

AN ORDINANCE 2011-09-15-0763

**AUTHORIZING GIVING A CONSERVATION EASEMENT TO THE NATURE CONSERVANCY FOR THE SCENIC CANYON NATURAL AREA AND TRANSFERRING ANY RESULTING U.S. FISH AND WILDLIFE SERVICE ENDANGERED-SPECIES MITIGATION CREDITS TO THE U.S. ARMY FOR THE BENEFIT OF ITS ACTIVITIES ON CAMP BULLIS.**

\* \* \* \* \*

**WHEREAS**, the City acquired the Scenic Canyon property with money dedicated to Edwards aquifer protection.

**WHEREAS**, protecting the quantity and quality of recharge into the Edwards Aquifer has the incidental effect of benefitting endangered species such as the Golden-Cheeked Warbler.

**WHEREAS**, the City is amenable to placing restrictions on the Scenic Canyon property specifically aimed at protecting endangered species for so long as such restrictions do not detract from aquifer protection.

**WHEREAS**, encouraging endangered-species habitat at Scenic Canyon may yield endangered-species mitigation credits from the U.S. Fish and Wildlife Service that, if transferred to the U.S. Army, would tend to protect the Army's operations at Camp Bullis.

**WHEREAS**, protecting the Army's operations at Camp Bullis is important to keeping Fort Sam Houston open, and keeping Fort Sam Houston open is important to the economic well being of the City.

**WHEREAS**, the Scenic Canyon property is described in detail on **Attachment I**.

**BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF SAN ANTONIO:**

**SECTION 1.** The City is authorized to negotiate, execute, and deliver a conservation easement with The Nature Conservancy relating to the Scenic Canyon property for protection of quantity and quality of Edwards Aquifer recharge, with the additional goal, insofar as it is compatible with aquifer protection, of protecting endangered-species habitat. If any U.S. Fish and Wildlife Service endangered-species mitigation credits arise out of the conservation easement, the City must transfer those credits to the U.S. Army in support of the Army's mission at Camp Bullis. The City Attorney must approve the form of the conservation easement and related documents, if any, and the City Manager must determine that the substance of all documents are in the City's best interests.

**SECTION 2.** The City Manager and her designee, severally, are authorized and directed to execute and deliver all documents reasonably pertinent to the above-described conservation-easement transaction and otherwise to do all things necessary or convenient to effectuate the described transaction.

**SECTION 3.** All attachments to this ordinance are incorporated into it for all purposes as if they were fully set forth.

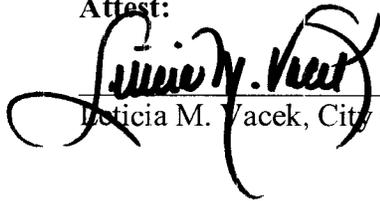
**SECTION 4.** The City will receive no monetary consideration for the conservation easement, so no fiscal-related provisions are called for.

**SECTION 5.** This ordinance becomes effective 10 days after passage, unless it receives the eight votes requisite to immediate effectiveness under San Antonio Municipal Code § 1-15, in which case it becomes effective immediately.

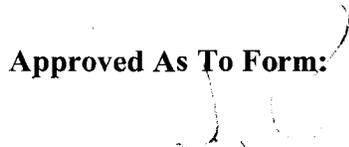
**PASSED AND APPROVED** this 15<sup>th</sup> day of September 2011.

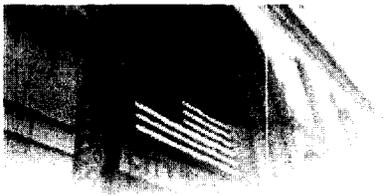
  
M A Y O R  
Julián Castro

Attest:

  
\_\_\_\_\_  
Leticia M. Vacek, City Clerk

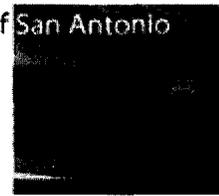
Approved As To Form:

  
\_\_\_\_\_  
Michael D. Bernard, City Attorney



Request for  
**COUNCIL**  
**ACTION**

City of San Antonio



## Agenda Voting Results - 17

<b>Name:</b>	5, 7, 9, 10, 11A, 11B, 12, 14, 16, 17, 18, 19, 21						
<b>Date:</b>	09/15/2011						
<b>Time:</b>	02:21:33 PM						
<b>Vote Type:</b>	Motion to Approve						
<b>Description:</b>	An Ordinance authorizing a conservation easement to the Nature Conservancy for Scenic Canyon Natural Area and authorizing the transfer of U.S. Fish and Wildlife Service endangered species mitigation credit for the use and benefit of Ft. Sam Houston on their Camp Bullis site. [Pat DiGiovanni, Deputy City Manager; Xavier Urrutia , Director, Parks & Recreation]						
<b>Result:</b>	Passed						
Voter	Group	Not Present	Yea	Nay	Abstain	Motion	Second
Julián Castro	Mayor		x				
Diego Bernal	District 1		x				x
Ivy R. Taylor	District 2		x				
Jennifer V. Ramos	District 3		x			x	
Rey Saldaña	District 4		x				
David Medina Jr.	District 5		x				
Ray Lopez	District 6		x				
Cris Medina	District 7	x					
W. Reed Williams	District 8		x				
Elisa Chan	District 9		x				
Carlton Soules	District 10	x					

## Attachment I

**BEING** 452.7 acres of land, consisting of 472.7 acres of land **SAVE & EXCEPT** 20.0 acres of land, out of a called 472.596 acre tract as recorded in Volume 11744, Page 1981 of the Real Property Records of Bexar County, Texas and being out of the J. M. Ross Survey No. 226, Abstract 651, County Block 4569A, the M. A. Bryan Survey No. 229, Abstract 93, County Block 4571, the Albert Schmidt Survey No. 3, Abstract 1164, County Block 4570, and the Texas Central Railway Co. Survey No. 1, Abstract 1028, County Block 4605 in Bexar County, Texas and also being all of Lot 3, County Block 5744, Scenic Loop Playground Subdivision Unit 2 as recorded in Volume 980, Page 237 of the Deed and Plat Records of Bexar County, Texas, being partially in the City of San Antonio, Bexar County, Texas, said 452.7 acres being more particularly described by metes and bounds as follows:

**BEGINNING** at a found 1/2" iron rod in the west right-of-way line of Scenic Loop Road for the northeast corner of Lot 3 of said Scenic Loop Playground Subdivision Unit 2;

**THENCE** South 03° 09' 36" West, a distance of 99.15 feet with the west right-of-way line of Scenic Loop Road to a found 60D nail for angle;

**THENCE** South 02° 05' 28" East, a distance of 134.83 feet to a 6" cedar fence post for the southeast corner of said Lot 3;

**THENCE** South 86° 51' 50" West, a distance of 764.30 feet with south line of said Lot 3 to a found 1/2" iron rod with "Flores" cap for the southwest corner of said Lot 3 and northwest corner of Lot 4;

**THENCE** South 03° 17' 31" West, a distance of 258.81 feet with the west line of said Lot 4 to a 5" cedar fence post for the northeast corner of a called 22.470 acre tract as recorded in Volume 9615, Page 75 and the southeast corner of this tract;

**THENCE** South 78° 50' 04" West, a distance of 608.29 feet with the south line of said 472.596 acres to a 6" cedar post;

**THENCE** South 79° 07' 00" West, a distance of 2376.95 feet for the south line of said 472.596 acres to a 5" cedar post;

**THENCE** South 86° 36' 55" West, a distance of 787.89 feet with the south line of said 472.596 acres to a 5" cedar post

**THENCE** North 80° 03' 21" West, a distance of 293.08 feet with the south line of said 472.596 acres to an 8" cedar post;

**THENCE** North 84° 10' 40" West, a distance of 400.15 feet with the south line of said 472.596 acres to an 8" cedar post;

**THENCE** North 82° 56' 04" West, a distance of 240.10 feet with the south line of said 472.596 acres to a 19" Oak;

**THENCE** North 81° 13' 40" West, a distance of 189.12 feet with the south line of said 472.596 acres to a found 1/2" iron rod for the southwest corner of this tract and the southeast corner of a called 55.55 acre tract as recorded in Volume 6321, Page 580 of the Real Property Records of Bexar County, Texas;

**THENCE** North 09° 36' 08" West, a distance of 713.07 feet with the west line of said 472.596 acres to found 1/2" iron rod with "Flores" cap;

**THENCE** North 09° 43' 04" West, a distance of 1263.80 feet with the west line of said 472.596 acres to a found 1/2" iron rod for the southeast corner of the Minihan tract as recorded in Volume 11856, Page 1970 of the Real Property Records of Bexar County, Texas;

**THENCE** North 64° 13' 09" East, a distance of 217.78 feet with the west line of said 472.596 acres to a found 1/2" iron rod;

**THENCE** North 20° 16' 33" East, a distance of 406.17 feet with the west line of said 472.596 acres to a 4" cedar post;

**THENCE** North 21° 04' 26" West, a distance of 188.36 feet with the west line of said 472.596 acres to found 1/2" iron rod;

**THENCE** North 33° 45' 47" West, a distance of 118.43 feet with the west line of said 472.596 acres to a 6" cedar post;

**THENCE** North 34° 43' 51" West, a distance of 291.97 feet with the west line of said 472.596 acres to a 20" cedar;

**THENCE** North 37° 08' 38" West, a distance of 559.41 feet with the west line of said 472.596 acres to a 6" cedar post;

**THENCE** North 05° 53' 51" East, a distance of 571.88 feet with the west line of said 472.596 acres to a found 1/2" iron rod;

**THENCE** North 17° 02' 53" East, a distance of 127.71 feet with the west line of said 472.596 acres to found 1/2" iron rod;

**THENCE** North 00° 46' 46" East, a distance of 300.68 feet with the west line of said 472.596 acres to found 1/2" iron rod;

**THENCE** North 33° 58' 31" West, a distance of 57.58 feet with the west line of said 472.596 acres to a found 1/2" iron rod for the northeast corner of a called 25.00 acre tract as recorded in Volume 6072, Page 1583 of the Real Property Records of Bexar County, Texas and being on the south line of a called 41.39 acre tract as recorded in Volume 10598, Page 832 of the Real Property Records of Bexar County, Texas and being the northwest corner of this tract;

**THENCE** South 80° 40' 26" East, a distance of 2480.05 feet with the south line of said 41.39 acres and the south line of a 25.00 acre tract as recorded in Volume 9955, Page 1229 of the Real Property Records of Bexar County, Texas, to found 1/2" iron rod with "Wilkie" cap for an angle point of the herein described tract;

**THENCE** South 84° 17' 04" East, a distance of 243.23 feet to a found 1/2" iron rod with "Wilkie" cap for an angle point of the herein described tract;

**THENCE** South 84° 12' 04" East, a distance of 609.75 feet to found 1/2" iron rod with "Wilkie" cap for the southeast corner of the Sanchez tract as recorded in Volume 11023, Page 1936 of the Real Property Records of Bexar County, Texas;

**THENCE** South 84° 33' 04" East, a distance of 1996.40 feet with the north line of said 472.596 acres to a found 1/2" iron rod with "Flores" cap for the northeast corner of this tract;

**THENCE** with the east line of said 472.596 acres, the following courses:

South 60° 08' 59" East, a distance of 54.16 feet to found 1/2" iron rod with "Flores" cap;

South 27° 43' 53" East, a distance of 551.28 feet to a 4" cedar post;

South 11° 38' 36" East, a distance of 163.40 feet to a 6" cedar post;

South 01° 59' 52" West, a distance of 126.83 feet to a found 1/2" iron rod with "Flores" cap;

South 88° 41' 38" West, a distance of 389.42 feet to a found 1/2" iron rod with "Flores" cap;

South 82° 27' 45" West, a distance of 134.70 feet to a found 1/2" iron rod with "Flores" cap;

South 28° 51' 23" East, a distance of 498.08 feet to found 1/2" iron rod with "Flores" cap;

North 70° 39' 58" East, a distance of 463.37 feet to a found 1/2" iron rod with "Flores" cap on the west right-of-way of Bluehill Pass;

South 05° 58' 53" West, a distance of 211.26 feet with the west line of Bluehill Pass to a 6" cedar fence post;

South 89° 33' 07" West, a distance of 184.56 feet to a found 1/2" iron rod;

South 05° 21' 54" West, a distance of 1368.28 feet to a 5" cedar post for the northwest corner of said Lot 3;

**THENCE** South 85° 01' 22" East, a distance of 740.16 feet with the north line of said Lot 3 to the **POINT OF BEGINNING** and containing 472.7 acres of land, more or less, partially in the City of Grey Forest, Bexar County, Texas;

**SAVE & EXCEPT 20.0 ACRES** of land being a portion of said 472.596 acre tract as recorded in Volume 11744, Page 1981 of the Real Property Records of Bexar County, Texas and situated within the J.M. Ross Survey No. 226, Abstract No. 651, County Block 4569A in Bexar County, Texas, said 20.0 acres being more particularly described by metes and bounds as follows:

**BEGINNING** at a found 1/2" iron rod with "WILKIE" cap being the southeast corner of a 25.00 acre tract as recorded in Volume 9955, Page 1229 of the Real Property Records of Bexar County, Texas and the southwest corner of a 5.25 acre tract as recorded in Volume 11532, Page 1975 of the Real Property Records of Bexar County, Texas for a northern angle point of the herein described tract;

**THENCE** South 84° 17' 04" East, a distance of 243.23 feet to a found 1/2" iron rod with "Wilkie" cap on the south line of a 7.77 acre tract as recorded in Volume 12406, Page 1206 of the Real Property Records of Bexar County, Texas for an angle point;

**THENCE** South 84° 12' 04" East, a distance of 121.79 feet to a set 1/2" iron rod with "ACES" cap for the northeast corner of the herein described tract;

**THENCE** departing the south line of said 7.77 acres and crossing said 472.596 acre tract, the following courses::

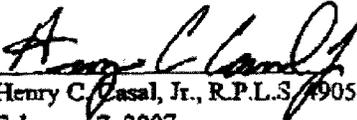
South 17° 28' 28" West, a distance of 314.10 feet to a set 1/2" iron rod with "ACES" cap for an angle point;

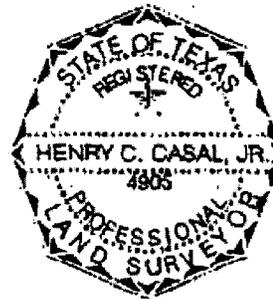
South 00° 51' 42" West, a distance of 620.27 feet to a set ½" iron rod with "ACES" cap for an angle point;  
South 65° 29' 43" West, a distance of 150.80 feet to a set ½" iron rod with "ACES" cap for an angle point;  
North 75° 01' 13" West, a distance of 317.43 feet to a set ½" iron rod with "ACES" cap for an angle point;  
South 81° 16' 08" West, a distance of 205.57 feet to a set ½" iron rod with "ACES" cap for an angle point;  
North 76° 07' 01" West, a distance of 236.96 feet to a set ½" iron rod with "ACES" cap for an angle point;  
North 21° 10' 01" West, a distance of 374.90 feet to a set ½" iron rod with "ACES" cap for an angle point;  
North 38° 19' 32" East, a distance of 506.08 feet to a set ½" iron rod with "ACES" cap for an angle point;  
North 14° 14' 10" West, a distance of 254.77 feet to a set ½" iron rod with "ACES" cap on the south line of said 25.00 acre tract for an angle point of the herein described tract;

**THENCE** South 80° 40' 26" East, a distance of 508.46 feet to the **POINT OF BEGINNING** and containing 20.0 acres of land, more or less, in Bexar County, Texas.

Plat of survey provided.

ALAMO CONSULTING ENGINEERING  
& SURVEYING, INC.

  
Henry C. Casal, Jr., R.P.L.S. 4905  
February 7, 2007  
Revised: 5/18/07  
Job No. 112000.00



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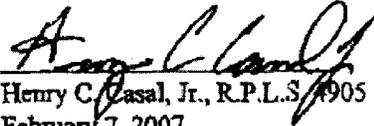
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North 21° 10' 01" West, a distance of 374.90 feet to a set ½" iron rod with "ACES" cap for an angle point;  
North 38° 19' 32" East, a distance of 506.08 feet to a set ½" iron rod with "ACES" cap for an angle point;  
North 14° 14' 10" West, a distance of 254.77 feet to a set ½" iron rod with "ACES" cap on the south line  
of said 25.00 acre tract for an angle point of the herein described tract;

**THENCE** South 80° 40' 26" East, a distance of 508.46 feet to the **POINT OF BEGINNING** and containing 20.0  
acres of land, more or less, in Bexar County, Texas.

Plat of survey provided.

ALAMO CONSULTING ENGINEERING  
& SURVEYING, INC.

  
Henry C. Casal, Jr., R.P.L.S. #905  
February 7, 2007  
Revised: 5/18/07  
Job No. 112000.00





species. The protection of the Property will also help to support many plant and animal species which are dependent on the water sources, nesting habitat, and food sources found on the Property; and will help to ensure that this area and its existing features will continue to be available for its natural habitat values. Some of the natural systems to be protected that are well represented in the Property include, without limitation: habitat for plants and animals, including spring salamanders and invertebrate species, representative of the Edwards Plateau of Central Texas. Among the species and natural systems to be protected that are well represented on the Property include, without limitation: breeding, feeding, sheltering, nesting, and foraging habitat for the Golden-cheeked Warbler. Several major habitats present on the Property include, without limitation: dry to mesic juniper-oak slope/canyon floor forests, dry grassland openings, and microhabitats provided by intermittent streams and surface karst formations.

Protection of quantity and quality of recharge into the Edwards Aquifer and the other concerns discussed above, including protecting habitat for endangered species, are collectively referred to as the "Conservation Values."

C. Easement Documentation Report. The characteristics of the Property, its current use and state of improvement, are described in a report entitled Scenic Canyon Easement Documentation Report dated \_\_\_\_\_, 2011, prepared by Grantee for Grantor and signed, acknowledged and mutually agreed upon by the parties. Grantor worked with Grantee to ensure that the report is a complete and accurate description of the Property as of the date of this Conservation Easement. It establishes the baseline condition of the Property as of the Effective Date and includes reports, maps, photographs and other documentation and is attached to this instrument as **Exhibit B**.

D. Grantor and Grantee have the common purpose of conserving the above-described Conservation Values of the Property in perpetuity, and the State of Texas has authorized the creation of conservation easements pursuant to Chapter 183 of the Texas Natural Resources Code, TEX. NAT. RES. CODE ANN. §§ 183.01, *et. seq.*, and Grantor and Grantee wish to avail themselves of the provisions of that law.

E. Grantor and Grantee acknowledge that, in administering this easement, Grantee will use funding provided by the U.S. Army ("Army") pursuant to 10 U.S.C. § 2684a for the protection of land surrounding the Camp Bullis Military Installation from incompatible development and for preserving habitat on the Property, and accordingly the Army shall have certain third-party, contingent rights as more particularly described herein.

F. The City of San Antonio's joinder in this instrument is authorized by Ordinance ??????

NOW, THEREFORE, Grantor, for and in consideration of the facts recited above and of the mutual covenants, terms, conditions and restrictions contained herein, as an absolute and unconditional gift, hereby gives, grants, bargains, and conveys unto Grantee a Conservation Easement in perpetuity over the Property of the nature and character as follows:

1. **PURPOSE.** The purpose of this Conservation Easement is to ensure that the Property will be retained forever predominantly in its natural condition; to protect native plants, animals, or plant communities on the Property with a principal focus on Golden-cheeked Warbler habitat protection; to prevent any use of the Property that will impair or interfere with the Conservation Values of the Property, while allowing for traditional uses on the Property that are compatible with and not destructive of the Conservation Values of the Property, all subject to the terms of this Conservation Easement.

Grantor will not perform, nor knowingly allow others to perform, any act on or affecting the Property that is inconsistent with the purposes of this Conservation Easement. However, unless otherwise specified below, nothing in this Conservation Easement shall require Grantor to take any action to restore the condition of the Property after any act of God or other event over which Grantor had no control, and in such event, the Property can be allowed to return to its natural state such that the Conservation Values will return to their original state. Grantor understands that nothing in this Conservation Easement relieves it of any obligation or restriction on the use of the Property imposed by law, including, without limitation, the federal Endangered Species Act.

2. **PROPERTY USES.** Any activity on or use of the Property inconsistent with the purposes of this Conservation Easement is prohibited. Without limiting the generality of the foregoing, the following is a listing of activities and uses which are expressly prohibited or which are expressly allowed. Additional retained rights of Grantor are set forth in Section 3 below.

2.1 No Subdivision. The Property may not be divided, subdivided or partitioned, nor conveyed or pledged for a debt except in its current configuration in its entirety.

2.2 Construction.

(a) There shall be no construction of any new structures or improvements allowed on the Property, except for (i) minor structures and improvements approved in advance by Grantee for habitat protection and recreational purposes permitted hereunder, none of which may be within 100 yards of a karst feature containing a well-defined surface opening (such as a cave) or a sinkhole (without a surface opening) that has a catchment area greater than 1.6 acres, and (ii) perimeter fencing along the boundaries of the Property. However, existing structures and improvements may be maintained, remodeled, and repaired as set forth in Section 2.2(c) below.

(b) Roads. Existing unimproved roads and 2-Tracks may be repaired and maintained as necessary to support the activities expressly permitted herein. No new roads or 2-Tracks shall be constructed on the Property unless approved by Grantee. "2-

Tracks” means avenues of vehicle access delineated on the natural surface of the land as two (2) parallel wheel tracks and that have not been improved by any building, construction, installation, or placement of any materials thereon.

- (c) Maintenance, Repairs & Replacements. Grantor shall have the right, but not the obligation, to maintain, remove, replace and repair existing structures, fences, water wells, utilities, and other improvements, and in the event of their destruction, to reconstruct any such existing improvements with another of similar function, capacity, location and material, except any deviations that are otherwise approved by Grantee. Notwithstanding the foregoing, in no event shall any repaired, remodeled, reconstructed or replacement structure or improvement exceed 20% of the original footprint of the structure or improvement existing as of the date of Easement Documentation Report or the initial installation date for new structures and improvements permitted under Section 2.2(a) above.
- (d) Preservation of Conservation Values. Grantor shall at all times use best efforts and practices in the construction of structures and improvements to minimize impact on the Conservation Values. All construction shall be sited as to cause no effect to the Conservation Values of the Property.
- (e) No Other Construction. Except as expressly set forth in this Section 2.2 or elsewhere in this Conservation Easement, no other structures or improvements may be placed or constructed on the Property.

2.3 Mineral Extraction. There shall be no exploration, development, production, extraction, or transportation of oil, gas or other mineral substances (whether such other mineral substances be part of the mineral estate or part of the surface estate) on, from, or across the Property (“Mineral Activities”) except in accordance with this Section; provided, however, that this Section does not apply to water, which is addressed elsewhere in this Conservation Easement.

(a) No Surface Mining. Mineral Activities shall not be conducted by any surface mining methods. Surface mining is strictly prohibited.

(b) Third-Party Minerals. In the event all or part of the oil, gas or other mineral substances (whether such other mineral substances be part of the mineral estate or part of the surface estate) are owned by third parties as of the date of the grant of this Conservation Easement, the following provisions shall apply to such third party oil, gas and other mineral

substances to the extent this Conservation Easement is deemed subordinated (by law or otherwise) to such oil, gas and other mineral substances ownership rights: Whenever such third party owners are required by applicable law or pursuant to any existing or future contract, conveyance or lease to obtain any consent from Grantor with respect to any access to, operation on, physical alteration of, or improvement to the Property, Grantor shall, prior to giving any such consent, consult with Grantee and use its best efforts to incorporate conditions or restrictions on such consent as Grantee may reasonably determine are required in order to prevent a significant impairment or interference with the Conservation Values. In the event Grantor at any time becomes the owner of any of such third party ownership rights, then such rights shall be deemed immediately subject to this Conservation Easement (including without limitation, paragraphs (a) and (b) of this Section), and any and all subsequent Mineral Activities, contracts, conveyances and leases of or relating to such ownership rights shall be bound by the provisions of this Conservation Easement.

2.4 Agricultural Use. There shall be no agricultural activities on the Property except in accordance with Section 2.10 below.

2.5 Timber Harvest. No removal of timber shall be allowed except in accordance with Section 2.10 below.

2.6 Grazing. There shall be no grazing by domestic livestock or other ranching activities on the Property.

2.7 Recreational Uses. Grantor shall have the right to engage in and permit others to engage in recreational uses of the Property, including, without limitation, hunting, fishing, wildlife observation, education, and research, that do not require or result in any surface alteration or other development or disturbance of the land (beyond nominal or *de minimis* disturbance) and that do not adversely affect the Conservation Values. Hunters or other shooters must not use lead shot when using a shotgun. No use of vehicles off of roads or 2-Tracks for recreation is allowed. Notwithstanding the foregoing, any public use of the Property must be conducted in accordance with a management plan approved by Grantee and the U.S. Fish & Wildlife Service ("USFWS").

2.8 Vehicles. There shall be no operation of dune buggies, motorcycles, all-terrain vehicles (ATVs) or other types of motorized recreational vehicles on the Property, except in conjunction with activities otherwise allowed by this Conservation Easement. Cars, trucks, ATVs and other ranch vehicles shall not be considered as recreational vehicles when used to monitor the Conservation

Easement or when used by Grantor, Grantee, and their contractors, agents, and invitees in furtherance of the Conservation Values. All permitted vehicle use shall be conducted in a manner that avoids damage to the Conservation Values of the Property and shall utilize existing roads and 2-Tracks, except where necessary for emergency response or public safety situations. The existing corral site shall be used for any parking of vehicles and temporary on-site storage or staging of equipment or machinery.

2.9 Excavation. Except as necessary to accommodate the activities expressly permitted under this Conservation Easement, including features intended to increase the quantity or protect the quality of recharge, there shall be no ditching, draining, diking, filling, excavating, dredging, removal of topsoil, sand, gravel, rock, minerals or other materials, mining, drilling or removal of minerals, nor any building of roads or change in the topography of the Property or disturbance in the soil in any manner. Notwithstanding the foregoing, nothing in this Section shall be deemed to authorize surface mining (including, without limitation, the removal of gravel, sand or caliche) or any other activity expressly prohibited elsewhere in this Conservation Easement.

2.10 Destruction of Plants, Disturbance of Natural Habitat. Without prior approval of Grantee, Grantor shall have the right to: (i) cut and remove non-native trees, shrubs, or plants, (ii) cut and remove dead, dying or diseased native trees, shrubs and plants (including, without limitation, for purposes of oak wilt prevention and suppression), and (iii) cut or prune trees and brush to the limited extent that they constitute a hazard or impediment to permitted road and 2-Track usage, existing utilities, or structures and improvements permitted hereunder, so long as the Conservation Values are not significantly impaired or interfered with. With the prior approval of Grantee, Grantor shall have the right to (i) cut firebreaks, except that such approval shall not be required in case of emergency firebreaks, and (ii) cut and remove native trees, shrubs, or plants in order to preserve or enhance natural communities or other Conservation Values of the Property or other reasonable purposes that do not adversely impact the Conservation Values. There shall be no additional removal, harvesting, destruction, or cutting of native trees, shrubs, or plants.

2.11 Non-Native Plants and Animals. There shall be no intentional introduction of non-native plants or animals on the Property except with Grantee's prior approval.

2.12 Hydrology. Other than on-site activities allowed in this Conservation Easement in connection with the two (2) existing wells on the Property, there shall be no alteration, depletion or extraction of surface water, natural water courses, lakes, ponds, marshes,

subsurface water or any other water bodies on the Property, except for structures or other features intended to increase the quantity or protect the quality of aquifer recharge. No such structures or features may be built if disallowed by the federal Endangered Species Act or other applicable law. No person may take any action, whether or not otherwise permitted under this instrument, that would materially and adversely affect the quantity or quality of recharge into the Edwards Aquifer.

2.13 Biocides. There shall be no possession, use, or storage of pesticides or biocides on the Property, except for those approved by Grantor and Grantee for use in the Edwards Aquifer recharge zone for management purposes permitted under this Conservation Easement.

2.14 Dumping. There shall be no storage or dumping of trash, garbage, or other unsightly or offensive material, hazardous substance, or toxic waste, nor any placement of underground storage tanks in, on, or under the Property; there shall be no changing of the topography through the placing of soil or other substance or material such as land fill or dredging spoils, nor shall activities be conducted on the Property that could cause erosion or siltation on the Property. Notwithstanding the foregoing, trash receptacles may be used for temporary collection and storage of trash provided that they are regularly and properly disposed off-site of the Property.

2.15 Pollution. There shall be no pollution of surface water, natural water courses, lakes, ponds, marshes, subsurface water or any other water bodies, nor shall activities be conducted on the Property that would be detrimental to water purity or that could alter the natural water level or flow in or over the Property, except for structures or other features intended to increase the quantity or protect the quality of aquifer recharge. No such structures or features may be built if disallowed by the federal Endangered Species Act or other applicable law.

2.16 Predator Control. Grantor shall have the right to control, destroy, or trap predatory and problem animals, but in so doing must not materially impair the Conservation Values.

2.17 Commercial Development. Any commercial or industrial use of or activity on the Property, other than those relating to recreational use to the extent permitted in this Conservation Easement, is prohibited. No rights of passage shall be granted or retained across or upon the Property, if that right of passage is used in conjunction with prohibited activities.

2.19 Density. Neither the Property nor any portion of it shall be included as part of the gross area of other property not subject to this Conservation Easement for the purposes of determining density, lot

coverage, or open space requirements under otherwise applicable laws, regulations, or ordinances controlling land use and building density. No development rights that have been encumbered or extinguished by this Conservation Easement shall be transferred to any other lands pursuant to a transferable development rights, scheme cluster development arrangement, or otherwise. But with the prior written permission of Grantee, this Section shall not preclude transfer of development rights resulting from the destruction or demolition of any existing residential building on the Property.

2.20 Soil and Water Conservation; Erosion Control. Grantor may conduct activities for the purpose of soil and water conservation and erosion control utilizing practices (i) customary for the area, or (ii) consistent with federal or state approved soil conservation and erosion control practices and all applicable laws and regulations governing such practices, including without limitation, enrollment of the Property (or portions thereof) in the U.S.D.A Conservation Reserve Program, to the extent such activities are consistent with the Conservation Values.

2.21 GCW Habitat Protection. Notwithstanding anything herein to the contrary, the following activities are prohibited unless the Grantee's prior approval is obtained: use of heavy machinery such as dozers, backhoes, tractors, and road maintainers during the Golden-cheeked Warbler breeding season (presently March 1 through August 14) except when necessary for emergency response or public safety situations.

**3. ADDITIONAL RIGHTS RETAINED BY GRANTOR.** Grantor retains the following additional rights; provided, however, none of the enumerated rights imposes a duty on Grantor to exercise the right:

3.1 Existing Uses. The right to undertake or continue any activity or use of the Property not prohibited by this Conservation Easement. Prior to making any change in use of the Property, Grantor shall notify Grantee in writing to allow Grantee a reasonable opportunity to determine whether it believes such change would violate the terms of this Conservation Easement.

3.2 Transfer. The right to sell, give, mortgage, lease, or otherwise convey the Property subject to the terms of this Conservation Easement.

3.3 Habitat Restoration and Enhancement. With the prior written approval of Grantee, the right to restore and enhance native plant and wildlife habitat, consistent with approved wildlife management and soil conservation practices and all applicable laws and regulations governing such practices in the event of a catastrophic event.

**3.4 Aquifer Protection.** Except as disallowed by the federal Endangered Species Act or other applicable law:

- a. **Monitoring Hydrology.** The right to monitor the hydrology of the Edwards Aquifer and other water or geologic formations, including the right to install, operate, and maintain aquifer-recharge-related monitoring equipment, including a continuous recording rain gauge. Grantor may install, operate, and maintain fences and other devices reasonably necessary to provide security for the monitoring equipment.
- b. **Wells.** The right to drill, operate, and maintain monitoring wells, except no drilling may occur during Golden-cheeked Warbler breeding season. Grantor may install, operate, and maintain fences and other devices reasonably necessary to provide security for the monitoring wells.
- c. **Research.** The right to conduct research activities with appropriate research entities related to watershed management, water quality protection, or other similar purposes consistent with the Conservation Values.
- d. **Recharge Features.** The right to construct, operate, and maintain recharge structures and associated facilities, except construction must not occur during Golden-cheeked Warbler breeding season.

**4. NOTICE/APPROVAL OF EXERCISE OF GRANTOR'S RESERVED OR RETAINED RIGHTS.**

*4.1 Notice. For activities for which Grantee's prior approval is not expressly required, Grantor hereby agrees to notify Grantee in writing fifteen (15) days before exercising any reserved or retained right under this Conservation Easement that may have an adverse impact on the Conservation Values (unless a different time period is otherwise expressly required in this Conservation Easement).*

**4.2 Approval.** When Grantee's approval is required prior to Grantor engaging in any activity, Grantor's request for approval shall be in writing and contain detailed information regarding the proposed activity. Such request shall be delivered to Grantor at least sixty (60) days prior to the anticipated start date of such activity. Grantee agrees to use reasonable diligence to respond to the request within said 60 days; provided, however, that approval shall not be deemed in the event of Grantee's delay in response.

5. **RIGHTS OF GRANTEE.** To accomplish the purpose of this Conservation Easement, the following rights are granted to Grantee by this Conservation Easement:

5.1 Right to Enforce. The right to preserve and protect the Conservation Values of the Property and enforce the terms of this Conservation Easement.

5.2 Right of Entry.

(a) The right of Grantee to enter the Property at reasonable times for the purposes of (i) inspecting the Property to determine if there is compliance with the terms of the Conservation Easement, and (ii) obtaining evidence for the purpose of seeking judicial enforcement of this Conservation Easement. Grantee agrees that this entry will be done in a manner that will not interfere unreasonably with Grantor's permitted uses of the Property and that will minimize any adverse impact on the Conservation Values. Grantee also agrees to provide advance notice to Grantor prior to entering the Property, except in any case where immediate entry is necessary or desirable to prevent, terminate, or mitigate damage to, or the destruction of, the Conservation Values, or to prevent, terminate or mitigate a violation of the terms of this Conservation Easement.

(b) The right of Grantee's staff, contractors, and associated natural resource management professionals to enter the Property at least two (2) times per year at a mutually convenient time (with any additional visits requiring Grantor's consent) for the purposes of: (i) ecological monitoring, biological surveys, inventories, and research as described below, and (ii) management of exotic and invasive plants and animals. This right of entry shall be done in a manner as will not disturb the quiet enjoyment of the Property by Grantor or of the Conservation Values.

5.3 Monitoring and Research. The right to monitor aquifer recharge, plant and wildlife populations, plant communities, and natural habitats on the Property. Grantor shall cooperate with Grantee in establishing, at no expense to Grantor, a written monitoring and research plan or other research activities or projects, if desired by Grantee, to direct the monitoring of and research on aquifer recharge, plant and wildlife populations, plant communities, and natural habitats on the Property.

5.4 Management of Exotics and Invasive Species. Grantor may control, manage or destroy exotic non-native species or invasive species of plants and animals that threaten the Conservation Values of the property. Such activities shall be conducted in accordance with

then-existing management recommendations by USFWS, Texas Parks & Wildlife Department, or successor natural resource agencies for managing Golden-cheeked Warbler habitat and may include, but shall not be limited to, application of pesticides, mowing, fencing, trapping and prescribed burning, but no such activity may adversely affect other Conservation Values, including aquifer recharge. Grantee will consult with Grantor prior to implementing management activities.

5.5 Army Mitigation Credits. Grantor and Grantee acknowledge and agree that any endangered species mitigation credits that may accrue as a result of this Conservation Easement shall be credited to the Army for the benefit of its operations at Camp Bullis.

Compliance and ecological monitoring reports, recharge reports, biological surveys, inventories and research, and monitoring, research or management plans of the Property prepared or obtained by Grantee pursuant to this Section shall be provided to Grantor and the Army upon request, respectively, to the extent not attorney-client or work product privileged.

6. **RESPONSIBILITIES OF GRANTOR AND GRANTEE NOT AFFECTED.** Other than as specified herein, this Conservation Easement is not intended to impose any legal or other responsibility on Grantor, or in any way to affect any existing obligation of Grantor as owners of the Property. Among other things, this shall apply to:

6.1 Taxes. Grantor shall be solely responsible for payment of all taxes and assessments, if any, properly levied against the Property.

6.2 Upkeep and Maintenance. Grantor shall be solely responsible for the upkeep and maintenance of the Property, to the extent it may be required by law. Grantee shall have no obligation for the upkeep or maintenance of the Property.

7. **ACCESS.**

7.1 Public Access. Notwithstanding that all or partial funding for this conveyance was provided by the Army, no right of access by the general public to any portion of the Property is conveyed by this Conservation Easement. However, the public has the right to view the Property from adjacent publicly accessible areas such as public roads and waterways.

7.2 Grantee's Access to the Property. Without limiting the generality of the grant of this Conservation Easement to Grantee, Grantor expressly conveys and assigns to Grantee (and to the Army under the conditions for allowing the exercise of its rights as set forth in Section 8.8) the rights of ingress and egress to and through the Property as an assignee of a partial interest in the Property solely as an easement holder by virtue of this grant of Conservation Easement. All such

access must be limited to the extent and for exercise of the Grantee's rights expressly permitted in this Conservation Easement, and any such access shall be conducted in a manner to minimize any adverse impact on the Conservation Values.

**8. EASEMENT ENFORCEMENT.** Grantee, along with the Army under certain circumstances described in Section 8.8 below, shall have the right to prevent and correct violations of the terms of this Conservation Easement. The following provisions shall be applicable to enforcement of this Conservation Easement:

8.1 Notice of Violation. If Grantee becomes aware that a violation of the terms of this Conservation Easement has occurred or is threatened to occur, Grantee may at its discretion take appropriate legal action. Except when an ongoing or imminent violation could substantially diminish or impair the Conservation Values, Grantee shall give written notice of the violation to Grantor to allow the 60-day cure period described in Section 8.3 below.

8.2 Corrective Action. Upon the receipt of a notice of violation, Grantor shall promptly commence, and thereafter diligently pursue to completion, corrective action sufficient to cure the violation (if there is a violation) and, where the violation involves injury to the Property, to restore the portion of the Property so injured.

8.3 Default. Grantor shall be in default of this Conservation Easement if it fails to so cure the violation within sixty (60) days after the notice of violation is given; provided that, if more than sixty (60) days is reasonably required for the corrective action, then, if Grantor promptly begins the corrective action within such sixty (60) day period, no default shall exist as to the violation for so long thereafter as Grantor is diligently pursuing such cure to completion. The fact that a default does not exist under the foregoing provisions shall in no event, however, absolve Grantor from any liability under this Conservation Easement with respect to the violation.

8.4 Remedies. In the event of a violation, Grantee shall have all remedies available at law or in equity to enforce the terms of this Conservation Easement, including (but not limited to) the right to: (i) seek a temporary or permanent injunction with respect to any activity causing a violation; (ii) force the restoration of that portion of the Property affected by the violation to a condition similar or equivalent to the condition that existed prior to the violation, by restoring soils, replanting suitable domestic vegetation, or taking such other action as is reasonably necessary to achieve such restoration; and (iii) recover any additional damages arising from the violation; provided, however, that, except in the event of emergency enforcement, Grantee shall not enforce its rights under clauses (i) or (ii) above after the giving of a notice of violation until such time as a default exists under the

foregoing provisions. The foregoing remedies shall be cumulative and shall be in addition to all other remedies existing at law or in equity with respect to the violation.

8.5 Costs of Enforcement. In any action, suit, or other proceeding undertaken to enforce any right or obligation under this Conservation Easement, or to interpret any of the provisions of this Conservation Easement, the prevailing party shall be entitled to recover from the non-prevailing party the costs and expenses of such proceeding, including (but not limited to) the court costs and attorneys' fees and expenses incurred by the prevailing party (whether incurred at the trial, appellate, or administrative level), in such amount as the court or administrative body may judge reasonable, all of which may be incorporated into and be a part of any judgment or decision rendered in such action, suit or other proceeding.

8.6 Emergency Enforcement. The foregoing provisions notwithstanding, if Grantee reasonably determines that a violation has occurred or is about to occur and circumstances require immediate action to prevent, terminate, or mitigate significant damage to or the destruction of any of the Conservation Values, or to prevent, terminate, or mitigate a significant violation of a material term of this Conservation Easement, such party may give a notice of violation to the extent reasonably practicable under the circumstances (which may be given orally in such cases or not at all depending on the circumstances) and Grantee may then pursue its remedies under this Conservation Easement without waiting for the period to cure the violation which is provided for above.

8.7 Discretion. The failure of Grantee to discover a violation or to take action under this Conservation Easement with respect to a violation shall not bar it from doing so at a later time, and shall not be deemed or construed to be a waiver of Grantee's rights in the event of any subsequent occurrence of that or any other violation.

8.8 Army Enforcement. Should the Grantee fail to adequately enforce any term of this Conservation Easement or permit the Property to be used or developed in a manner inconsistent with the purposes of this Conservation Easement, as reasonably determined by the Army and after having given Grantee and Grantor notice thereof and a reasonable opportunity to cure the matter, then the Secretary of the Army, through his or her authorized representative, shall have the right to enforce this Conservation Easement using the procedures under this Section 8 and Sections 5.1 and 5.2, together with the right of entry granted to Grantee under Section 7.2 and all authorities available under state or federal law. No greater right of entry by the Army shall be exercised than specified in this Section. Any activities by the Army under this Section shall be subject to the availability of appropriated funds.

9. **TRANSFER OF EASEMENT.** The parties recognize and agree that the benefits of this Conservation Easement are in gross and assignable. Upon prior written notice to the Army, Grantee shall have the right to transfer or assign this Conservation Easement to a "qualified organization" under Section 170(h) of the U.S. Internal Revenue Code (which qualified organization must also be qualified to hold the Conservation Easement under applicable state law) that (i) is approved by the Army, (ii) qualifies as an "eligible entity" as defined by 10 U.S.C. § 2684a(b), (iii) qualifies as a "holder" under Texas Natural Resources Code § 183.001, and (iv) expressly agrees to assume the responsibility imposed on Grantee by this Conservation Easement. Should Grantee, or Grantee's assignee, either dissolve or become incapable of providing for long-term monitoring and enforcement of this Conservation Easement, Grantee or Grantee's assignee shall notify the Army, and in such event, the Secretary of the Army, through his designated representative, shall have the option to direct Grantee or Grantee's assignee to transfer the Conservation Easement to the Army or a third party that qualifies as a permitted transferee under this Section. Grantee shall ensure that any assignment or instrument transferring this Conservation Easement contains the rights set forth in this Section. Further, if Grantee ever ceases to exist or no longer qualifies under Section 170(h), Texas Natural Resources Code § 183.001, and 10 U.S.C. § 2684a(b) or applicable state law, a court with jurisdiction may transfer this Conservation Easement to another qualified organization having similar purposes that agrees to assume the responsibility. In the event Grantee transfers or assigns this Conservation Easement, in whole or in part, Grantee is hereby granted the right to reserve a third-party right of enforcement if Grantee so elects at the time of the transfer.

10. **TRANSFER OF PROPERTY.** Any time the Property, or any interest therein, is transferred by Grantor to any third party, Grantor shall notify Grantee and the Army in writing at least thirty (30) days prior to the transfer of the Property, and the document of conveyance shall expressly refer to this Conservation Easement.

11. **AMENDMENT OF EASEMENT.** This Conservation Easement may be amended only with the written consent of Grantor, Grantee, and the Army. Any such amendment shall be consistent with the purposes of this Conservation Easement and shall comply with Sec. 170(h) of the Internal Revenue Code, or any regulations promulgated in accordance with that section. Any such amendment shall also be consistent with Chapter 183 of the Texas Natural Resources Code, TEX. NAT. RES. CODE ANN. §§ 183.01, *et. seq.*, or any regulations promulgated pursuant to that law. Grantor and Grantee have no right or power to agree to any amendment that would affect the enforceability of this Conservation Easement.

12. **TERMINATION OF EASEMENT.** If it is determined that conditions on or surrounding the Property have changed so much that it is impossible to fulfill the conservation purposes set forth above, a court with jurisdiction may, at the joint request of both Grantor and Grantee, terminate this Conservation Easement.

If some or all the Property is condemned, the holder of the easement receives 30% of the award and the owner of the fee receives the remainder. If condemnation of all or

a portion of the Property renders it impossible to fulfill the conservation purposes, this Conservation Easement may be terminated by court order.

13. **INTERPRETATION.** This Conservation Easement shall be interpreted under the laws of the State of Texas, resolving any ambiguities and questions of the validity of specific provisions so as to give maximum effect to its conservation purposes.

14. **TITLE.** Grantor covenants and represents that Grantor is the sole owner and is seized of the Property in fee simple and has good right to grant and convey this Conservation Easement; that the Property is free and clear of any and all encumbrances, including but not limited to, any mortgages not subordinated to this Conservation Easement, and that Grantee shall have the use of and enjoy all of the benefits derived from and arising out of this Conservation Easement.

15. **NOTICES.** Any notices required by this Conservation Easement shall be in writing and shall be personally delivered or sent by first class mail, to Grantor and Grantee, respectively, at the following addresses, unless a party has been notified by the other of a change of address.

If to Grantor:

City of San Antonio  
(Attention: City Manager)  
P.O. Box 839966  
San Antonio, Texas 78283-3966

If to Grantee:

The Nature Conservancy  
Attn: Legal  
200 E. Grayson, Suite 202  
San Antonio, Texas 78215

If to Army:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

16. **HAZARDOUS WASTE.** Grantor represents and warrants that, to its knowledge, no known hazardous substance or toxic waste exists or has been generated, treated, stored, used, disposed of, or deposited in or on the Property, and that there are not now any underground storage tanks located on the Property.

Nothing contained in this Conservation Easement shall give rise, in the absence of a judicial decree, to any right or ability of Grantee to become the operator of the Property within the meaning of the Comprehensive Environmental Response, Compensation and Liability Act by exercising physical control over the day-to-day operations of Grantor or becoming involved in management decisions of Grantor regarding the generation, handling or disposal of hazardous substances.

17. **COMPLIANCE WITH APPLICABLE LAWS.** Grantor shall comply with all statutes, laws, ordinances, rules, regulations, codes, orders, guidelines, or other restrictions, or requirements applicable to the Property. Nothing herein shall be construed to allow Grantor to engage in any activity which is restricted or prohibited by law, restrictions or other requirements applicable to the Property.

18. **SEVERABILITY.** If any provision of this Conservation Easement is found to be invalid, the remaining provisions shall not be altered thereby.

19. **PARTIES.** Every provision of this Conservation Easement that applies to Grantor or Grantee shall also apply to their respective heirs, executors, administrators, assigns, and all other successors as their interest may appear. Notwithstanding anything else to the contrary, this Conservation Easement does not create any third party rights of enforcement, except those expressly granted herein to the Army.

20. **RE-RECORDING.** In order to ensure the perpetual enforceability of the Conservation Easement, Grantee is authorized to re-record this instrument or any other appropriate notice or instrument.

21. **MERGER.** The parties agree that the terms of this Conservation Easement shall survive any merger of the fee and easement interest in the Property.

22. **SUBSEQUENT LIENS ON PROPERTY.** No provisions of this Conservation Easement should be construed as impairing the ability of Grantor to use this Property as collateral for subsequent borrowing, provided that any mortgage or lien arising from such a borrowing is subordinate to this Conservation Easement and does not violate the restrictions on subdivision of the Property.

23. **ACCEPTANCE & EFFECTIVE DATE.** As attested by the signature of its authorized representative, Grantee hereby accepts without reservation the rights and responsibilities conveyed by this Conservation Easement. This Conservation Easement is to be effective the date recorded in the Bexar County Real Property Records.

24. **APPROPRIATIONS BY CITY COUNCIL.** The obligations of the City under this easement to pay money are limited by Texas Constitution Article 11, Sections 3, 5, and 7, to the extent applicable, and other applicable law.

TO HAVE AND TO HOLD, this Grant of Conservation Easement unto Grantee, its successors and assigns, forever, subject to the reservation hereinafter set forth.

*[Remainder of page intentionally left blank.]*

## Reservation from Conveyance

Grantee acknowledges that Grantor conveys this Conservation Easement to it under the authority of Texas Local Government Code § 253.011, without receiving fair market value. In compliance with that statute, the City Council of the City of San Antonio finds that protection of the Conservation Values by means of this Conservation Easement is a public purpose. If at any time Grantee or its successors or assigns fail to use the Conservation Easement in a manner that primarily promotes a public purpose for which it was established, this Conservation Easement automatically reverts to the City of San Antonio.

Upon the occurrence of this reverter, if the City of San Antonio or another political subdivision of the State of Texas is still the owner of the fee underlying the Conservation Easement, the Army may designate, in accordance with Section 9, another 501(c)3-qualified entity that also qualifies as a "holder" under Texas Natural Resources Code § 183.001. Grantor or its successor must grant another conservation easement on the same terms and conditions as this Conservation Easement to the entity so designated. Grantor's conveyance of the new easement to the entity designated by the Army need not be approved by the City Planning Commission, City Council, or other City-related body or any equivalent bodies of the other political subdivision holding title.

Upon the occurrence of this reverter, if neither the City of San Antonio nor another political subdivision of the State of Texas is still the owner of the fee underlying the Conservation Easement, the Army may designate, in accordance with Section 9, an entity that qualifies as a "holder" under Texas Natural Resources Code § 183.001. Grantor's successor must grant another conservation easement on the same terms and conditions as this Conservation Easement to the entity so designated.

IN WITNESS WHEREOF, Grantor and Grantee, intending to legally bind themselves, have executed this Conservation Easement as of the date first written above. This Conservation Easement may be executed in multiple counterparts, each of which shall be deemed an original, but all of which together shall constitute but one and the same instrument.

GRANTOR:

**City of San Antonio**, a Texas municipal  
corporation

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

STATE OF TEXAS

§  
§  
§

COUNTY OF BEXAR

This instrument was acknowledged before me on the \_\_\_\_ day of \_\_\_\_\_, 2011, by \_\_\_\_\_ of the City of San Antonio, in capacity stated and on behalf of that entity.

\_\_\_\_\_  
Notary Public, State of Texas

[SEAL]

GRANTEE:

THE NATURE CONSERVANCY

By: \_\_\_\_\_

\_\_\_\_\_

Name: \_\_\_\_\_

\_\_\_\_\_

Title: \_\_\_\_\_

\_\_\_\_\_

STATE OF TEXAS

§  
§  
§

COUNTY OF \_\_\_\_\_

This instrument was acknowledged before me on the \_\_\_\_ day of \_\_\_\_\_, 2011, by \_\_\_\_\_ of THE NATURE CONSERVANCY, in said capacity on behalf of said entity.

\_\_\_\_\_  
Notary Public, State of Texas

[SEAL]

EXHIBIT(S):

Exhibit A      Property Description  
Exhibit B      Easement Documentation Report

AFTER RECORDING, RETURN TO:

The Nature Conservancy  
Attn: Legal  
200 E. Grayson St., Suite 202  
San Antonio, Texas 78215

## Exhibit A: Property Description

**BEING** 452.7 acres of land, consisting of 472.7 acres of land **SAVE & EXCEPT** 20.0 acres of land, out of a called 472.596 acre tract as recorded in Volume 11744, Page 1981 of the Real Property Records of Bexar County, Texas and being out of the J. M. Ross Survey No. 226, Abstract 651, County Block 4569A, the M. A. Bryan Survey No. 229, Abstract 93, County Block 4571, the Albert Schmidt Survey No. 3, Abstract 1164, County Block 4570, and the Texas Central Railway Co. Survey No. 1, Abstract 1028, County Block 4605 in Bexar County, Texas and also being all of Lot 3, County Block 5744, Scenic Loop Playground Subdivision Unit 2 as recorded in Volume 980, Page 237 of the Deed and Plat Records of Bexar County, Texas, being partially in the City of San Antonio, Bexar County, Texas, said 452.7 acres being more particularly described by metes and bounds as follows:

**BEGINNING** at a found 1/2" iron rod in the west right-of-way line of Scenic Loop Road for the northeast corner of Lot 3 of said Scenic Loop Playground Subdivision Unit 2;

**THENCE** South 03° 09' 36" West, a distance of 99.15 feet with the west right-of-way line of Scenic Loop Road to a found 60D nail for angle;

**THENCE** South 02° 05' 28" East, a distance of 134.83 feet to a 6" cedar fence post for the southeast corner of said Lot 3;

**THENCE** South 86° 51' 50" West, a distance of 764.30 feet with south line of said Lot 3 to a found 1/2" iron rod with "Flores" cap for the southwest corner of said Lot 3 and northwest corner of Lot 4;

**THENCE** South 03° 17' 31" West, a distance of 258.81 feet with the west line of said Lot 4 to a 5" cedar fence post for the northeast corner of a called 22.470 acre tract as recorded in Volume 9615, Page 75 and the southeast corner of this tract;

**THENCE** South 78° 50' 04" West, a distance of 608.29 feet with the south line of said 472.596 acres to a 6" cedar post;

**THENCE** South 79° 07' 00" West, a distance of 2376.95 feet for the south line of said 472.596 acres to a 5" cedar post;

**THENCE** South 86° 36' 55" West, a distance of 787.89 feet with the south line of said 472.596 acres to a 5" cedar post

**THENCE** North 80° 03' 21" West, a distance of 293.08 feet with the south line of said 472.596 acres to an 8" cedar post;

**THENCE** North 84° 10' 40" West, a distance of 400.15 feet with the south line of said 472.596 acres to an 8" cedar post;

**THENCE** North 82° 56' 04" West, a distance of 240.10 feet with the south line of said 472.596 acres to a 19" Oak;

**THENCE** North 81° 13' 40" West, a distance of 189.12 feet with the south line of said 472.596 acres to a found 1/2" iron rod for the southwest corner of this tract and the southeast corner of a called 55.55 acre tract as recorded in Volume 6321, Page 580 of the Real Property Records of Bexar County, Texas;

**THENCE** North 09° 36' 08" West, a distance of 713.07 feet with the west line of said 472.596 acres to found 1/2" iron rod with "Flores" cap;

**THENCE** North 09° 43' 04" West, a distance of 1263.80 feet with the west line of said 472.596 acres to a found 1/2" iron rod for the southeast corner of the Minihan tract as recorded in Volume 11856, Page 1970 of the Real Property Records of Bexar County, Texas;

**THENCE** North 64° 13' 09" East, a distance of 217.78 feet with the west line of said 472.596 acres to a found 1/2" iron rod;

**THENCE** North 20° 16' 33" East, a distance of 406.17 feet with the west line of said 472.596 acres to a 4" cedar post;

**THENCE** North 21° 04' 26" West, a distance of 188.36 feet with the west line of said 472.596 acres to found 1/2" iron rod;

**THENCE** North 33° 45' 47" West, a distance of 118.43 feet with the west line of said 472.596 acres to a 6" cedar post;

**THENCE** North 34° 43' 51" West, a distance of 291.97 feet with the west line of said 472.596 acres to a 20" cedar;

**THENCE** North 37° 08' 38" West, a distance of 559.41 feet with the west line of said 472.596 acres to a 6" cedar post;

**THENCE** North 05° 53' 51" East, a distance of 571.88 feet with the west line of said 472.596 acres to a found 1/4" iron rod;

**THENCE** North 17° 02' 53" East, a distance of 127.71 feet with the west line of said 472.596 acres to found 1/2" iron rod;

**THENCE** North 00° 46' 46" East, a distance of 300.68 feet with the west line of said 472.596 acres to found 1/2" iron rod;

**THENCE** North 33° 58' 31" West, a distance of 57.58 feet with the west line of said 472.596 acres to a found 1/2" iron rod for the northeast corner of a called 25.00 acre tract as recorded in Volume 6072, Page 1583 of the Real Property Records of Bexar County, Texas and being on the south line of a called 41.39 acre tract as recorded in Volume 10598, Page 832 of the Real Property Records of Bexar County, Texas and being the northwest corner of this tract;

**THENCE** South 80° 40' 26" East, a distance of 2480.05 feet with the south line of said 41.39 acres and the south line of a 25.00 acre tract as recorded in Volume 9955, Page 1229 of the Real Property Records of Bexar County, Texas, to found 1/2" iron rod with "Wilkie" cap for an angle point of the herein described tract;

**THENCE** South 84° 17' 04" East, a distance of 243.23 feet to a found 1/2" iron rod with "Wilkie" cap for an angle point of the herein described tract;

**THENCE** South 84° 12' 04" East, a distance of 609.75 feet to found 1/2" iron rod with "Wilkie" cap for the southeast corner of the Sanchez tract as recorded in Volume 11023, Page 1936 of the Real Property Records of Bexar County, Texas;

**THENCE** South 84° 33' 04" East, a distance of 1996.40 feet with the north line of said 472.596 acres to a found 1/2" iron rod with "Flores" cap for the northeast corner of this tract;

**THENCE** with the east line of said 472.596 acres, the following courses:

South 60° 08' 59" East, a distance of 54.16 feet to found 1/2" iron rod with "Flores" cap;

South 27° 43' 53" East, a distance of 551.28 feet to a 4" cedar post;

South 11° 38' 36" East, a distance of 163.40 feet to a 6" cedar post;

South 01° 59' 52" West, a distance of 126.83 feet to a found 1/2" iron rod with "Flores" cap;

South 88° 41' 38" West, a distance of 389.42 feet to a found 1/2" iron rod with "Flores" cap;

South 82° 27' 45" West, a distance of 134.70 feet to a found 1/2" iron rod with "Flores" cap;

South 28° 51' 23" East, a distance of 498.08 feet to found 1/2" iron rod with "Flores" cap;

North 70° 39' 58" East, a distance of 463.37 feet to a found 1/2" iron rod with "Flores" cap on the west right-of-way of Bluehill Pass;

South 05° 58' 53" West, a distance of 211.26 feet with the west line of Bluehill Pass to a 6" cedar fence post;

South 89° 33' 07" West, a distance of 184.56 feet to a found 1/2" iron rod;

South 05° 21' 54" West, a distance of 1368.28 feet to a 5" cedar post for the northwest corner of said Lot 3;

**THENCE** South 85° 01' 22" East, a distance of 740.16 feet with the north line of said Lot 3 to the **POINT OF BEGINNING** and containing 472.7 acres of land, more or less, partially in the City of Grey Forest, Bexar County, Texas;

**SAVE & EXCEPT 20.0 ACRES** of land being a portion of said 472.596 acre tract as recorded in Volume 11744, Page 1981 of the Real Property Records of Bexar County, Texas and situated within the J.M. Ross Survey No. 226, Abstract No. 651, County Block 4569A in Bexar County, Texas, said 20.0 acres being more particularly described by metes and bounds as follows:

**BEGINNING** at a found 1/2" iron rod with "WILKIE" cap being the southeast corner of a 25.00 acre tract as recorded in Volume 9955, Page 1229 of the Real Property Records of Bexar County, Texas and the southwest corner of a 5.25 acre tract as recorded in Volume 11532, Page 1975 of the Real Property Records of Bexar County, Texas for a northern angle point of the herein described tract;

**THENCE** South 84° 17' 04" East, a distance of 243.23 feet to a found 1/2" iron rod with "Wilkie" cap on the south line of a 7.77 acre tract as recorded in Volume 12406, Page 1206 of the Real Property Records of Bexar County, Texas for an angle point;

**THENCE** South 84° 12' 04" East, a distance of 121.79 feet to a set 1/2" iron rod with "ACES" cap for the northeast corner of the herein described tract;

**THENCE** departing the south line of said 7.77 acres and crossing said 472.596 acre tract, the following courses::

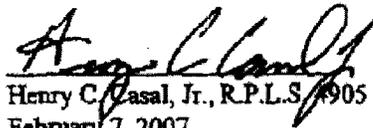
South 17° 28' 28" West, a distance of 314.10 feet to a set 1/2" iron rod with "ACES" cap for an angle point;

South 00° 51' 42" West, a distance of 620.27 feet to a set ½" iron rod with "ACES" cap for an angle point;  
South 65° 29' 43" West, a distance of 150.80 feet to a set ½" iron rod with "ACES" cap for an angle point;  
North 75° 01' 13" West, a distance of 317.43 feet to a set ½" iron rod with "ACES" cap for an angle point;  
South 81° 16' 08" West, a distance of 205.57 feet to a set ½" iron rod with "ACES" cap for an angle point;  
North 76° 07' 01" West, a distance of 236.96 feet to a set ½" iron rod with "ACES" cap for an angle point;  
North 21° 10' 01" West, a distance of 374.90 feet to a set ½" iron rod with "ACES" cap for an angle point;  
North 38° 19' 32" East, a distance of 506.08 feet to a set ½" iron rod with "ACES" cap for an angle point;  
North 14° 14' 10" West, a distance of 254.77 feet to a set ½" iron rod with "ACES" cap on the south line  
of said 25.00 acre tract for an angle point of the herein described tract;

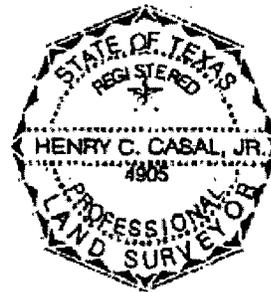
**THENCE** South 80° 40' 26" East, a distance of 508.46 feet to the **POINT OF BEGINNING** and containing 20.0  
acres of land, more or less, in Bexar County, Texas.

Plat of survey provided.

ALAMO CONSULTING ENGINEERING  
& SURVEYING, INC.



Henry C. Casal, Jr., R.P.L.S. #905  
February 7, 2007  
Revised: 5/18/07  
Job No. 112000.00



**Exhibit B: Easement Documentation Report**

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**CITY OF SAN ANTONIO  
PROPERTIES**  
Golden-Cheeked Warbler Habitat Assessment

Valerie Collins, Environmental Manager,  
Pape-Dawson Engineers, Inc., San Antonio, Texas

Julie Groce, Extension Program Specialist,  
Institute of Renewable Natural Resources, Texas A&M University,  
San Antonio, Texas

September 2010

**CITY OF SAN ANTONIO PROPERTIES  
Golden-Cheeked Warbler Habitat Assessment**

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## Golden-Cheeked Warbler Habitat Assessment

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Golden-Cheeked Warbler Habitat Assessment**

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**Golden-Cheeked Warbler Habitat Assessment**

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# CITY OF SAN ANTONIO PROPERTIES

## Golden-Cheeked Warbler Habitat Assessment

### INTRODUCTION

The golden-cheeked warbler (*Dendroica chrysoparia*) is a federally endangered migratory songbird that breeds in central Texas and winters in southern Mexico and Central America. The breeding range of the golden-cheeked warbler (hereafter warbler) is restricted to central Texas, mainly in the eastern half of the Edwards Plateau and southern half of the Cross Timbers ecoregions (as delineated by Griffith et al. 2004). The range extends primarily from Stephens and Palo Pinto Counties in the north to northern Bexar County in the southeast and Edwards and Kinney Counties in the southwest (Figure 1). Warbler breeding habitat consists of woodlands of Ashe juniper (*Juniperus ashei*) and oak (*Quercus* spp.) where juniper is of sufficient age to provide nesting material (e.g., shredding bark; Pulich 1976). The Texas Parks and Wildlife Department (TPWD) describes warbler habitat as “woodlands with mature Ashe juniper (cedar) in a natural mix with oaks, elms [*Ulmus* spp.], and other hardwoods, in relatively moist (mesic) areas such as steep canyons and slopes, and adjacent uplands... These areas generally will have a nearly continuous canopy cover of trees with 50–100% canopy closure and an overall woodland canopy height of 20 feet or more” (Campbell 2003).

The City of San Antonio Parks and Recreation Department (hereafter City) requested vegetation surveys be conducted on several City properties during spring 2010 to quantify and map habitat with potential to be occupied by golden-cheeked warblers. The City, in cooperation with the U.S. Army and U.S. Fish and Wildlife Service (USFWS), sought to identify warbler habitat for the purpose of determining potential mitigation credits. Thus, the objective of this project was to quantify vegetation characteristics on City properties and to model the extent of potential golden-cheeked warbler habitat. Vegetation characteristics measured in this study included percent canopy closure, percent of Ashe juniper in the canopy, presence of mature Ashe juniper, canopy height, and species richness. Although the vegetation surveys and model development were the primary objectives of this study, the study also collected location data on golden-cheeked warblers detected on the properties.

# CITY OF SAN ANTONIO PROPERTIES

## Golden-Cheeked Warbler Habitat Assessment

### Golden-Cheeked Warbler Habitat

*Percent canopy closure.*—Warblers occur in mixed woodlands of relatively closed canopy (i.e., >50% closure), with most warblers found in areas averaging >70% canopy cover (Wahl et al. 1990, Beardmore 1994, Coldren 1998, Reemts et al. 2008). However, occurrence and territories of golden-cheeked warblers have also been documented in areas of 35–40% canopy cover (USFWS 1996, SWCA 2003 in Edwards County, Reemts et al. 2008 at Fort Hood, Heilbrun et al. 2009 near Government Canyon State Natural Area). TPWD defines potential warbler habitat as areas with 35–100% canopy closure (Campbell 2003).

*Percent Ashe juniper in canopy.*—Tree composition in warbler-occupied sites varies by region and site conditions, ranging from 10 to 90% Ashe juniper and 10 to 85% hardwood trees (Shaw 1989, USFWS 1996, Rowell et al. 2002). A study of vegetation characteristics at Fort Hood suggested that sites ( $n = 325$ ) with a small proportion of hardwood vegetation were not preferred by warblers, whereas areas with a mix of junipers (1–25%) and hardwoods (75–90%) were positively related to warbler occurrence (Horne and Anders 2001). At the Kerr Wildlife Management Area, Kerr County, Peterson (2001) found warbler territories ( $n = 25$ ) in areas with canopy composition of 80% juniper and 15% oaks. Although the species composition of trees and shrubs vary throughout the breeding range, Ashe juniper is always present and often the dominant canopy species (Shaw 1989, USFWS 1996, Rowell et al. 2002, Baccus et al. 2007, Reemts et al. 2008). TPWD describes potential warbler habitat as woodlands with at most 90% juniper in the canopy (Campbell 2003).

*Presence of mature Ashe juniper.*—Warblers are typically found in areas of mature mixed woodlands (Kroll 1974, Campbell 2003, DeBoer and Diamond 2006). TPWD defines mature Ashe junipers as trees  $\geq 4.6$  m ( $\geq 15$  ft) in height with trunks  $\geq 12.7$  cm ( $\geq 5$  inches) diameter at breast height (dbh), although “the essential element is that juniper trees have shredding bark, at least near the base of the tree” because warblers construct their nests primarily of juniper bark strips (Pulich 1976, Campbell 2003). Ashe juniper bark begins stripping near the base of the tree by 20 years of age and progresses to the crown by 40 years, although the age at which Ashe

## CITY OF SAN ANTONIO PROPERTIES

### Golden-Cheeked Warbler Habitat Assessment

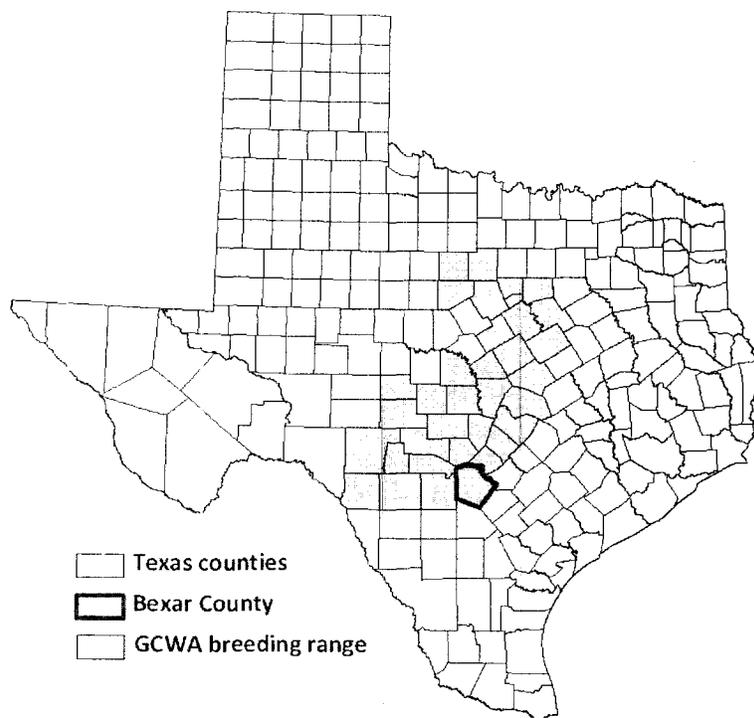
juniper reaches adequate size and bark-stripping characteristics may depend on soil type, local climate conditions, and past land use (Kroll 1974, USFWS 1998). For a study on Fort Hood, researchers used 4 categories of juniper age class based on branch and bark characteristics and juniper height and found warbler occurrence at survey points ( $n = 325$ ) was correlated with the more mature age categories (Horne and Anders 2001). Using similar categories for juniper maturity, DeBoer and Diamond (2006) found that, across the breeding range, warbler presence was positively correlated with patches of habitat ( $n = 49$ ) containing more mature Ashe juniper trees.

*Canopy height.*—Golden-cheeked warblers have been found in areas where canopy height averages 4–7.5 m, and in some areas with canopy as low as 3 m (Attwater in Chapman 1907, Pulich 1976, Kroll 1980, Shaw 1989, Beardmore 1994, Rowell et al. 2002, Newnam 2008, Reemts et al. 2008, Heilbrun et al. 2009). TPWD describes warbler habitat as having an overall woodland canopy height  $\geq 6.1$  m ( $\geq 20$  ft; Campbell 2003).

*Species richness.*—Ashe juniper and Spanish oak (aka Texas oak, *Quercus buckleyi*) are the most commonly detected woody vegetation species throughout the breeding range relative to golden-cheeked warbler occurrence. Additional species include plateau live oak (*Q. fusiformis*), shin oak (*Q. sinuata* var. *beviloba*), Texas ash (*Fraxinus texensis*), cedar elm (*Ulmus crassifolia*), Arizona walnut (*Juglans major*), and lacey oak (*Q. laceyi*; Choban 1974, Pulich 1976, Ladd 1985, Wahl et al. 1990, Rowell et al. 2002, Cummins 2006, Newnam 2008). However, studies that compared woody plant diversity with warbler occurrence found little correlation (Kroll 1980, Magness 2003, DeBoer and Diamond 2006, but see Shaw 1989).

# CITY OF SAN ANTONIO PROPERTIES

## Golden-Cheeked Warbler Habitat Assessment



**Figure 1 - General distribution of the golden-cheeked warbler's breeding range in central Texas. Habitat assessment surveys occurred in northern Bexar County.**

### STUDY SITES

Field surveys occurred on seven (7) City properties, four (4) of which share common boundaries (Figure 2): Medallion Tract (aka Sinkin; 146 ac [59 ha]), Panther Springs (281 ac [113 ha]), Scenic Canyon (453 ac [183 ha]), Friedrich/Woodland Hills (591 ac [239 ha]), and Rancho Diana/Cedar Creek (1,392 ac [563 ha]). All properties are located in northern Bexar County within the Balcones Canyonlands of the Edwards Plateau ecoregion (Griffith et al. 2004). From previous surveys by City staff, warblers were known to occur in 4 of the 5 property groups. All properties except Panther Springs lie between Government Canyon State Natural Area and Camp Bullis; Panther Springs lies east of and closest to Camp Bullis. Most properties are bounded in part by residential development. Public access is allowed only in Friedrich Park.

CITY OF SAN ANTONIO PROPERTIES  
 Golden-Cheeked Warbler Habitat Assessment

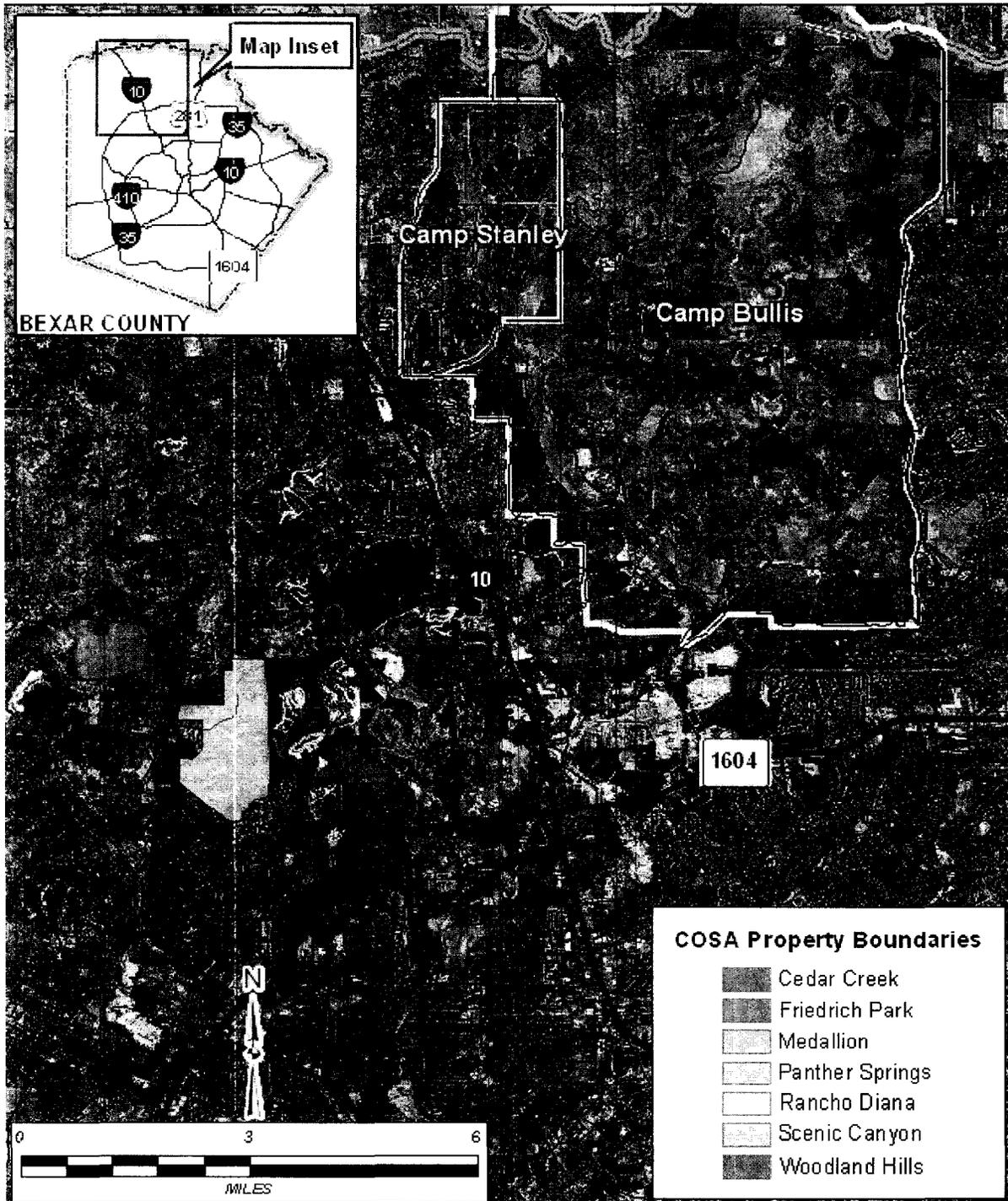


Figure 2 - City of San Antonio properties assessed for potential golden-cheeked warbler habitat, March-May 2010

# CITY OF SAN ANTONIO PROPERTIES

## Golden-Cheeked Warbler Habitat Assessment

### METHODS

#### Habitat Assessment

The study followed the methods outlined in the City's Request for Proposal (RFP) and Addendum I for vegetation surveys and model development. A 200-m grid was generated over each property and established survey points at the intersections of the gridlines and in the center of each grid square (Figure 3). Corner points and center points were surveyed independently of each other with at least five (5) days separating the visits. Supplemental data points were added to the grids at property boundaries to ensure the habitat model extended to the boundaries of each property.

Surveyors navigated to each point using handheld GPS units (Garmin eTrex Vista<sup>®</sup> HCx). At each survey point, surveyors recorded the GPS accuracy (maintaining an accuracy of  $\leq 5$  m [ $\leq 16.4$  ft]), and percent canopy closure. Percent canopy closure was measured with a spherical densiometer, with one measurement taken in each cardinal direction at 5 m from the survey point. Within a 1-ac (36-m radius [118 ft]) buffer around each survey point, surveyors recorded: percent Ashe juniper in the canopy (visual estimation), canopy height (visual estimation, measured in feet), woody plant species present in the canopy and juniper age categories (Table 1). Percent juniper in the canopy and canopy height were estimating to the nearest 5-unit interval (e.g., 35, 40, 45% or 5, 10, 15 ft). For the purposes of this project, canopy was defined as the upper third of the dominant vegetation. Canopy height was measured from the ground to the top of the canopy layer in 5-foot increments. Juniper age categories were based on physical characteristics of the trees, such as height, diameter at breast height (dbh), and bark stripping (Table 2); age categories present within each 1-ac buffer were noted. At the start and end of each day's survey, the surveyor recorded time, cloud cover, temperature, and wind speed. Wind speed was estimated using the Beaufort wind scale. See Appendix A for additional survey details, protocol, and 2010 data sheet.

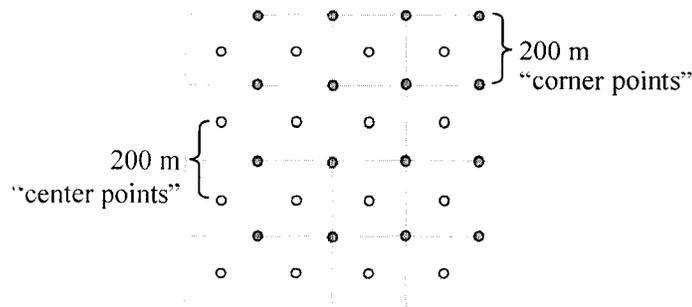
# CITY OF SAN ANTONIO PROPERTIES

## Golden-Cheeked Warbler Habitat Assessment

### Golden-Cheeked Warbler Surveys

While conducting the vegetation surveys, the surveyor also recorded incidental golden-cheeked warbler detections. To maximize the opportunity for detecting warblers during the vegetation surveys, the vegetation surveys were conducted 15 March through 15 May, between sunrise and approximately 1:00 pm, with temperatures between 40°F and 85°F, winds less than 12 mph (Beaufort scale 3), and outside of detectable precipitation. When vegetation surveys were completed at a point, the surveyors remained within 1 acre of the point to listen and look for warblers for up to 10 minutes of total survey time. If a warbler was observed, the surveyor approached to within 10 m of each warbler and recorded its location with the GPS unit. In the same manner, surveyors recorded the location of any warblers detected between survey points. A robust determination of the presence or absence of warblers from a given location requires repeated survey efforts. Therefore, these incidental warbler surveys should not be used as a definitive map of warbler occupancy, or a lack thereof.

As time permitted, the surveyor returned to the City properties to record additional warbler detections using the USFWS presence/absence survey protocol, although not all sites were visited a total of five (5) times (and thus cannot conclude warbler absences). These surveys were conducted throughout the entirety of each property; surveys were not based on previous warbler detections nor did they specifically avoid areas of potential non-habitat. At least 5 days were allowed to pass before surveying an area again. If a warbler was observed, the surveyor approached to within 10 m of each warbler and recorded its location with the GPS unit.



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**Figure 3 - Two sets of vegetation survey points established on a 200-m grid. Each set was surveyed independently and at least 5 days apart on City properties in northern Bexar County, March–May 2010.**

**Table 1 - Habitat variables and methods of measurement for the golden-cheeked warbler habitat assessment on City properties, northern Bexar County, March–May 2010.**

<b>Variable</b>	<b>Method</b>	<b>Location of measurement</b>
GPS error	Handheld GPS unit	At point
% canopy closure	Spherical densiometer	5 m from point in each cardinal direction
% juniper in canopy	Visual estimation	Within 1 acre (36 m) of point
Canopy height	Visual estimation	Within 1 acre (36 m) of point
Age of Ashe junipers present (J1–J4)	Visual estimation	Within 1 acre (36 m) of point
Inventory of woody plants in canopy	Visual estimation	Within 1 acre (36 m) of point
Presence of golden-cheeked warbler	Handheld GPS unit	Within 10 m of warbler location

**Table 2 - Age categories and descriptions of Ashe juniper used during the golden-cheeked warbler habitat assessment on City properties, northern Bexar County, March–May 2010.**

<b>Age Category</b>	<b>Ashe Juniper Description</b>
J-1	<1.8 m (<6 ft) tall; trunk <7.6 cm (<3 in) dbh
J-2	Nearly full height, many branchlets, white fungus on bark, trunk 7.6–20.3 cm (3–8 in) dbh; little or no signs of shedding bark.
J-2S	Nearly full height, many branchlets, white fungus on bark, trunk 7.6–20.3 cm (3–8 in) dbh; bark shows signs of stripping at least near the base of the tree.
J-3S	Branchlets beginning to thin and tree opening up inside, bark beginning to darken and strip. no white fungus, trunk >20.3 cm (>8 in) dbh.
J-4	Relatively open inside, dark bark with considerable stripping, branchlets reduced, often ‘un-huggable’ trunk.

City of San Antonio staff conducted territory mapping surveys at Woodland Hills (minimum of four (4) visits per habitat patch with at least five (5) days between visits) and that data is included in summaries of potential warbler habitat use and the maps of warbler detections. City staff recorded actual (within 10 m of warbler) and estimated warbler locations (estimated distance and direction for the observer to the warbler) based on auditory and visual detections. Warbler location data collected during these additional surveys complimented the warbler data collected

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during vegetation surveys and provided additional information regarding areas used by warblers on City properties.

This analysis mapped all warbler detections collected during vegetation surveys and supplementary surveys. For the territory mapping data sourced from the City, only those detections that were actual or estimated within 50 m of the observer were included. The analysis then extracted and summarized the interpolated values of the vegetation characteristics for all warbler detections.

### ANALYSIS

#### Model Development

A GIS model of potential warbler habitat was created using the Spatial Analyst Natural Neighbor Interpolation tool in ArcGIS 9.3.1. A cell size of 3.5 m was used for the interpolation. Interpolation is a procedure used to predict the values of cells at locations that lack sampled points. It is based on the principle of spatial dependence, which measures the degree of dependence between near and distant objects. Thus, the interpolation tool creates a continuous surface by averaging the values between sample points weighted by the proximity to sampled data. This procedure was applied to the following vegetation characteristics: percent canopy closure, percent Ashe juniper in canopy, canopy height, and species richness. Sample points with shredding bark juniper were buffered 200 m rather than interpolated (see below). The vegetation survey data (actual and interpolated values) was categorized as potential warbler habitat or non-habitat based primarily on TPWD habitat definitions (Campbell 2003). These parameters included percent canopy closure, percent Ashe juniper in canopy, and presence of mature (i.e., shredding bark) juniper (Table 3).

*Percent canopy closure.*—TPWD defines potential warbler habitat as woodlands with 35–100% canopy closure (Campbell 2003), thus all cells with values of  $\geq 35\%$  canopy closure were considered as potential habitat.

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*Percent Ashe juniper in canopy.*—TPWD defines potential warbler habitat as woodlands with 10–90% Ashe juniper in the canopy (Campbell 2003). Thus, the model categorized cells as potential habitat if their values for percent juniper in the canopy ranged 10–90%, inclusive. For the purposes of this study, live oak was considered a deciduous hardwood.

*Presence of mature Ashe juniper.*—To determine potential warbler habitat using the shredding bark characteristics, the model created 200-m buffers around all sample points with age classes of J-2S or greater, on the basis that warblers could easily travel 200 m to gather nesting material. The model categorized all cells that occurred within the 200-m buffers as potential habitat.

**Table 3 - Categories of vegetation characteristics used to model potential golden-cheeked warbler habitat on City of San Antonio properties.**

	<b>Not Habitat</b>	<b>Potential Habitat</b>
Canopy height	No Restrictions	No Restrictions
% canopy closure	< 35%	> or = 35%
% juniper in canopy	< 10% or >90%	10–90%, inclusive
Presence of shredding bark juniper	Cells >200 m from surveys points with age categories J-2S, J-3S, or J-4 present	Cells ≤ 200 m from surveys points with age categories J-2S, J-3S, or J-4 present

**The final model of potential habitat included only those cells that satisfied all of the above three requirements.**

*Canopy height and species richness.*—While canopy height is useful as a general guideline to land managers throughout the range of the species, the City has documented warblers in areas with canopy height <6.1 m (<20 ft).

Limited information exists regarding warbler occurrence and woody plant diversity. Species richness is a measure of the number of species found in a sample and is one method for

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analyzing species diversity. The number of species within 36 meters of each point was tabulated and presented as an index of species richness.

Although this analysis interpolated canopy height and species richness, and included maps of these characteristics herein, these parameters were excluded from the final habitat model.

### RESULTS AND DISCUSSION

#### Habitat Assessment

This study conducted vegetation surveys at 618 points (577 grid points and 41 supplemental points) throughout the five (5) property groups (2,863 ac), or approximately one (1) sample point every 4.6 acres (Figures 4–8). Surveys occurred 15 March through 14 May 2010, between sunrise and 1315. Temperatures at the start of surveys in the morning averaged 56.7°F (range 34–77°F) while ending temperatures averaged 72.6°F (range 58–88°F). GPS accuracy averaged 3.57 m.

The most commonly encountered species included Ashe juniper (*Juniperus ashei*), plateau live oak (*Quercus fusiformis*), mountain laurel (*Sophora secundiflora*), Spanish (Texas) oak (*Quercus buckleyi*), and Texas persimmon (*Diospyros texana*). Additional species included catclaw acacia (*Acacia roemeriana*), evergreen sumac (*Rhus virens*), cedar elm (*Ulmus crassifolia*), black cherry (*Prunus serotina* var. *eximia*), and shin oak (*Quercus sinuata* var. *breviloba*). Species occurring on the sites in lower abundance included walnut (*Juglans* spp.), deciduous yaupon (*Ilex decidua*), redbud (*Cercis canadensis*), lacey oak (*Quercus laceyi*), and hackberry (*Celtis laevigata*). Rare species included buckeye (*Aesculus* spp.), willow baccharis (*Baccharis neglecta*), honey mesquite (*Prosopis glandulosa*), pecan (*Carya illinoensis*), Texas ash (*Fraxinus texensis*), and huisache (*Acacia farnesiana*). It must reiterated, however, that the vegetation characteristics values for warbler detections were derived from the interpolated maps and do not represent actual vegetation data collected at warbler locations.

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The vegetation survey data among the five (5) property groups showed average canopy closure ranged from 40.4–76.1% (S.D. = 22.1–36.3), average percent Ashe juniper in the canopy ranged from 56.9–77.2% (S.D. = 16.2–30.1), average canopy height ranged from 18.9–26.7 ft (5.76–8.14 m; S.D. = 6.7–10.2 ft), and average species richness ranged from 2.7–3.9 (S.D. = 0.9–1.1; Table 4). Juniper age classes of J-2S or higher were detected at 95.5% of the survey points; age classes of J-3S or higher were detected at 66.7% of the survey points with the highest proportion of older juniper occurring on Medallion Tract and Scenic Canyon (Table 4). A 200-m buffer around all survey points with age class of J-2S or higher covered 100% of each property. The lowest average values for all vegetation characteristics occurred on Panther Springs (Table 4).

### Golden-Cheeked Warbler Surveys

In addition to recording warblers detected during the vegetation surveys, the Pape-Dawson team recorded warblers detected during three (3) additional visits to Rancho Diana/Cedar Creek and one (1) additional visit to Friedrich, Medallion, Panther Springs, and Scenic Canyon each. City staff completed a minimum of four (4) territory mapping surveys per habitat patch in Woodland Hills. All surveys combined resulted in 496 warbler detections, with 435 detections occurring within the property boundaries (Figures 9–12). Golden-cheeked warblers were detected at all properties except Panther Springs.

As per the City RFP, the models created 10-acre (4.05-ha) buffers around the warbler detections to estimate the amount of habitat occupied by warblers. The resulting estimate indicates a minimum of 972 acres (393 ha) of habitat is occupied within the City property boundaries (Figures 9–12).

### Model Development

Interpolating the habitat characteristics provided predictions of the extent of potential golden-cheeked warbler habitat for each property (Figures 13–37). The models indicated approximately 2,394.6 acres (969.1 ha) of potential warbler habitat among the five (5) property groups: 152.6 ac at Medallion Tract, 155.3 ac at Panther Springs, 432.1 ac at Scenic Canyon, 536.6 ac between

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Friedrich Park and Woodland Hills, and 1118.0 ac between Rancho Diana and Cedar Creek. Ninety-four percent of warbler detections occurred within the potential habitat delineations (Figures 17, 27, 32, 37).

### **Warbler Habitat Use**

Based on the interpolated vegetation data, warbler detections occurred in vegetation with an average canopy closure of 71.3% (S.D. = 19.4), average percent juniper in the canopy of 66.3% (S.D. = 16.9), average canopy height of 26.2 ft (7.98 m; S.D. = 7.1 ft), and average species richness of 3.9 (S.D. = 0.7) across all properties (Table 5). The 200-m buffer around vegetation sample points with J-2S or high juniper age classes covered the entirety of each City property and encompassed all points of warbler detection and non-detection. Therefore, within the City properties, the J-2S metric does not describe a limiting factor to warbler distribution. If non-warbler habitat exists within the City properties, the J-2S metric has limited utility in delineating the boundary between habitat and non-habitat.

Nearly all warbler detections occurred in areas with >35% canopy closure (96% of detections), 10–90% juniper in the canopy (97% of detections), and canopy height of >15 ft (98% of detections; Table 6). In comparison, 79.3% of vegetation sample points contained >35% canopy closure, 93.4% of sample points contained 10–90% juniper in the canopy, and 91.4% of sample points had an average canopy height of >15 ft (Table 7).

### **Model Limitations**

These models for the habitat assessment of the City of San Antonio properties provide an approximation of the vegetation characteristics on each property. In addition, in the field and through interpolation, data values for canopy height and percent juniper in the canopy were averaged within one (1) acre around the sample points. The true values for habitat characteristics between vegetation survey points may in actuality be larger or smaller than estimated in the interpolation models. As is inherent in most models, some variability in the system may not have been captured within the scale of the survey grid (e.g., 200-m grid with approximately 140

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m between neighboring points). Nevertheless, the survey methods and resulting habitat models provide a quick and simple way of estimating potential warbler habitat across relatively large areas where detailed analyses of habitat may be cost-prohibitive or inefficient. For future applications, gaps in the resultant habitat maps can be addressed in a manner dependent on the purpose and goals of the modeler.

Although most warbler detections occurred within the final potential habitat delineation, the parameters of potential habitat (e.g., >35% canopy cover, 10–90 % juniper composition) were sufficiently broad to cover the majority of each property and, thus, the warblers that occurred in the properties. Additionally, because of the broad parameters of potential habitat, the model may overestimate the amount of potential habitat. In future projects, additional vegetation metrics should be evaluated in an effort to more accurately delineate potential warbler habitat.

### **Mitigation Credits**

Once habitat acreages per property group were derived, mitigation credits for impacts to golden-cheeked warbler habitat were calculated for use by Camp Bullis under the September 2009 Programmatic Biological Opinion (PBO). The PBO grants one (1) credit per acre of suitable warbler habitat and 0.5 credit per acre of adjacent buffer that is not considered suitable for occupation by warblers. Credits were calculated on three properties, Scenic Canyon, Woodland Hills, and Rancho Diana/Cedar Creek. These credits were then halved per US Fish and Wildlife Service guidance based on City properties having “pre-existing preservation initiatives” in place. Resulting credits for each parcel are presented in Table 8.

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**Table 4 - Summary of vegetation data collected at survey points on City of San Antonio properties, March–May 2010, including the mean, standard deviation (S.D.) and range of values for each property and the total across properties.**

Property	Property size (ac)	No. survey points	<u>% canopy closure</u>			<u>% juniper in canopy</u>			<u>Canopy height (ft)</u>			<u>Species richness</u>			<u>% of pts w/juniper age class</u>				
			mean	S.D.	range	mean	S.D.	range	mean	S.D.	range	mean	S.D.	range	J-1	J-2	J-2S	J-3S	J-4
Medallion	146	36	75.3	22.1	10–100	77.2	16.2	25–90	22.5	6.7	15–40	3.6	1.1	2–6	100	100	100	86.1	25.0
Panther Springs	281	65	40.4	36.3	0–100	56.9	30.1	0–95	18.9	7.9	0–35	2.7	1.1	0–5	61.5	80.0	81.5	30.8	4.6
Scenic Canyon	453	97	76.1	22.7	4–100	73.0	20.7	5–95	25.9	10.2	10–55	3.4	1.0	2–6	100	99.0	100	85.6	40.2
Friedrich/ Woodland Hills	591	130	73.4	30.1	0–100	68.1	22.4	5–95	26.7	9.6	10–50	3.7	0.9	2–6	99.2	96.9	96.2	70.0	24.6
Rancho Diana/ Cedar Creek	1,392	290	58.4	31.1	0–100	63.5	24.0	0–100	20.2	8.1	5–50	3.9	1.0	1–7	100	99.7	94.8	64.1	13.4
<b>Total or Mean</b>	<b>2,863</b>	<b>618</b>	<b>63.4</b>	<b>31.8</b>	<b>0–100</b>	<b>66.1</b>	<b>24.1</b>	<b>0–100</b>	<b>22.5</b>	<b>9.2</b>	<b>0–55</b>	<b>3.6</b>	<b>1.1</b>	<b>0–7</b>	<b>95.8</b>	<b>96.9</b>	<b>94.8</b>	<b>66.5</b>	<b>19.7</b>

**Table 5 - Summary of interpolated vegetation characteristics at golden-cheeked warbler detection points, including the mean, standard deviation (S.D.) and range of values for each property group<sup>a</sup> and the total across properties. Data was collected on City of San Antonio properties, northern Bexar County, March–May 2010.**

Property	No. GCWA detections <sup>b</sup>	<u>% canopy closure</u>			<u>% juniper in canopy</u>			<u>Canopy height (ft)</u>			<u>Species richness</u>		
		mean	S.D.	range	mean	S.D.	range	mean	S.D.	range	mean	S.D.	range
Medallion	2	66.9	20.1	52–81	78.8	4.7	75–82	20.4	6.5	15–25	2.7	0.5	2.5–3.3
Scenic Canyon	70	74.2	15.7	37–96	68.5	14.7	34–91	30.0	9.3	15–48	3.6	0.6	2.0–4.7
Friedrich/ Woodland Hills	234	74.1	17.8	23–98	70.2	13.7	20–90	26.0	6.2	14–48	3.9	0.7	2.1–5.7
Rancho Diana/ Cedar Creek	129	64.7	22.4	7–97	58.0	20.1	7–94	24.6	6.4	11–41	4.0	0.6	2.1–5.7
<b>Total or Mean</b>	<b>435</b>	<b>71.3</b>	<b>19.4</b>	<b>23–98</b>	<b>66.3</b>	<b>16.9</b>	<b>7–94</b>	<b>26.2</b>	<b>7.1</b>	<b>11–48</b>	<b>3.9</b>	<b>0.7</b>	<b>2.0–5.7</b>

<sup>a</sup> No warblers were detected at Panther Springs.

<sup>b</sup> GCWA detections do not indicate unique individuals; we often recorded multiple detection points per individual.

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**Table 6 - Interpolated vegetation characteristics at golden-cheeked warbler detection points, by category and property group<sup>a</sup>. Data was collected on City of San Antonio properties, northern Bexar County, March–May 2010.**

	<b>Medallion</b>	<b>Scenic Canyon</b>	<b>Friedrich/Woodland</b>	<b>Rancho Diana/Cedar Creek</b>	<b>Total points</b>	<b>% pts in category</b>
<b>No. of GCWA detections</b>	2	70	234	129	435	
<b>% canopy closure</b>						
0.0–14.9	0	0	0	3	3	0.7
15.0–34.9	0	0	2	12	14	3.2
35.0–49.9	0	4	32	20	56	12.9
50.0–69.9	1	24	47	34	106	24.4
70.0–100	1	42	153	60	256	58.9
<b>% juniper in canopy</b>						
0.0–9.9	0	0	0	6	6	1.4
10.0–24.9	0	0	4	7	11	2.5
25.0–49.9	0	6	11	18	35	8.0
50.0–74.9	0	37	117	75	229	52.6
75.0–90.0 <sup>b</sup>	2	26	102	20	150	34.5
90.1–100	0	1	0	3	4	0.9
<b>Canopy height (ft)</b>						
0.0–14.9	0	0	3	2	5	1.1
15.0–19.9	1	11	26	38	76	17.5
20.0+	1	59	205	89	354	81.4
<b>Species richness</b>						
0.0–1.9	0	0	0	0	0	0.0
2.0–3.9	2	53	126	60	241	55.4
4.0–5.9	0	17	108	69	194	44.6
6.0+	0	0	0	0	0	0.0

<sup>a</sup> Warblers were not detected at Panther Springs during the 2010 habitat assessment.

<sup>b</sup> Category follows TPWD definition of potential golden-cheeked warbler habitat, i.e., percent Ashe juniper in canopy is 10–90%, inclusive.

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**Table 7 - Vegetation characteristics by category and property group from data collected on City of San Antonio properties, northern Bexar County, March–May 2010.**

	<b>Medallion</b>	<b>Panther Springs</b>	<b>Scenic Canyon</b>	<b>Friedrich/Woodland</b>	<b>Rancho Diana/Cedar Creek</b>	<b>Total points</b>	<b>% pts in category</b>
<b>No. survey points</b>	36	65	97	130	290	618	
<b>% canopy closure</b>							
0.0–14.9	1	24	3	10	38	76	12.3
15.0–34.9	1	8	1	9	33	52	8.4
35.0–49.9	4	5	12	8	35	64	10.4
50.0–69.9	7	11	16	14	52	100	16.2
70.0–100	23	17	65	89	132	326	52.8
<b>% juniper in canopy</b>							
0.0–9.9	0	9	1	1	7	18	2.9
10.0–24.9	0	3	2	10	24	39	6.3
25.0–49.9	3	4	8	11	32	58	9.4
50.0–74.9	4	26	22	35	95	182	29.4
75.0–90.0 <sup>a</sup>	29	18	60	67	124	298	48.2
90.1–100	0	5	4	6	8	23	3.7
<b>Canopy height (ft)</b>							
0.0–14.9	0	8	3	6	36	53	8.6
15.0–19.9	10	13	18	15	95	151	24.4
20.0+	26	44	76	109	159	414	67.0
<b>Species richness</b>							
0.0–1.9	0	7	0	0	2	9	1.5
2.0–3.9	18	46	60	54	93	271	43.9
4.0–5.9	16	12	35	74	180	317	51.3
6.0+	2	0	2	2	15	21	3.4

<sup>a</sup> Category follows TPWD definition of potential golden-cheeked warbler habitat, i.e., percent Ashe juniper in canopy is 10–90%, inclusive.

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**Table 8 - Calculation of mitigation credits per September 2009 Camp Bullis Programmatic Biological Opinion**

**Woodland Hills (Without Friedrich Park)**

Habitat Type	Acreage	Mitigation Ratio (acres habitat: acres credit)	Full Credit Value	1/2 Credit Value
Suitable habitat (per 2S, 3 parameter model)	289.00	1 : 1.0	289.00	144.50
Non-habitat (buffer around known occupied habitat)	36.00	1 : 0.5	18.00	9.00
<b>Total Acreage - Woodland Hills:</b>	<b>325.00</b>		<b>307.00</b>	<b>153.50</b>

**Scenic Canyon**

Habitat Type	Acreage	Mitigation Ratio (acres habitat: acres credit)	Credit Value	Credit Value
Suitable habitat (per 2S, 3 parameter model)	432.00	1 : 1.0	432.00	216.00
Non-habitat (buffer around known occupied habitat)	21.00	1 : 0.5	10.50	5.25
<b>Total Acreage - Scenic Canyon:</b>	<b>453.00</b>		<b>442.50</b>	<b>221.25</b>

**Rancho Diana/Cedar Creek**

Habitat Type	Acreage	Mitigation Ratio (acres habitat: acres credit)	Credit Value	Credit Value
Suitable habitat (per 2S, 3 parameter model)	1118.00	1 : 1.0	1118.00	559.00
Non-habitat (buffer around known occupied habitat)	274.00	1 : 0.5	137.00	68.50
<b>Total Acreage - Rancho Diana/Cedar Creek</b>	<b>1392.00</b>		<b>1255.00</b>	<b>627.50</b>

**Scenic Canyon and Rancho Diana/Cedar Creek**

1,697.50      **848.75**

**Scenic Canyon and Rancho Diana/Cedar Creek and Woodland Hills**

2,004.5      **1,002.25**

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Figure 4 - Location of vegetation surveys conducted at Medallion Tract for the 2010 warbler habitat assessment of CoSA properties.

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Figure 5 - Location of vegetation surveys conducted at Panther Springs for the 2010 warbler habitat assessment of CoSA properties.

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Figure 6 - Location of vegetation surveys conducted at Scenic Canyon for the 2010 warbler habitat assessment of CoSA properties

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Figure 7 - Location of vegetation surveys conducted at Friedrich Park and Woodland Hills for the 2010 warbler habitat assessment of CoSA properties.

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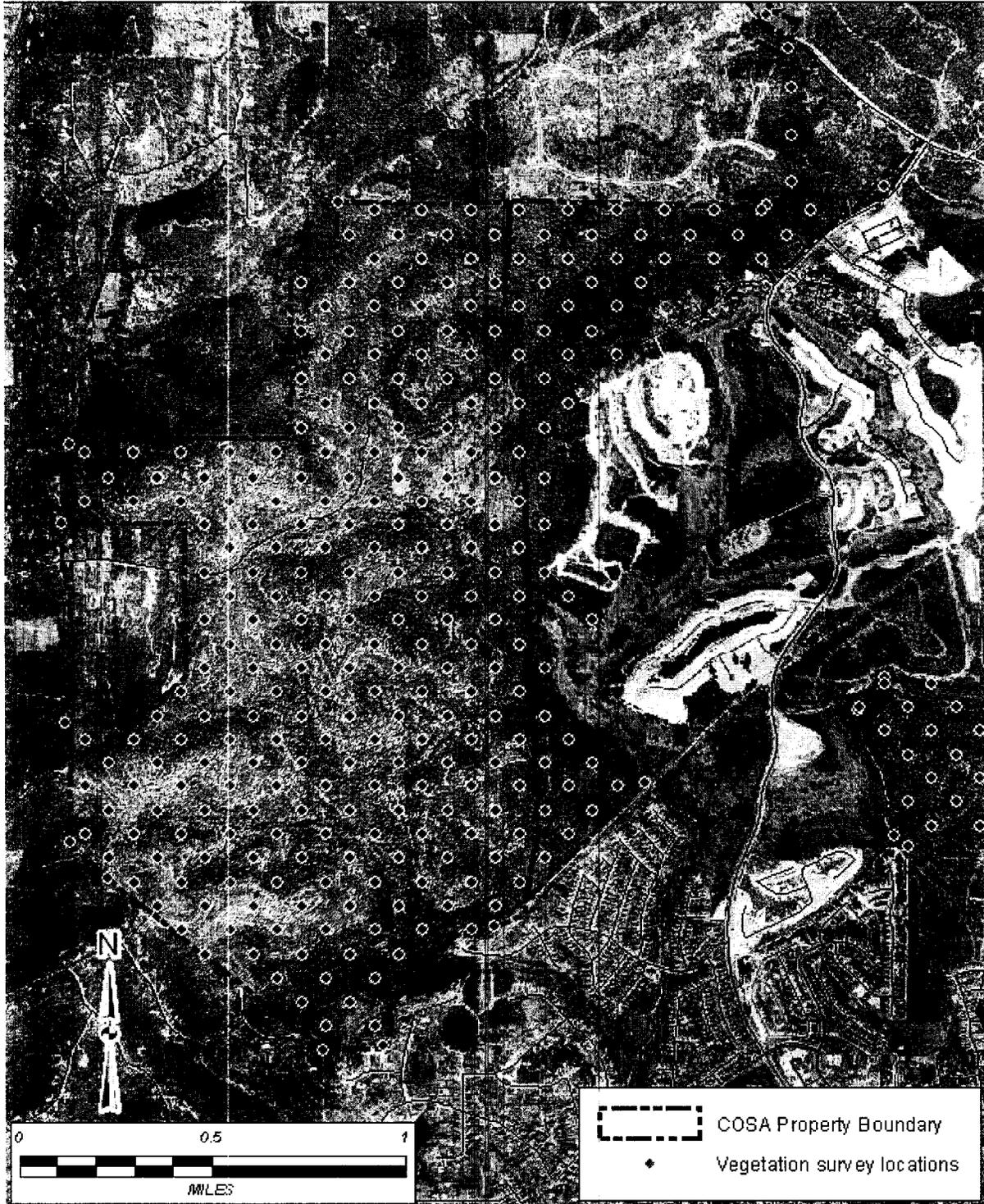


Figure 8 - Location of vegetation surveys conducted at Rancho Diana and Cedar Creek for the 2010 warbler habitat assessment of CoSA properties.

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Figure 9 - Golden-cheeked warbler detections at Medallion Tract, recorded during vegetation surveys, March-May 2010. Number of detections may not equal the number of individual warblers. Red buffer around detection points indicates a 10-acre area used to estimate the amount of occupied habitat.

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Figure 10 - Golden-cheeked warbler detections at Scenic Canyon, recorded during vegetation and warbler surveys, March-May 2010. Number of detection points is greater than the number of individual warblers. Red buffer around detection points indicates a 10-acre area used to estimate the amount of occupied habitat.

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Figure 11 - Golden-cheeked warbler detections at Friedrich Park and Woodland Hills, recorded during vegetation and warbler surveys, March-May 2010. Number of detection points is greater than the number of individual warblers. Red buffer around detection points indicates a 10-acre area used to estimate the amount of occupied habitat.

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Figure 12 - Golden-cheeked warbler detections at Rancho Diana and Cedar Creek, recorded during vegetation and warbler surveys, March-May 2010. FNumber of detection points is greater than the number of individual warblers. Red buffer around detection points indicates a 10-acre area used to estimate the amount of occupied habitat.

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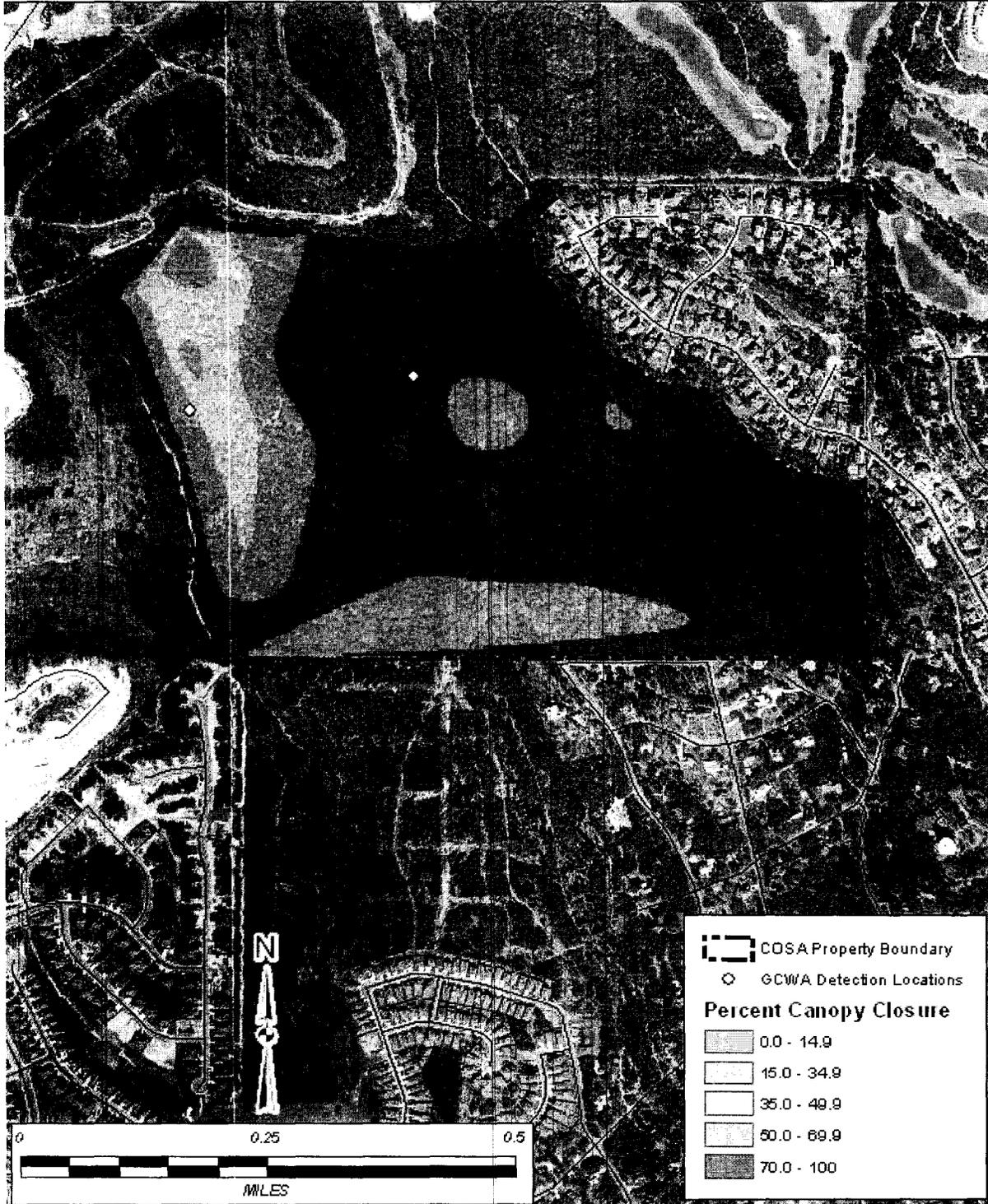


Figure 13 - Predicted canopy closure for Medallion Tract, modeled using nearest neighbor interpolation and warbler detections compiled during the 2010 field surveys.

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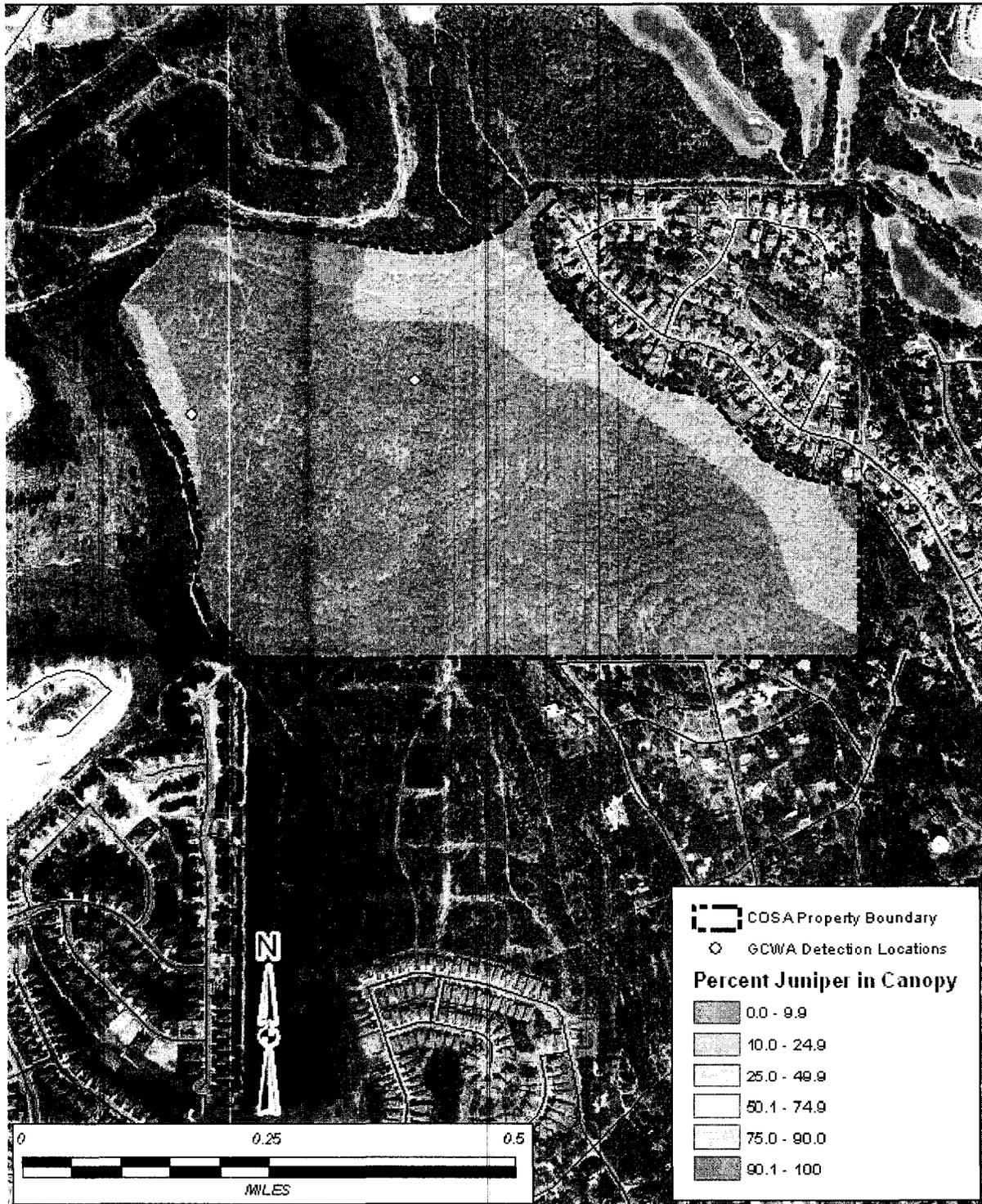


Figure 14 - Predicted juniper in canopy for Medallion Tract, modeled using nearest neighbor interpolation and warbler detections compiled during the 2010 field surveys.

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Figure 15 - Predicted canopy height for Medallion Tract, modeled using nearest neighbor interpolation and warbler detections compiled during the 2010 field surveys.

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Golden-Cheeked Warbler Habitat Assessment

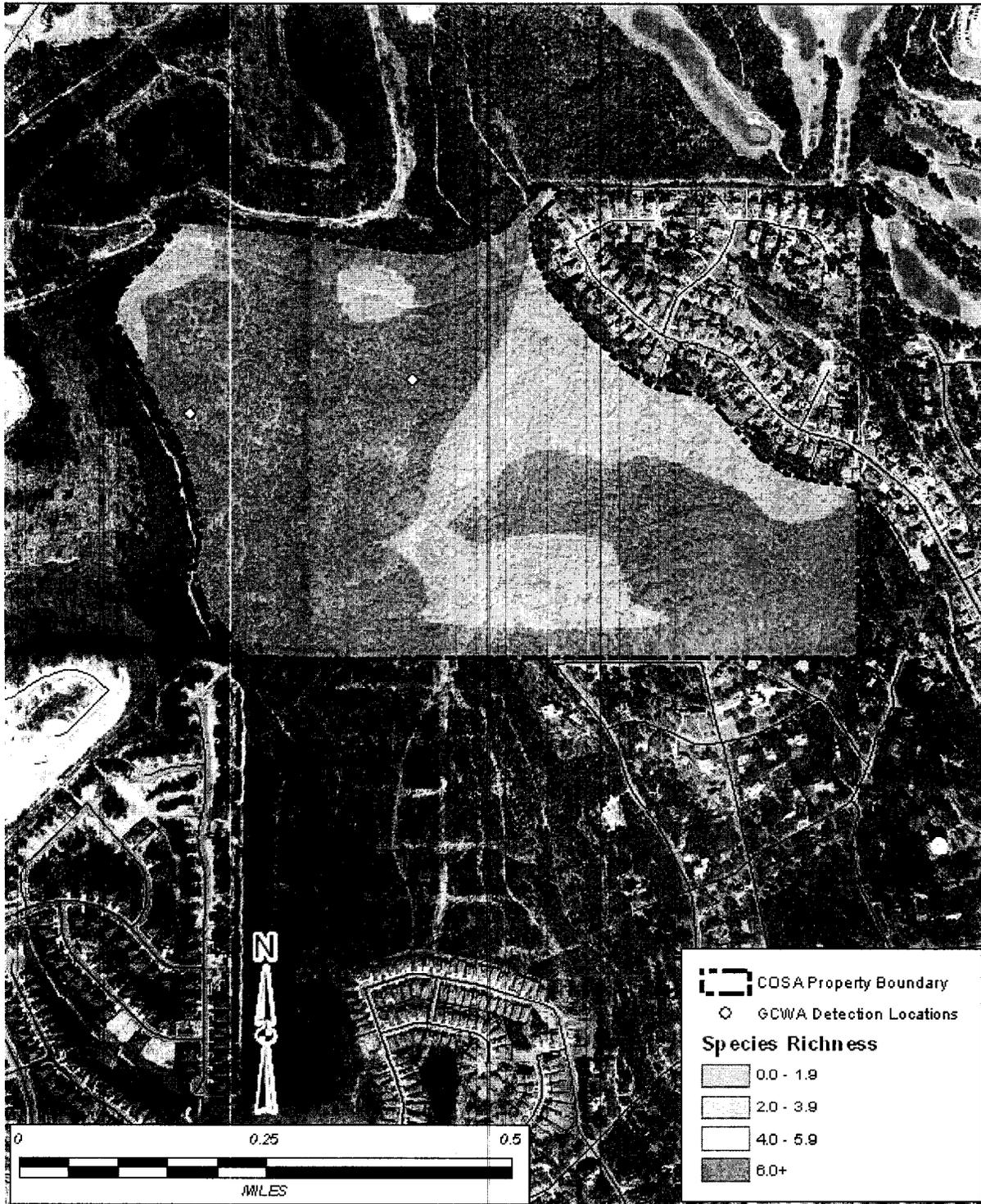


Figure 16 - Predicted species richness for Medallion Tract, modeled using nearest neighbor interpolation and warbler detections compiled during 2010 field surveys.

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Figure 17 - Predicted delineation of potential golden-cheeked warbler habitat for Medallion Tract and warbler detections compiled during the 2010 field surveys. Delineations include all cells with >35% canopy closure, 10–90% Ashe juniper in the canopy, and juniper age classes of J-2S or higher.

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Figure 18 - Predicted canopy closure for Panther Springs modeled using nearest neighbor interpolation.

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Figure 19 - Predicted juniper in canopy for Panther Springs, modeled using nearest neighbor interpolation.

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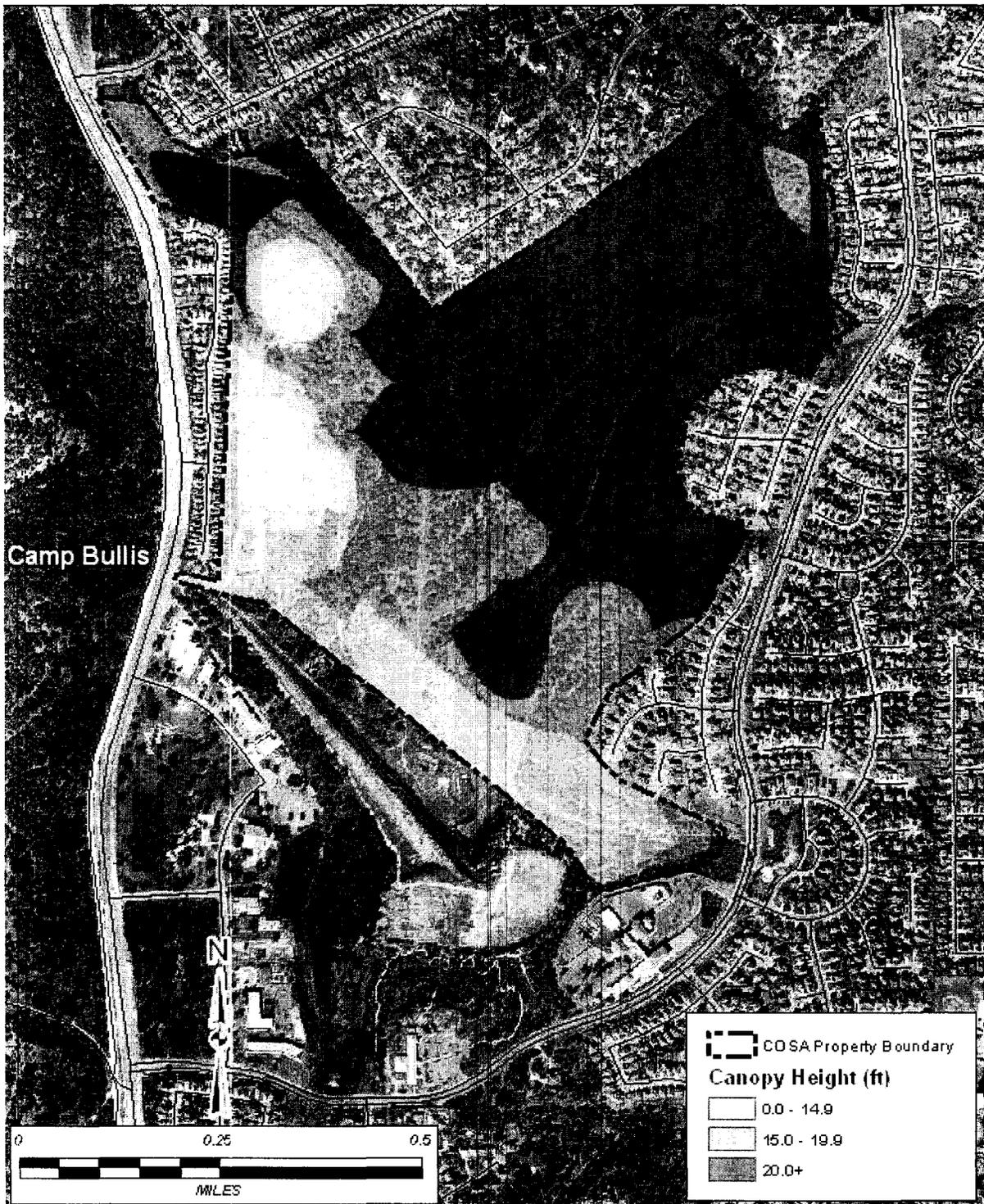


Figure 20 - Predicted canopy height for Panther Springs, modeled using nearest neighbor interpolation.

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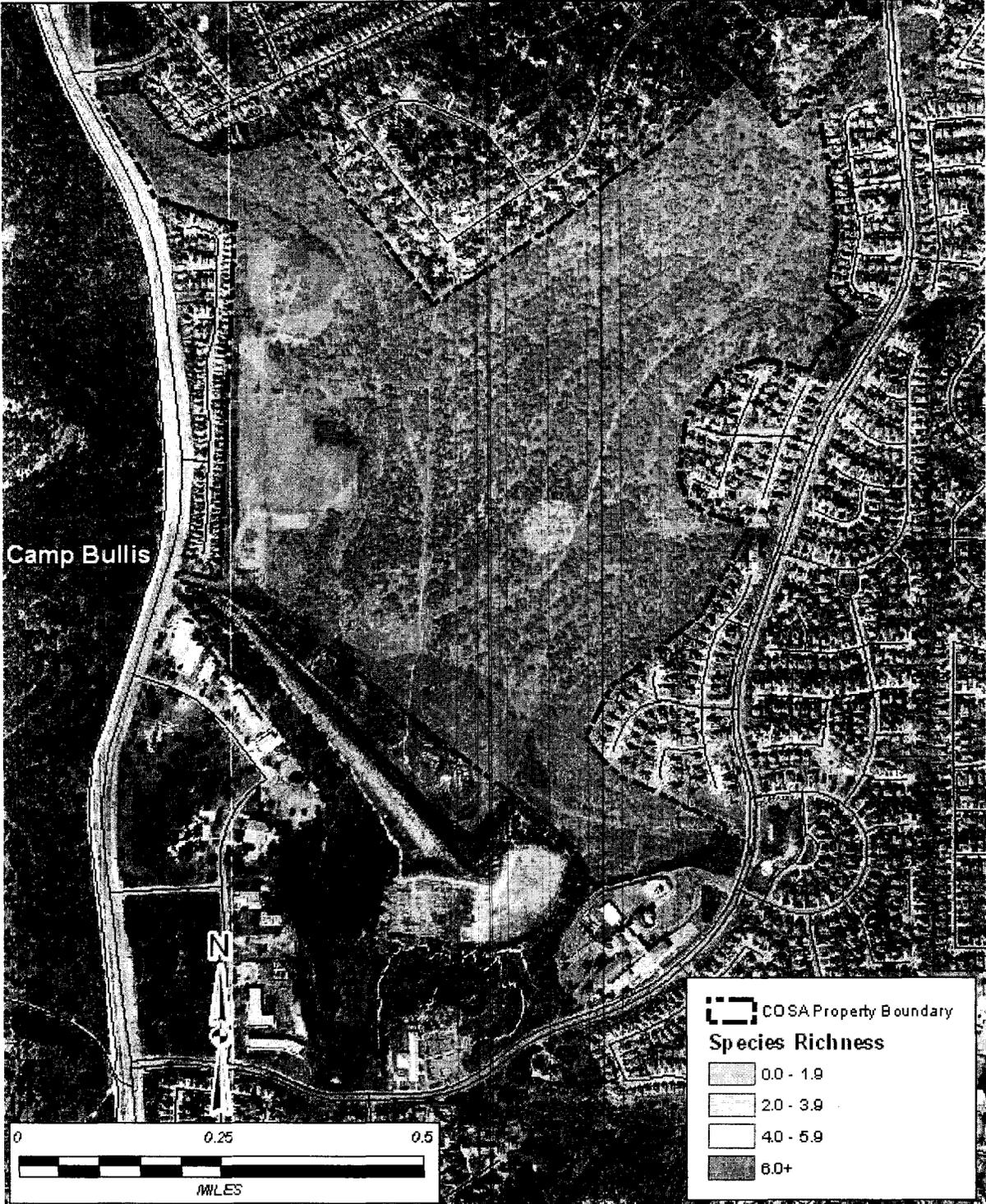


Figure 21 - Predicted species richness for Panther Springs, modeled using nearest neighbor interpolation.

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Figure 22 - Predicted delineation of potential golden-cheeked warbler habitat for Panther Springs. Delineations include all cells with >35% canopy closure, 10–90% Ashe juniper in the canopy, and juniper age classes of J-2S or higher.

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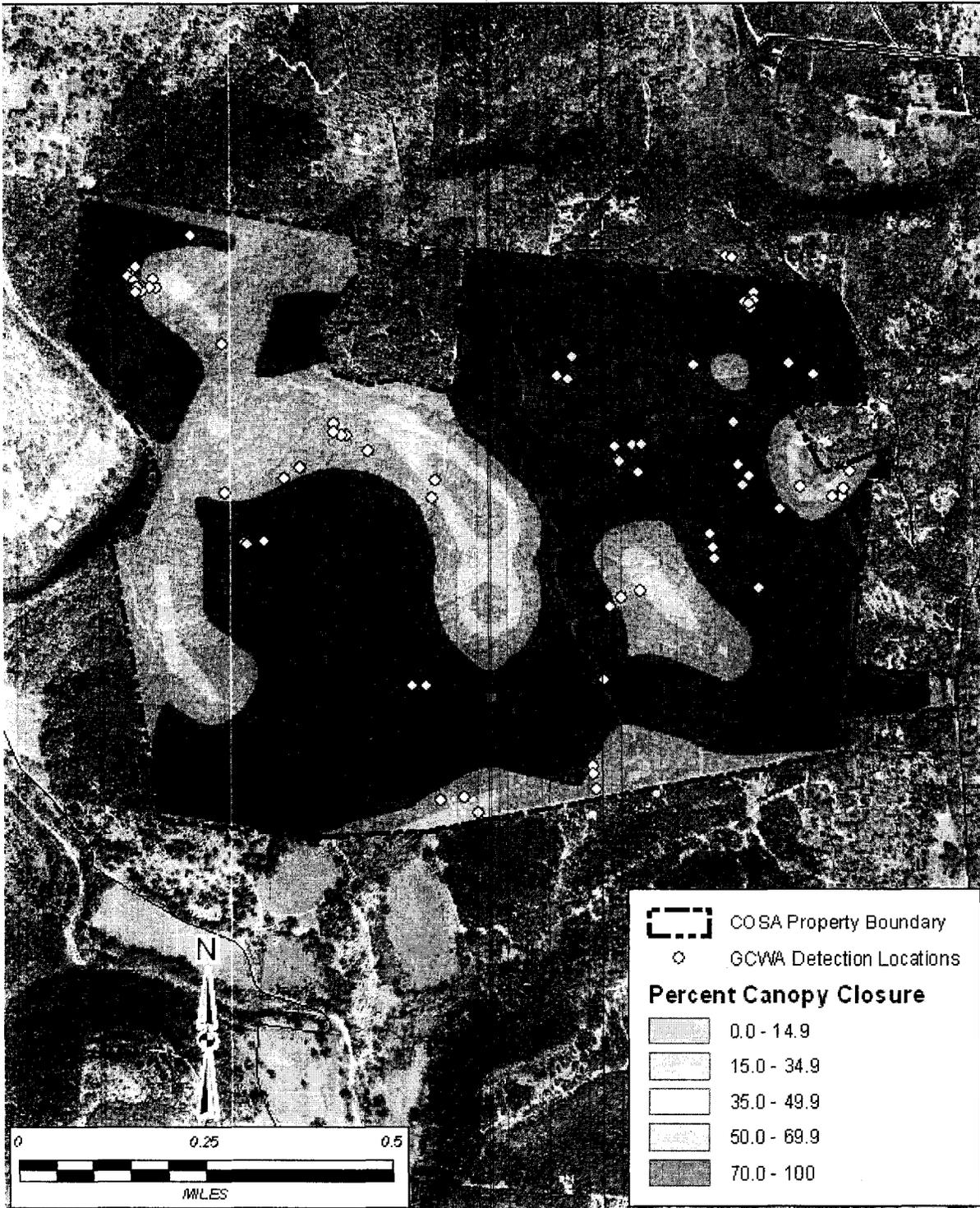


Figure 23 - Predicted canopy closure for Scenic Canyon, modeled using nearest neighbor interpolation and warbler detections compiled during the 2010 surveys.

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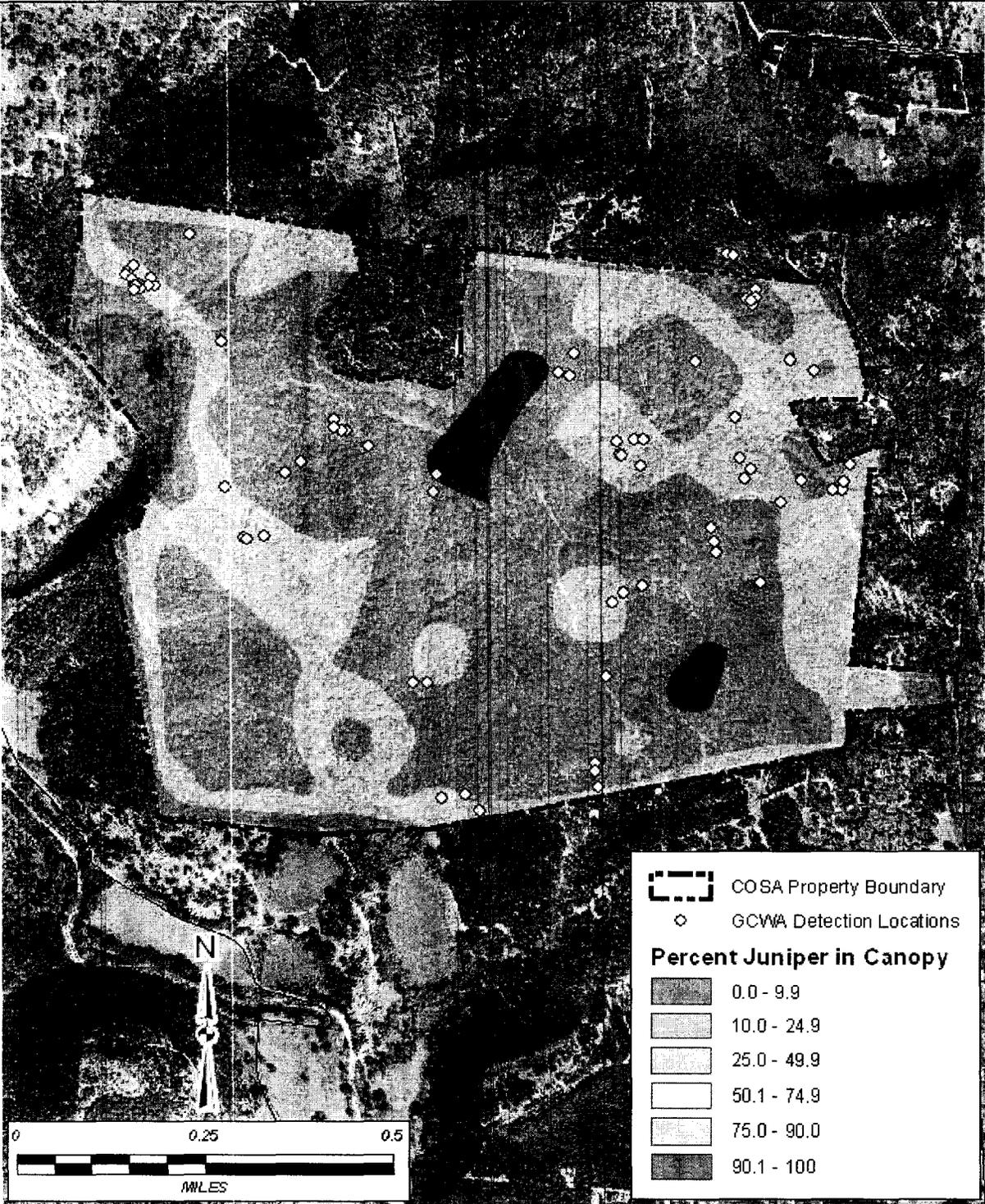


Figure 24 - Predicted juniper in canopy for Scenic Canyon, modeled using nearest neighbor interpolation and warbler detections compiled during the 2010 field surveys.

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Figure 25 - Predicted canopy height for Scenic Canyon modeled using nearest neighbor interpolation and warbler detections compiled during the 2010 field surveys.

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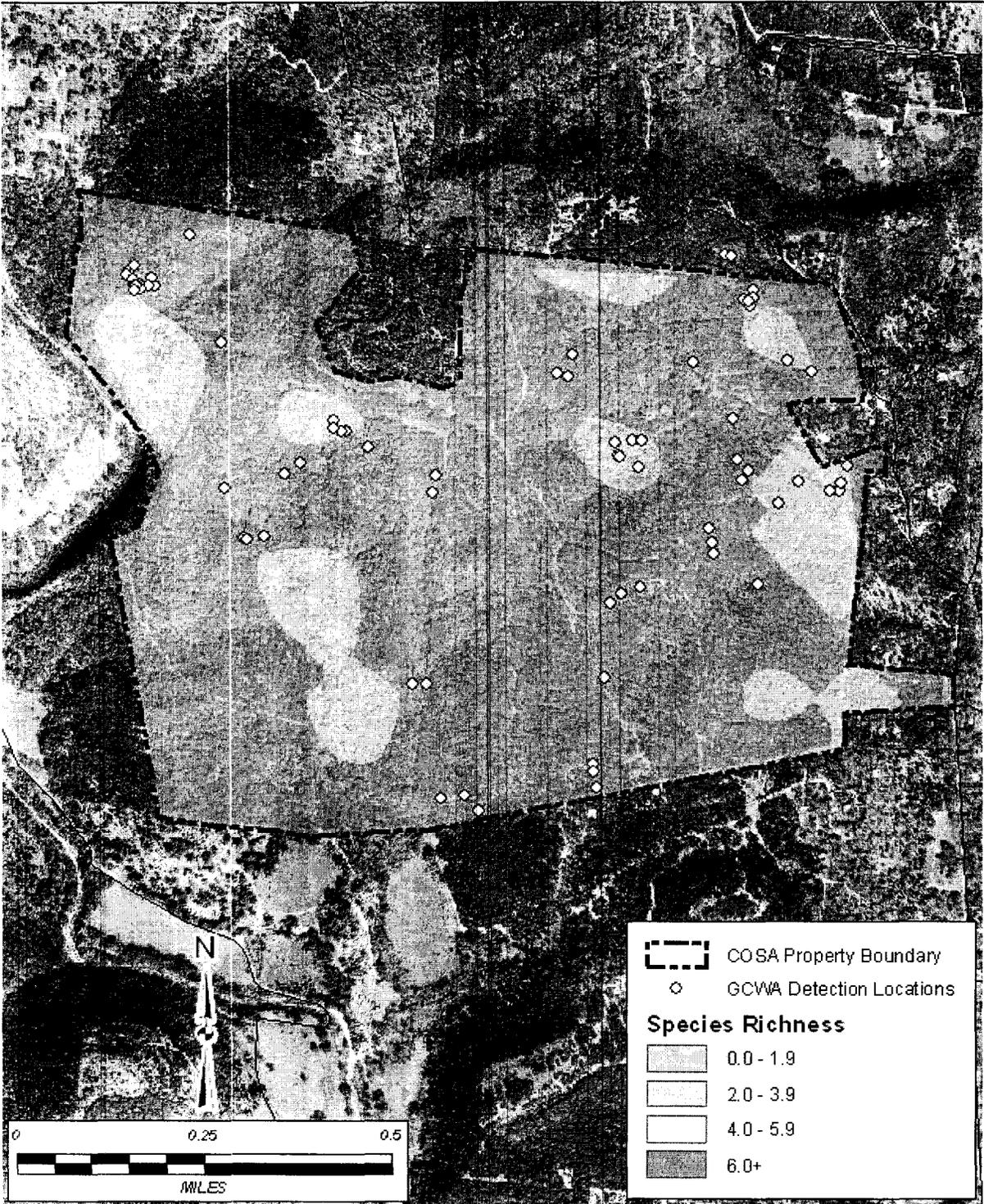


Figure 26 - Predicted species richness for Scenic Canyon, modeled using nearest neighbor interpolation and warbler detections compiled during the 2010 field surveys.

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Figure 27 - Predicted delineation of potential golden-cheeked warbler habitat for Scenic Canyon and warbler detections compiled during the 2010 field surveys. Delineations include all cells with >35% canopy closure, 10–90% Ashe juniper in the canopy, and juniper age classes of J-2S or higher.

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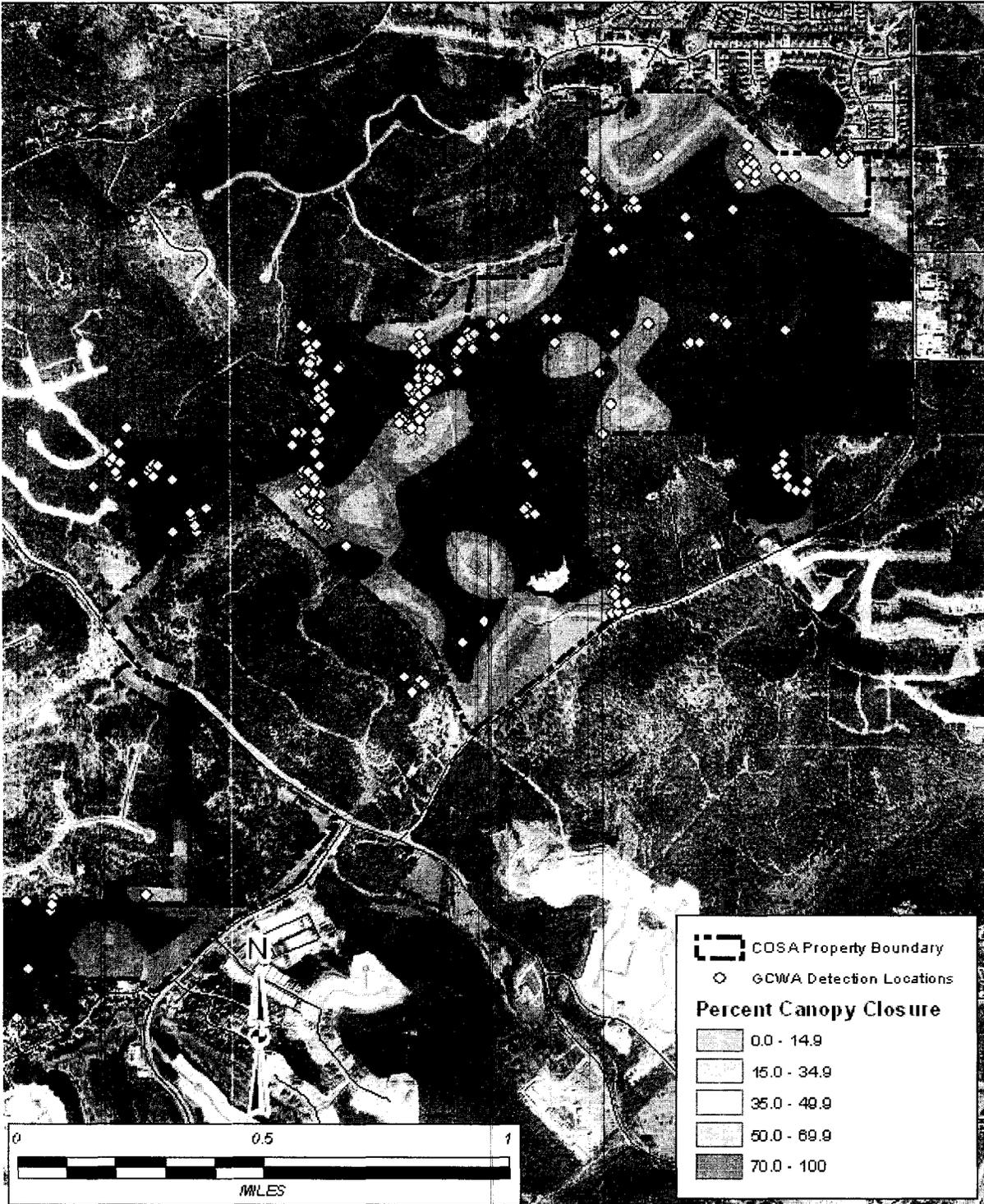


Figure 28 - Predicted canopy closure for Friedrich Park and Woodland Hills, modeled using nearest neighbor interpolation and warbler detections compiled during the 2010 field surveys.

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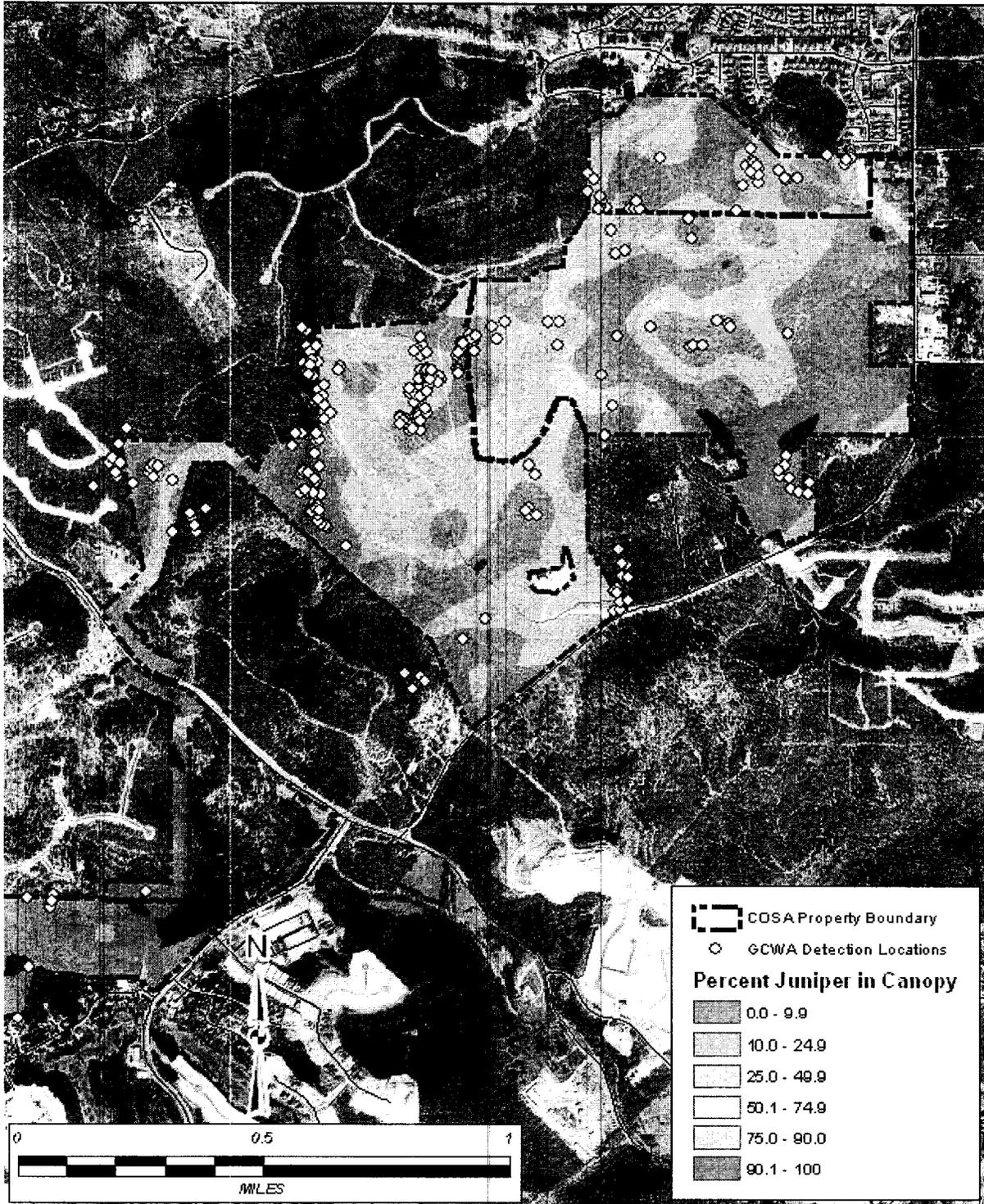


Figure 29 - Predicted juniper in canopy for Friedrich Park and Woodland Hills, modeled using nearest neighbor interpolation and warbler detections compiled during the 2010 field surveys.

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Figure 30 - Predicted canopy height for Friedrich Park and Woodland Hills, modeled using nearest neighbor interpolation and warbler detections compiled during the 2010 field surveys.

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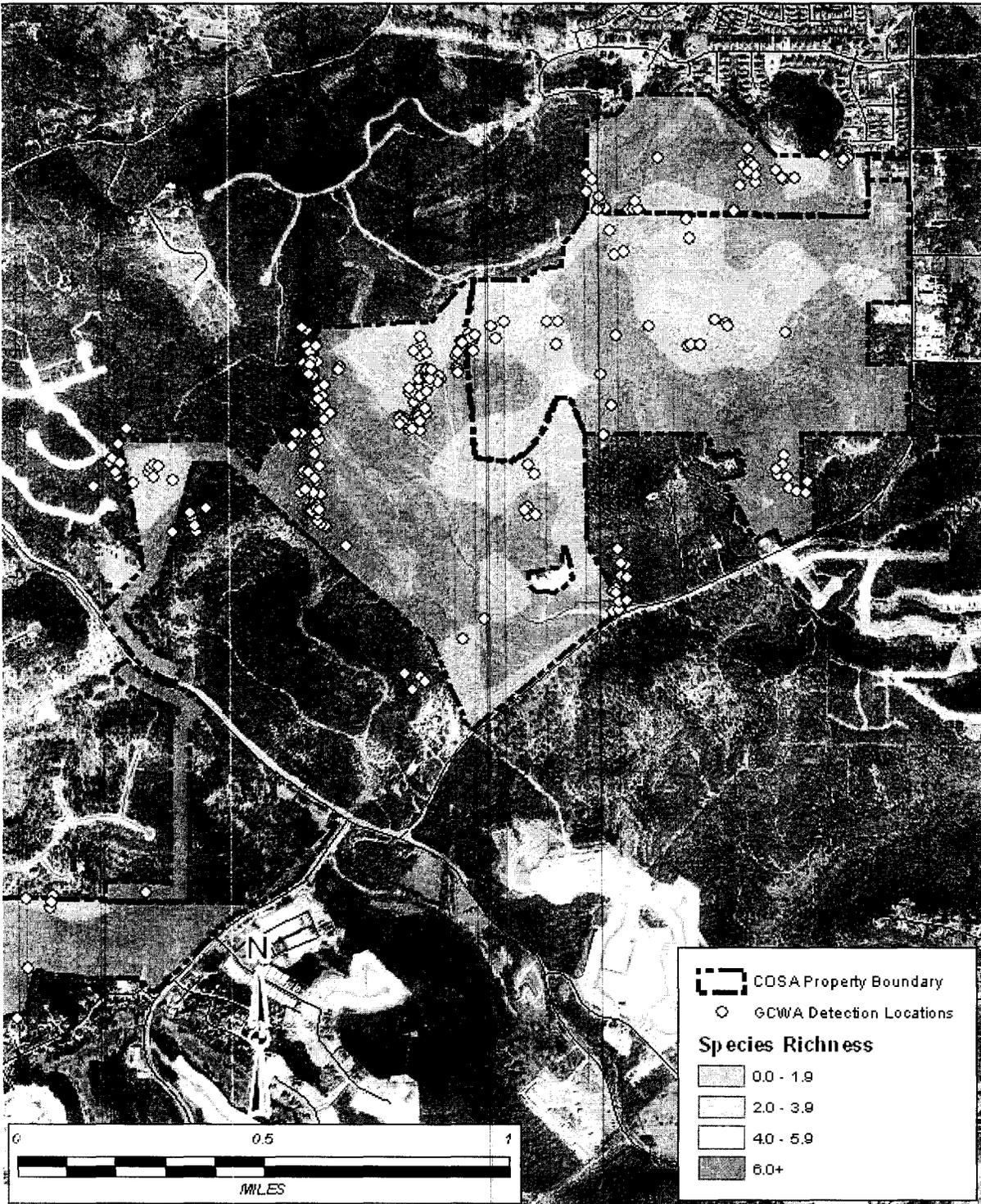


Figure 31 - Predicted species richness for Friedrich Park and Woodland Hills, modeled using nearest neighbor interpolation and warbler detections compiled during the 2010 field surveys.

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Figure 32 - Predicted delineation of potential golden-cheeked warbler habitat for Friedrich Park and Woodland Hills and warbler detections compiled during the 2010 field surveys. Delineations include all cells with >35% canopy closure, 10–90% Ashe juniper in the canopy, and juniper age classes of J-2S or higher.

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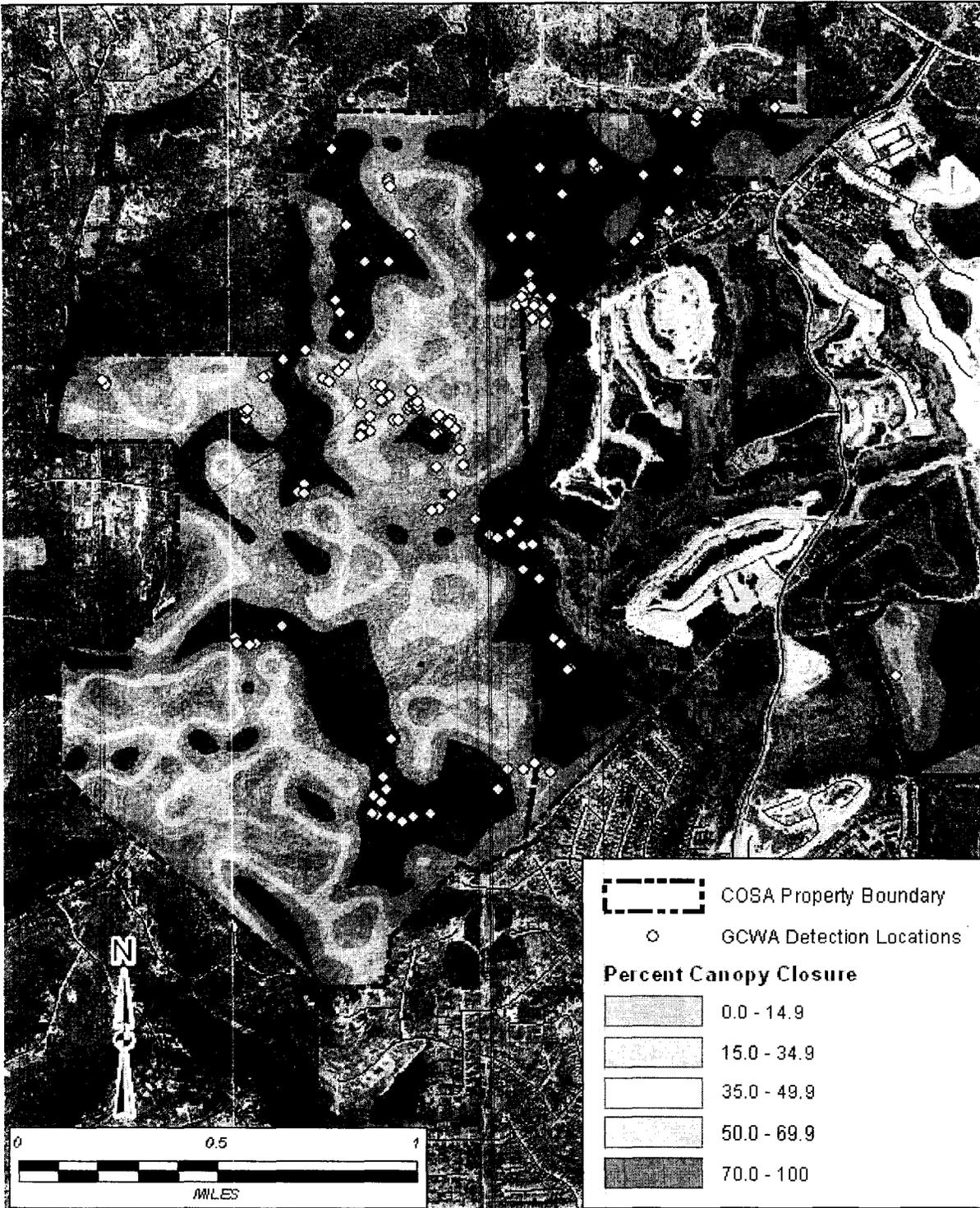


Figure 33 - Predicted canopy closure for Rancho Diana and Cedar Creek, modeled using nearest neighbor interpolation and warbler detections compiled during the 2010 field surveys.

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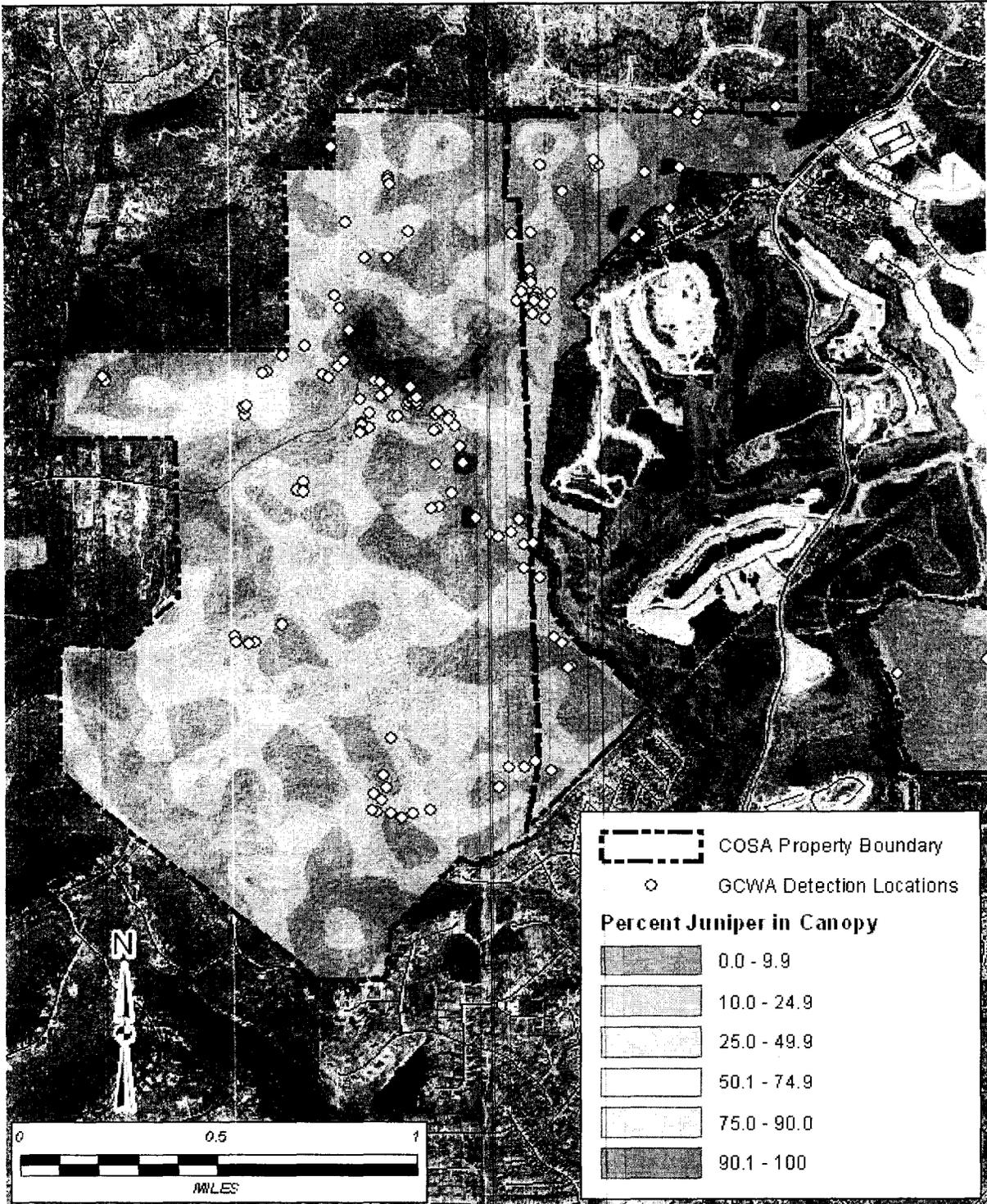


Figure 34 - Predicted juniper in canopy for Rancho Diana and Cedar Creek, modeled using nearest neighbor interpolation and warbler detections compiled during the 2010 field surveys.

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Figure 35 - Predicted canopy height for Rancho Diana and Cedar Creek, modeled using nearest neighbor interpolation and warbler detections compiled during the 2010 field surveys.

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Figure 36 - Predicted species richness for Rancho Diana and Cedar Creek, modeled using nearest neighbor interpolation and warbler detections compiles during the 2010 field surveys.

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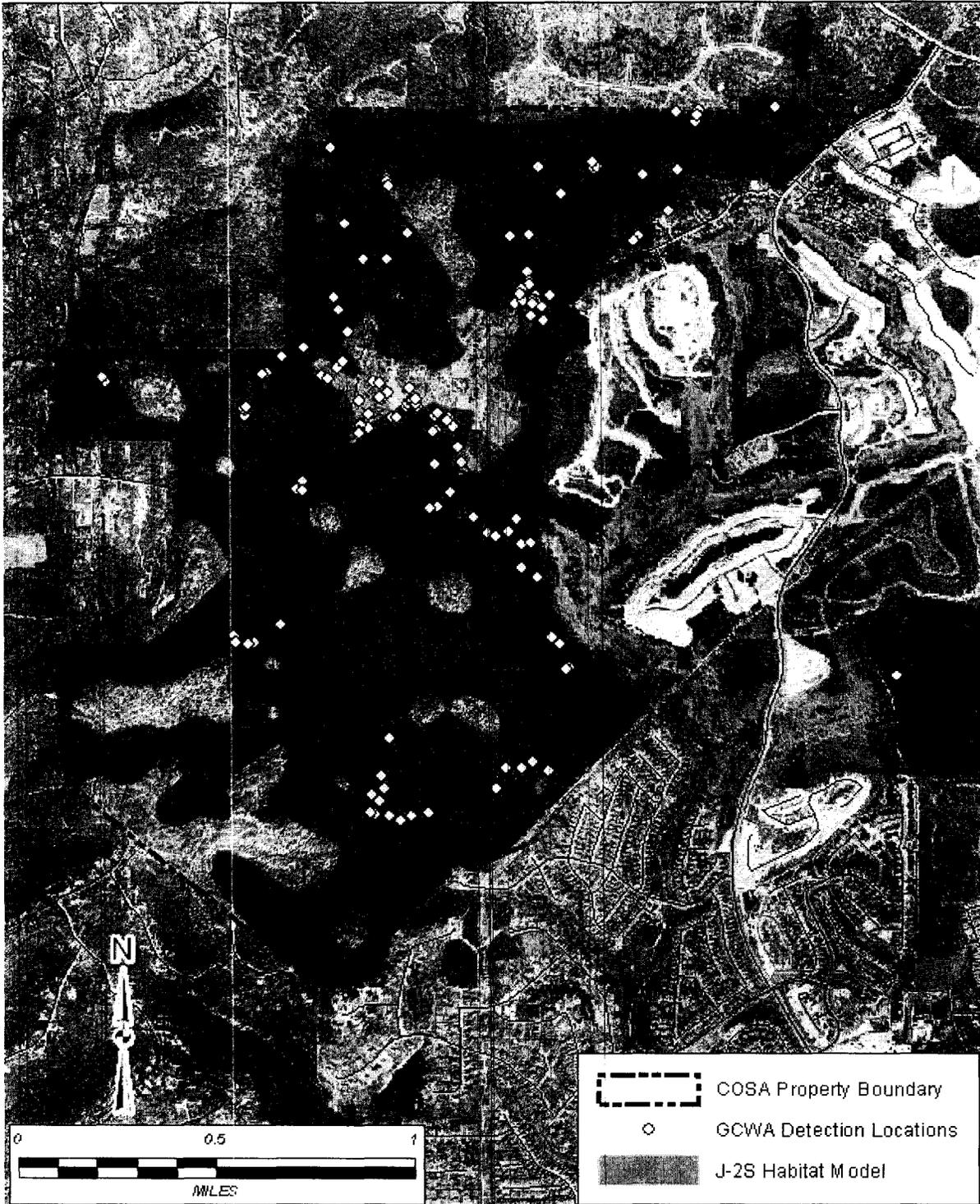


Figure 37 - Predicted delineation for potential golden-cheeked warbler habitat for Rancho Diana and Cedar Creek and warbler detections compiled during the 2010 field surveys. Delineations include all cells with >35% canopy closure, 10–90% Ashe juniper in the canopy, and juniper age classes of J-2S or higher.

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## Golden-Cheeked Warbler Habitat Assessment

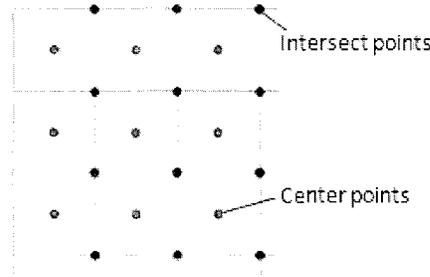
### Appendix A - Protocol used for the habitat assessment on CoSA properties, March-May 2010.

#### NECESSARY EQUIPMENT

GPS unit	binoculars	protocol	clipboard
2-way radio	compass	data sheets	water
densiometer	road maps	pencils	extra batteries

#### PROTOCOL

- Vegetation sampling occurs at 2 sets of survey points generated on a 200-m grid (i.e., “intersection points” and “center points”). Each set is to be surveyed independently of each other and at least 5 days apart.
- Surveys occur from mid-March through mid-May, between sunrise and 1pm, ~40 – 85°F, when winds are less than 12mph, and outside of detectable rain.
- Navigate to the survey points using GPS coordinates. Maintain a GPS accuracy of 5 m or less while at each survey point.
- At each survey point, record time, GPS error, and 4 canopy cover readings with a densiometer (1 reading in each cardinal direction at 5 m from the survey point).
  - **% Canopy cover:** For this project, canopy is defined as the upper third of the prominent vegetation. For example, in a shrubland dotted with trees, the canopy would be the tree layer; in a grassland with some shrubs, the canopy would be the shrub layer. Canopy may be absent or may be a fairly low shrub layer. Calculations of canopy cover using the densiometer are based on the prominent vegetation (i.e., ignore understory vegetation when determining canopy cover).
- Within 1 acre (36-m radius) of survey point, record: approximate canopy height in feet, visual estimate of % Ashe juniper in the canopy, age class of Ashe junipers present, and inventory of woody plant species present within the canopy (Table 1).
  - **Canopy height:** Measured (in feet) from the ground to the top of the canopy layer.
  - **% Ashe juniper in canopy:** Visually estimate the percent of canopy that is comprised of Ashe juniper, in 5 % increments 0–100%.
  - **Age of Ashe juniper:** Age classes of Ashe juniper are categorized as J-1, J-2, J-2S, J-3S, and J-4 (Table 2). Note the presence of any age classes seen in the 1-acre area. This is simply presence or absence of each age class, not a percentage or quantity.
  - **Woody species in canopy:** Record all woody tree or shrub species present in the canopy (i.e., not a count of each species).
- When vegetation survey is complete, remain within 1 acre (36 m) of the survey point and look/listen for GCWAs. Remain at the point for a total of 10 minutes, including time spent on the veg survey.
- If a GCWA is observed, estimate the distance (in meters) and direction to the GCWA relative to the survey point (Table 3). HOWEVER, as often as possible walk to within 5–10 m of the individual and record its actual location. Do the same for all black-capped vireo (BCVI) detections.
- Also record GCWAs or BCVIs detected between survey points, along with the GPS point for the observation and approximate distance and direction relative to the transit point. If you record the bird’s actual location, enter “0” for distance and direction.



# CITY OF SAN ANTONIO PROPERTIES

## Golden-Cheeked Warbler Habitat Assessment

### Appendix A. Protocol cont'd.

#### Code sheet for Warbler Habitat Survey

##### Record the following information for each day of surveys

**Day...Month...Year:**

**Observer:** Initials (first, middle, last)

**Property Name:** Full name of property

**Property Code:** 2-letter code for the property

Friedrich/Woodland Hills = **FW**; Galo Tract = **GT**; Medallion (aka Sinkin) Tract = **MT**; Panther Springs = **PS**;  
Rancho Diana/Cedar Creek = **RC**; Scenic Canyon = **SC**

**Point type:** 1-letter code for whether you are surveying an intersect set of grid points or a center set of grid points. Intersect set = **I**; center set = **C**

**Start and Stop:** At the beginning and end of each day's survey, record the following

**Time:** The time the surveys began and ended for the day

**Temp:** Temperature in °F

**Wind:** Use Beaufort wind scale values (i.e., 0, 1, 2, 3 or 4)

**% Cloud Cover:** Estimate % cloud cover to the nearest 10%

**Field Proof:** Record your initials on your partner's data sheet (bottom of sheet) after thoroughly checking all the fields on his/her sheet.

##### Record the following information at each survey point

**Pt:** Point number where the vegetation survey occurs

**Time:** Time at which you begin the vegetation survey at given point

**GPS error (m):** Error reading from GPS unit in meters (error must stay at or below 5 m)

**# closed dots:** Number of "dots" on densiometer covered by canopy vegetation, one reading for each direction 5 m north, east, south, and west (see 'Using the densiometer' sheet)

**% cnpy cvr:** Calculate this number later in the day based on "# closed dots"

**Cnpy ht (ft):** Visual estimate of height in feet to top of canopy within 36-m area around point

**% J in cnpy:** Visual estimate of % juniper in the canopy within 36-m area around point

**Juniper age class:** Check-mark the box for each age class seen within 36-m area around point

**Veg species:** Record all woody plant species present in the canopy within 36-m area around point. Use either the 2-letter code (preferably) or species' full name.

**GCWA:** Record **A** for Audio, **V** for Visual\*\* or **A/V** for both. If a GCWA (or BCVI) is detected, spend a few minutes trying to locate the bird and mark its actual location with the GPS; record the UTMs in the "Notes" section of the data sheet (i.e., don't just save it in the GPS unit).

- If birds are detected en route between survey points, record the UTMs of your location when the bird is detected along with distance and direction; preferably, record the UTMs of the bird's actual location. Use one line on data sheet for each bird detected en route.

**Dist. (m):** Estimated distance between the survey point (or transit point) and the bird. Enter "0" if the bird's actual location is marked with the GPS.

**Dir. (°):** Direction in degrees from the survey point (or transit point) to the bird. Enter "0" if the bird's actual location is marked with the GPS.

**Notes:** Record any additional notes related to survey and detection. Note if any excessive background noise exists (e.g., vehicles) that may limit your ability to detect birds. Note any sinkholes, caves, or large holes in the ground. If a black-capped vireo (BCVI) is detected, record that here. Also record actual location UTMs for GCWA or BCVI

\*\*Always keep an eye out for colored leg bands on both GCWA and BCVI. If you notice bands, take some time to try and determine band color combination (some of the colors can be tricky).



**FIGURES 4-8**  
**Locations of Vegetation Surveys**

**FIGURES 9-12**  
**GCWA Detection with 10-ft. Buffer**

**FIGURES 13-17**  
**Medallion Tract Habitat Maps**

**FIGURES 18-22**  
**Panther Springs Habitat Maps**

**FIGURES 23-27**  
**Scenic Canyon Habitat Maps**

**FIGURES 28-32**  
**Friedrich Park/Woodland Hills Habitat Maps**

**FIGURES 33-37**  
**Rancho Diana/Cedar Creek Habitat Maps**