-6. The 1984 EA concludes that the project: “will have no significant impact on the traditional trend of northward development,” id. at 4, “will not involve any park, recreation, wildlife or historic preservation lands, nor any flowing streams or lakes falling under any federal, state or local statute, id. at 5; “will [cause it to] be easier, safer and less expensive to travel [and] cause no disruption of existing community cohesiveness, id.; “has no inconsistencies involving federal, state, or local laws relating to the environment” involving air, noise and water pollution, id.; and “will create no negative impacts on any elements in the aquatic area,” id. at 6.

The 1984 EA does not contain any section entitled secondary and cumulative impacts nor any discussion or analysis of potential indirect and cumulative impacts. The 1984 EA fails to identify any other past, present or reasonably foreseeable highway projects – or other types of development – in the area that might result in cumulative impacts along with the proposed project on environmental resources in the area, such as the Edwards Aquifer and endangered species.

The 1984 EA fails to describe in any detail the environmental baseline for the natural resources in the area. For example, there is no discussion of the then existing

water quality conditions in the Edwards Aquifer, including whether any pollutants potentially caused by highway infrastructure have been detected in the aquifer.

On August 8, 1984, the Assistant Division Administrator for the FHWA signed a determination “that this project will not have any significant impact on the human environment.” Pl. Ex. H. The finding of no significant impact (“FONSI”) was based solely on the FHWA’s review of the 1984 EA submitted by the Texas State Department of Highways and Public Transportation. According to FHWA’s FONSI, the 1984 EA “provide[d] sufficient evidence and analysis for determining that an environmental impact statement is not required.” *Id.*

B. The 2000 Environmental Assessment Reevaluation

An environmental assessment reevaluation was issued in March 2000 (“2000 Reevaluation”) (Pl. Ex. I). The 2000 Reevaluation states that the “overall design has remained the same as described in the original EA.” 2000 Reevaluation at 1. The 2000 Reevaluation states that the only change in the project area is that “there has been extensive commercial/retail development at the intersection of US 281 and Loop 1604 and several commercial developments on the east side and a new residential subdivision constructed on the west side of US 281 at Evans Road.” *Id.* at 1. The 2000 Reevaluation concludes that there “should not be any negative economic impacts,” *id.* at 1, there “will not be any significant degradation of existing environmental considerations due to this proposed work and it is not expected to cause any contamination to or effect upon any public water supply,” *id.* at 2, “the project will not have a substantial impact on air quality,” *id.* at 5, no “noise abatement measures are both feasible and reasonable,” *id.* at 9, and “no adverse impacts to the Golden-cheeked Warbler and the Black-capped Vireo

are expected,” *id.* at 11. The 2000 Reevaluation concludes “that there have not been any significant changes to the assessed area [and c]oncurrence that this project remains a FONSI is anticipated.” *Id.* at 14.

The 2000 Reevaluation does not contain any description of the environmental baseline. Under the “Water Quality” section, the 2000 Reevaluation states that “[t]here will not be any significant degradation of existing environmental considerations due to the proposed work and it is not expected to cause any contamination to or effect upon any public water supply.” 2000 Reevaluation at 2. Nowhere in the 2000 Reevaluation is there any description of what the “existing environmental [conditions]” are in relation to water quality of the Edwards Aquifer. The 2000 Reevaluation does not contain any discussion of whether or not any pollution of the Edwards Aquifer has occurred or whether any pollutants potentially related to transportation infrastructure have been found in the Edwards Aquifer.

As with the 1984 EA, the 2000 Reevaluation does not contain any discussion of alternatives to the proposed action. Also, as with the 1984 EA, the 2000 Reevaluation does not contain any discussion of indirect and cumulative impacts. The 2000 Reevaluation similarly fails to identify any other past, present or reasonably foreseeable highway projects – or other types of development – in the area that might result in cumulative impacts along with the proposed project on environmental resources in the area, such as the Edwards Aquifer and endangered species.

The 2000 Reevaluation does acknowledge that post-project noise levels will increase and that the projected noise levels will exceed FHWA established Noise Abatement Criteria. 2000 Reevaluation at 8, Table III. The 2000 Reevaluation

concludes that Noise Abatement measures are not feasible and “therefore, no noise abatement measures are proposed for this project.” Id. at 9. The 2000 Reevaluation fails to consider whether noise levels that exceed federal Noise Abatement Criteria for adjacent residential and business development – and cannot be mitigated – are significant impacts requiring the preparation of an environmental impact statement.

The 2000 Reevaluation dismisses traffic management devices that could moderate the speed of traffic and thereby reduce noise (as well as smooth the overall flow of traffic during times of congestion) because they might “increase congestion and air pollution.” 2000 Reevaluation at 9. However, there is no quantification of to what extent traffic management devices would increase congestion or air pollution. Elsewhere, the 2000 Reevaluation states that carbon monoxide (“CO”) concentrations are below National Ambient Air Quality Standards (“NAAQS”) “and therefore, the project will not have a substantial impact on air quality.” Id. at 5. So even though noise pollution will exceed federal standards and air pollution (at least for the only pollutant, CO, analyzed in the 2000 Reevaluation) does not exceed federal standards, TxDOT dismisses reductions in noise levels without any quantification of the air pollution trade-off or whether the increased air pollution would result in the exceedance of air pollution standards.

The 2000 Reevaluation fails to discuss any air pollutants besides CO, such as ground level ozone. TxDOT notes that “[t]his project is located in Bexar County, which is currently classified as being in attainment status of the NAAQS and therefore, conformity [with Clean Air Act state implementation plan] does not apply” Id. at 4-5

The 2000 Reevaluation and FONSI were approved by FHWA on December 11, 2000.

C. The 2004 Environmental Assessment Reevaluation

A second environmental assessment reevaluation was issued in December 2004 (“2004 Reevaluation”) (Pl. Ex. J). The 2004 Reevaluation covers expansion of U.S. 281 “from Sonterra Blvd. (0.4 miles north of Loop1604) to 2.5 miles north of Loop 1604” and a “grade separation of U.S. 281 over Stone Oak Parkway.” 2004 Reevaluation at 1. TxDOT describes these projects as “being proposed as a toll facility as part of the ‘starter toll system’ for Bexar County.” *Id.* “Other projects in the ‘starter toll system’ include the expansion of Loop 1604 from IH 10 to IH 35 (north), the inclusion of direct connectors at the IH 10/Loop 1604 interchange and the inclusion of a fully-directional interchange at Loop 1604/US281.” *Id.*

The 2004 Reevaluation describes the project as a “divided facility [that] would consist of six mainlanes with the addition of three lane frontage roads” in each direction. 2004 Reevaluation at 2. According to TxDOT, “the design concept and scope has remained the same as described in the original environmental documents, except that the US 281 mainlanes are now proposed to be tolled.” *Id.* However, the 2004 Reevaluation diagram depicts a total of 15 lanes, with an additional southbound auxiliary lane and two additional northbound auxiliary lanes more than what was considered in the 1984 EA. Compare 2004 Reevaluation (Figure 2B) with 1984 EA (Figure 2).

The 2004 Reevaluation reiterates the 1984 EA’s statement of Purpose and Need focusing on the “signalized intersections” that “result[] in tremendous congestion, particularly during peak periods, thus reducing the overall operational efficiency of the corridor.” 2004 Reevaluation at 4. As with the 1984 EA and the 2000 Reevaluation, the 2004 Reevaluation does not have an Alternatives section, nor are any alternatives

described, considered or analyzed. Rather than prepare a new, complete environmental assessment or environmental impact statement for this project, the original environmental assessment for which was prepared twenty years earlier, TxDOT prepared a “reevaluation” that purports to provide “[u]pdated and other pertinent information relative to the environmental documentation” Id. at 5.

The 2004 Reevaluation has a greatly expanded discussion of socio-economic factors, such as demographics, age distribution, incomes levels, and environmental justice factors. Id. at 5-17. One socio-economic related conclusion reached by TxDOT is that “[t]he proposed project would not adversely affect community cohesion [because] US 281 is currently the major highway running north and south through San Antonio [and] serves as a boundary separating neighborhoods and communities.” Id. at 10. Since there is no discussion of alternatives however, there is, of course, no analysis of whether alternative context sensitive designs could increase community cohesion.

In the discussion of economic impacts, TxDOT asserts that the project will result in “reduced vehicle operating costs,” as well as improve the “poor” “level of . . . psychological comfort afforded the driver.” 2004 Reevaluation at 14. However, there is no discussion of the amount of the tolls drivers would be forced to pay and, more importantly, whether those tolls would offset or surpass the promised “reduced vehicle operating costs,” as well as the impact of the tolls on the “psychological comfort” of the driver. Id. Additionally, while the 2004 Reevaluation acknowledges the adverse economic impacts of highway construction on business along that route, there is no indication that the potentially increased economic impacts of tolling of the highway on those businesses was considered in that analysis.

While the 2000 Reevaluation emphasized that Bexar County was in attainment with all air quality standards at that time, the 2004 Reevaluation acknowledges that the “San Antonio area (3 counties: Bexar, Comal and Guadalupe) has recently been classified as non-attainment under the federal 8-hour ozone national ambient air quality standards . . .” 2004 Reevaluation at 17. Yet, the 2004 Reevaluation again fails to describe or analysis the air quality impacts of current and projected traffic on U.S. 281 and other local roads on local residents, relying on an exemption from the substantive conformity requirements of the Clean Air Act resulting from the San Antonio area’s participation in a program known as the Early Action Compact. The 2004 Reevaluation fails to describe any of the well-documented health effects of highways and fails to model existing and projected ozone concentrations along the study area.

The 2004 Reevaluation reiterates that “previous traffic noise analysis concluded that no noise abatement measures would be feasible and reasonable for any of the impacted receivers . . . and therefore, the previous noises [sic] analysis remains valid.” 2004 Reevaluation at 18. As with the 2000 Reevaluation, the 2004 Reevaluation fails to analyze whether the non-mitigable noise impacts are significant. Id.

The entire discussion of the ecological and utilitarian significance of the Edwards Aquifer and potential impacts to the Aquifer in the 2004 Reevaluation consists of the following paragraph:

The project is located over the Edwards Aquifer Recharge Zone and therefore, a Water Pollution Abatement Plan is currently being prepared in accordance with 30 Texas Administrative Code (TAC) Chapter 213, Edwards Aquifer Rules and would be submitted to the TCEQ for approval. Since the project is federally funded, coordination with the Environmental Protection Agency’s Sole Source Aquifer Program would be required.

2004 Reevaluation at 18.

The 2004 Reevaluation summarily concludes that there will be no effect on any endangered species because such “occurrences are all 1.5 miles or more from the project area” 2004 Reevaluation at 32. The 2004 Reevaluation fails to consider whether there will be any secondary or cumulative impacts on endangered species outside the project area despite recognizing elsewhere that “[g]rowth and development are the principal secondary impacts related to highway improvement projects.” Compare *Id.* at 32 with *id.* at 36. In the secondary and cumulative impacts section, the 2004 Reevaluation states “[s]econdary development associated with the proposed project may result in impacts to biological communities and natural habitats that, in turn, may have cumulative effects that result in habitat fragmentation and disruption of wildlife populations.” *Id.* at 36. However, nowhere in the 2004 Reevaluation is that analysis ever extended to the consideration of the significance of impacts to endangered species, such as the golden-cheek warbler whose habitat is being lost at a substantial rate in the area due to massive residential developments.

FHWA issued a finding of no significant impact for the project in November 2005.

II. PROJECT LOCATION AT THE CONFLUENCE OF THE MOST ENVIRONMENTALLY SENSITIVE AND RAPIDLY DEVELOPING AREA IN BEXAR COUNTY

There is nowhere in Bexar County where the effects of massive and rapid urbanization are being felt more acutely and on a more sensitive and important environment. Declaration of William Barker, MA, AICP (“Barker Declaration”) (Pl. Ex. D) at ¶ 4 n.5.

A. Ecological Significance and Vulnerability of Edwards Aquifer

The expansions of U.S. 281 and Loop 1604 crisscross the recharge zone of the Edwards Aquifer. Pl. Ex. A. The Edwards is a federally designated sole source drinking water aquifer that provides water to over 1.7 million people and the spring flows of which are vital to the survival of at least nine endangered species in Comal Springs and San Marcos Springs. The Edwards Aquifer was the first aquifer in the Nation designated as a "sole source" aquifer under the "Gonzalez Amendment" to the Safe Drinking Water Act, which had as its specific purpose the protection of the Edwards Aquifer from federally financed or subsidized projects. See 42 U.S.C. § 330h-3(e); Barker Declaration at ¶16.

The Edwards is a karstic aquifer and therefore is highly vulnerable to water pollution because surface water quickly enters the aquifer through recharge features, such as caves, sinkholes and streambeds, without significant filtration compared to aquifers that are fed by water gradually seeping through layers of soil and substrate.

According to a leading local hydrogeology expert:

The Edwards is a karst aquifer, internationally recognized as the aquifer type most vulnerable to pollution. Texas' Groundwater Protection Unit (1989) supported this view by recognizing the Barton Springs and San Antonio Segments of the Edwards as the aquifers most susceptible to contamination in the state. Karst aquifers have complex flowpaths that allow rapid, unfiltered movement of contaminants from source areas to water supplies through caves, solutionally enlarged fractures, and related conduits.

The vulnerability of the Edwards Aquifer to contamination is illustrated by pollutants appearing in water wells with apparently increasing frequency in the San Antonio area where urban development over the recharge zone is greatest. The U.S. Geological Survey associated most contaminants in the aquifer with urban activities in San Antonio (Ging et al., 1997). Since then, additional reports of contaminants in aquifer water continue to be recorded and monitored by the Edwards Aquifer Authority and other agencies.

Declaration of George Veni, Ph.D. ("Veni Declaration") (Pl. Ex. C) at ¶¶ 5, 8.

B. Endangered Species in the Area

1. golden-cheeked warbler

The area north of the U.S. 281/Loop 1604 intersection also contains habitat that is vital to the recovery of the endangered golden-cheeked warbler (“Warbler”). The Warbler is a small bird that feeds on insects. The Warbler “is the only endemic breeding bird of Texas [and] its entire nesting area occurs within the State.” Final Rule to List the Golden-cheeked Warbler as Endangered, Fish and Wildlife Service, 55 Fed. Reg. 53153, 53154 (December 27, 1990) (Pl. Ex. K). After “conduct[ing] an extensive review of the status of the [species] and determin[ing] that an emergency posing a significant risk to the well-being of the golden-cheeked warbler existed,” the United States Fish and Wildlife Service (“FWS”) issued an emergency rule to list the species as endangered under the Endangered Species Act (“ESA”) on May 4, 1990. 55 Fed. Reg. 53154 (citing 55 Fed. Reg. 18844). A final rule designating the species as endangered was issued on December 27, 1990. 55 Fed. Reg. 53153.

The preeminent reason for the listing of the species was the ongoing and threatened destruction and fragmentation of its habitat from residential development and highway construction. While range management practices have had some impact, according to FWS:

Larger areas of continuous [habitat] are often subdivided and fragmented, especially near expanding population centers such as Austin, San Antonio, and the Austin-San Antonio corridor. Because of the growth and development in this corridor, the greatest rate of golden-cheeked warbler habitat loss has occurred in the southern and eastern portions of the Edwards Plateau.

...

Population growth and resulting loss and fragmentation of warbler habitat in these counties are major threats to the largest contiguous areas of preferred warbler habitat.

...

Highway construction has destroyed warbler habitat in Texas, and planned future construction would destroy and fragment additional warbler habitat. From 1989 to 2009, the number of lane miles in the State is projected to increase from 183,495 to 241,363, and the number of vehicles registered is projected to increase from 13,970,000 to 17,183,100. Over the next twenty years, [TxDOT] plans to spend over sixty billion dollars on highway construction. Several commentors provided information on specific proposed highway projects that, if constructed, would destroy warbler habitat.

...

Certain proposed private developments would also destroy and fragment warbler habitat. Interstate 35 connects San Antonio, New Braunfels, San Marcos, and Austin, and parallels the eastern edge of the warbler's range. It has been designated as the Greater San Antonio-Austin Corridor by the local business community, and intense development is planned there. Commentors provided descriptions of private developments that threaten several thousand acres of remaining warbler habitat. For example, the Woodland Hills Development of Cielo Vista properties surrounds Friedrich Wilderness Park near San Antonio. There are plans for 520 hectares (1,300 acres) of dense housing and suburban development, including single family homes, garden homes, apartments, offices, hotels, and other commercial enterprises, in the midst of excellent warbler habitat.

55 Fed. Reg. at 53157.

The FWS compiled a team of experts to assist in the recovery of the species, known as a "Recovery Team." In 1992, a recovery plan was finalized to guide the conservation of the species. Golden-Cheeked Warbler Recovery Plan, U.S. Fish and Wildlife Service, Region 2 Albuquerque, New Mexico (1992) (Pl. Ex. L; excerpts). The Warbler recovery plan notes:

Human activities have eliminated much warbler habitat within parts of the warbler's range that existed at the time of Pulich's (1976) initial surveys in 1962. Recent surveys suggest that the rate of habitat loss is accelerating as suburban developments spread into prime warbler habitat along the Balcones Escarpment, especially in the growth corridor from Austin to San Antonio (Wahl et al.1990).

Id. at 1.

The recovery plan further concludes that urbanization along the Austin-San Antonio corridor is the most imminent threat to the species:

Urbanization along the Waco-Austin-San Antonio corridor is an immediate threat. However, Pulich (1976) and Wahl et al. (1990) documented the loss of habitat in rural settings also. For purposes of recovery, the threat from urbanization is often considered more serious than agricultural activities because habitat is permanently removed and is usually replaced by structures of some sort. Also the secondary impacts of noise, lighting, expanded infrastructure, urban predators, etc. in urban areas may have an additional negative impact on GCWs and their habitat.

Id. at 83.

Subsequent to the release of the recovery plan in 1992, the Recovery Team has emphasized the absolute necessity of maintaining and recovering the species in Bexar County if the Warbler is to survive, yet alone recover to the point at which it no longer requires the protections of the ESA. According to the Recovery Team, “in looking at the relative contribution that various regions make to overall species’ survival, some regions are more critical than others.” Golden-cheeked Warbler Recovery Team April 2-3, 1998 Meeting Minutes: Responses to USFWS’s Questions (Pl. Ex. M) at 1. “Looking at the regions from this perspective, the most critical to the survival of the species are regions 5 and 6 (these two regions collectively encompass the Austin-San Antonio corridor). Id. at 2; see also id. at Figure 4 (depicting range of warbler and placing Bexar County in Region 6). The Recovery Team speculated that the other regions are “peripheral areas and small, fragmented sites [that] may be functioning as population sinks that are dependant on the health and productivity of the core source populations in regions 5 and 6.” Id. at 2. According to the Recovery Team:

The core areas (5 and 6) are so important to support peripheral populations and overall species survival, many team members felt there needed to be weight given to higher carrying capacities (2000-3000 singing males) in

these areas to ensure that their source/stability influences would continue to be available, particularly with the threat of encroaching urban development At least two populations are needed for 5 and 6. In recovery region 5, sufficient habitat only exists to support two populations (the [Balcones Canyonland Preserves] and [Balcones Canyonland National Wildlife Refuge (“BCNWR”)] areas). Little habitat exists in Williamson County, S. Travis County or N. Hays County, or west between Lake Buchanan and the BCNWR.

. . . .

In summary, because of their importance to the [Warbler’s] survival, at least two viable populations are needed for both recovery regions 5 and 6. The Austin-San Antonio corridor is undergoing rapid urban expansion, and thus each population in these regions should have enough area to support a carrying capacity of 2,000-3,000 singing males Preserve design and configuration and buffers from urban areas are critical to minimize edge effects and threats.

Id. at 6-7.

It is currently unknown whether sufficient habitat remains in the recovery unit encompassing Bexar County to meet the criteria for recovery of the species. “Additional studies are currently underway to determine whether or not GCWA habitat patches large enough to sustain two populations with over 3,000 breeding pairs each are feasible in this recovery unit.” Draft Environmental Assessment/Habitat Conservation Plan for a Portion of the Cibolo Canyon Property (Master Phase II), Bexar County, Texas (May 13, 2005) (Pl. Ex. N; excerpts only) at 57.²

2. karst habitat and species

The cave environments of central Texas have “been recognized to support one of the most important cave faunas in the world.” See e.g. Balcones Canyonlands Preserve Habitat Conservation Plan and Final Environmental Impact Statement. City of Austin & Travis County, Texas (March 1996) (Pl. Ex. O; excerpts) at 3-5 – 3-6. The dissolution of calcium carbonate from limestone bedrock by groundwater forms the unique

² The Cibolo Canyon development is one of many large scale developments proposed along US 281 that will harm the Warbler. Pl. Ex. N at Fig. 1 (showing location near US 281 north of proposed construction).

subterranean caves, sinkholes and fractures of central Texas known as karst terrain. Numerous karst areas of the Edwards limestone are isolated from one another by river and stream canyons, drainage divides, outcroppings of noncavernous formations, and sometimes faults. Similar to an island, each isolated piece of karst has acquired an endemic biota.” Id. at 3-2.

In 1998, the Karst Waters Institute published a list of the ten most endangered karst communities of the world; “a project that evolved out of the proceedings of a scientific conference held in February 1997 on the conservation and protection of karst biota”. The karst environment of the Edwards Aquifer is listed third. Christopher S. Belson, Karst Waters Institute's Second Annual Top Ten List of Endangered Karst Ecosystems, Vol. 7 (Fall/Spring 1999) (Pl. Ex. P).

The troglobites inhabiting the unique karst environment within central Texas are important not only for biodiversity, but also as indicators of the ecosystem’s health, as one of the richest sources of karst biota in the world. Further, the scientific value of cave fauna reaches to “evolutionary biologists and biogeographers and is an educational resource as well.” The Status and Range of Five Endangered Arthropods from caves in the Austin, Texas Region, Elliott & Redell, (1989) (Pl. Ex. Q) at 8. The troglobites inhabiting the cave environment of central Texas may be the only remaining animals representing “ancestral species inhabit[ing] surface habitats no longer present” within Central Texas. Id. at 8. “These relictual species have been called “living fossils”. Id. In Central Texas, the ancestors of several of these relicts once inhabited moist forests covering the Edwards Plateau during the Pleistocene. The cave dwelling species are our only remaining evidence of this bygone surface fauna.” Id.

According to one of the foremost karst geology experts in the region, “[t]he highway project area . . . extends through an area known to contain karst invertebrate species federally listed as endangered.” Veni Declaration at ¶ 9. Nine species known only from northern Bexar County have been listed by the U. S. Fish and Wildlife Service “as endangered due primarily to adverse impacts associated with the area’s urbanization.” Id. According to Dr. Veni, who designated the karst habitat zones in the area for the FWS, “[t]he northern 4,120 m (75.3%) of the project area extends through Karst Zone 1 where the listed species are known to occur; the southern 1,350 m (24.7%) of the project area extends over Karst Zone 2 where there is a high probability of the species being present.” Id.

C. The Severe Environmental and Health Effects of Highways, Particularly On Aquatic Species and As Facilitator of Urban Sprawl.

Highway corridors now cover a full one percent of the land surface of the United States and their direct environmental impacts extend to approximately 20% of the Nation’s land. Angermeier, P.L., A. P. Wheeler and A. E. Rosenberger. 2004. A Conceptual Framework for Assessing Impacts of Roads on Aquatic Biota. Fisheries December 2004, Vol. 29 no. 12, pp. 19-29 at 19 (“Angermeier”) (Pl. Ex. R). Angermeier et al. describe the environmental effects of three phases of highway impacts: construction, presence, and urbanization. Highway construction and presence have generally concentrated and short to medium term impacts, while highway induced urbanization has diffused, yet severe, and long term impacts. A primary impact of the road construction phase is the discharge of sediment to waterways.

Construction phase impacts are not as long lasting as urbanization impacts, but can be acute. FWS has explained that:

The volume of sediments observed in urbanizing portions of the Barton Springs watershed and increased turbidity during periods of major construction indicate that such activities influence these phenomena. . . . the relationship between urban runoff and increased erosion and sedimentation is well documented. Increases in turbidity tend to coincide with land clearing and construction activities, and discharge of turbid runoff from construction projects has been observed entering receiving waters in the Barton Springs watershed.

62 Fed. Reg. 23383.

It is widely recognized that “sediments generated during construction can substantially depress certain populations of [aquatic species].” Angermeier at 21. Angermeier et al note that “even though effects of construction generated sediment may extend several [kilometers] beyond the construction site and persist for years after construction, large-scale and long-term effects rarely are assessed or studied.” Id.

Highways have substantial adverse effects on water quality from a wide range of pollutants besides total suspended solids (sediments). As FWS has stated:

Highways can have major impacts on groundwater quality (TNRCC 1994; Barrett et al. 1995). The TNRCC (1994) lists highways and roads as the fifth most common potential source of groundwater contamination in the Edwards Aquifer. Elevated concentrations of metals, Kjeldahl nitrogen, and organic compounds have been detected in groundwater near highways and their control structures.

62 Fed. Reg. 23386.

Water pollution abatement plans for highways are generally focused on total suspended solid (“TSS”) removal efficiencies. However, controls on TSS are not adequate surrogates for the other pollutants associated with highways. For example, the FWS Austin office’s staff, in commenting on certain water quality measures focused on TSS removal, recently stated:

Emphasis on TSS [total suspended solids] removal is based on the assumption that TSS is an adequate surrogate for all other contaminants . . .

. TSS may not be an adequate surrogate for certain toxic pollutants of concern (soluble pesticides, nutrients or heavy metals). For example, a given BMP may not reduce dissolved metals concentrations to levels that avoid sublethal/lethal effects to species. In addition, the approach of looking at the water quality targets, parameter by parameter, ignores what we really want to know, namely, the toxicity of stormwater reaching the receiving water body with listed species. If a BMP removes 80% of TSS and still discharges stormwater with adverse effects, there is the real likelihood of take of [endangered aquatic species].

Pl. Ex. S (emphasis added). As Dr. Veni further explains:

Highway water quality studies at The University of Texas at Austin have found that different structural controls have different rates of pollutant removal; some methods that reduce certain contaminants may increase others (Barrett et al., 1995; Tenney et al., 1995). All structural controls require regular maintenance to be effective, but a large percentage in Bexar County are out of compliance and apparently ineffective, despite State and local oversight . . . This is critical because data from several studies clearly demonstrate that because of karst aquifers' high vulnerability to pollution, the presence of contaminants over a karst recharge zone is the most critical factor in assessing the risk of groundwater contamination . . .

Veni Declaration at ¶ 13; see also Barker Declaration at ¶¶ 16.

Highways also are significant threats to human health due to pollution of the air and water. For example, toxic compounds associated with motor vehicle emissions, such as benzene, have been detected in the Edwards Aquifer. Barker Declaration at ¶ 16-17. Studies have shown that highways are a significant risk factor for cancer, asthma attacks, bronchitis, cardiovascular disease and other harmful health effects due to various emissions from motor vehicles. *Id.* at 18.

Angermeier et al. conclude that transportation policy focuses primarily on impacts from the road construction phase and typically excludes the often far more extensive and severe impacts of urbanization. The authors explain:

Urbanization, the final phase of road development, affects aquatic systems across large spatial and temporal frames (up to thousands of square

kilometers and centuries respectively). Urbanization . . . has accelerated in recent decades and is a major contributor to contamination of surface and ground water and to modification of hydrology in the United States. Over 130,000 km of U.S. streams and rivers are impaired by urbanization, making it a leading cause of water-body impairment. Moreover, urbanization endangers at least 275 species in the United States, where it is the second-leading cause (next to non-native species) of species imperilment.

The relation between road building and urbanization is noteworthy in the context of road impacts on aquatic biota because it is typically ignored in official biological assessments. This omission is puzzling in NEPA-driven assessments . . . given that highway projects are one [of] the main types of federal action that cause urban sprawl. Effects of urbanization, which may lag behind road construction for decades, are generally excluded from impact assessments despite their severe, well-documented consequences for biota. More explicit recognition of the relation between road building and urbanization and of the effects of urbanization on aquatic biota is crucial to comprehensive assessment of road impacts.

Angermeier at 22.

Dated this 21st day of December, 2005

Respectfully Submitted,

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