2.2 NATURAL RESOURCES ASSESSMENT AND PROBLEM IDENTIFICATION

2.2.1 Introduction

In order to prepare the Watershed Management Plan for the Stevenson Creek Watershed, the entire watershed was investigated for undeveloped land, wetlands, natural areas, and potential restoration or preservation areas. The boundaries of the natural areas were identified and mapped on aerial photography (scale: 1" = 200'). These areas were characterized using the Florida Land Use Cover and Forms Classification System (FLUCCS) (FDOT, 1985).

The Stevenson Creek Watershed is a highly urbanized, densely populated area with little to offer in the way of natural systems. With one exception, the only undeveloped areas are golf courses and city parks. Wetlands are predominantly small isolated stormwater retention ponds or natural lakes that have been altered to such a degree that their origin can only be determined from historic aerial photography. The waterways are predominantly channelized with little riparian habitat. The intense development has also altered the estuarine system so that little habitat is provided at the mouth of Stevenson Creek.

Despite the intense urbanization of the watershed, improvements that do not require large expanses of open land and large expenditures of public funds can be made to increase the wildlife habitat and improve water quality. Studies have shown that golf courses can be managed to improve the water quality and wildlife habitat provided by the expanses of open space without negatively impacting the recreational function. For the purposes of this watershed management plan, a discussion of the existing natural conditions is provided in this section, while improvements that can be accomplished by public entities, private non-profit organizations, and by concerned private citizens are discussed in Section 3.

2.2.2 Existing Conditions

As can be seen in the land use map (Figure 2.1-2) and Table 2.2-1, the predominant land use within the watershed is residential, comprising approximately 70% of the total land area. Other developed areas such as commercial, industrial, institutional, open land, and transportation/utility land uses combined make up another 19% of the watershed. This leaves only 11% of the watershed in potential natural resource land uses, which includes undeveloped upland areas, recreational areas, open water bodies, or wetlands.

Most of the individual subwatersheds are similar in distribution of land uses. The Upper Spring Subwatershed has more wetlands than any other subwatershed, with 40 acres compared to less than 7 acres for each of the other subwatersheds. This is due to two large forested wetland areas near the intersection of Keene Road and Virginia Street. A 36-acre upland forested area in the Lower Spring Branch Subwatershed is by far the largest available habitat area in the watershed. The other subwatersheds have 0 to 7 acres of undeveloped uplands that may provide habitat. The open water bodies land use, which includes ponds, lakes, and other open water areas, is divided among three subwatersheds that have only 7 acres and four subwatersheds that have between 22 and 56 acres. The following paragraphs provide a subwatershed-by-subwatershed description of the land uses and available habitat.

Upper Spring Branch Subwatershed

The Upper Spring Subwatershed is located in the northernmost portion of the watershed and is the largest in total land area. There are several forested wetland areas within the watershed, as well as a freshwater marsh.

The freshwater marsh (approximately 4 acres) is located west of the forested wetland areas near the intersection of Virginia and Keene. The marsh is highly disturbed and dominated by nuisance vegetation such as primrose willow, cattail, and others. Some open water is present in the center of the marsh, indicating a depth that may be associated

Table 2.2-1

LAND USE TYPES PER BASIN IN THE STEVENSON CREEK WATERSHED (Approximate acreages)									
Land Use	**Hammond Branch**	**Jeffords Street**	**Lake Belleview**	**Lower Spring**	**Lower Stevenson**	**Middle Stevenson**	**Upper Spring**	**Upper Stevenson**	**TOTAL**
Residential (1000-1300)	649	529	340	338	516	287	1226	491	4376
Commercial (1400)	34	31	178	11	56	145	115	41	610
Industrial (1500)	5	4	13	0	20	00	0	0	42
Institutional (1700)	21	14	16	23	31	11	53	15	182
Recreational (1800)	96	40	24	0	116	45	18	0	339
Open Land (1900)	41	2	13	37	11	11	105	14	234
Agriculture (2000)	10	0	0	0	0	0	5.	0	15
Upland Forests (4000)	2	0	5	36	0	0	7	0	50
Water Bodies (5000)	27	22	37	8	40	7	56	7	205
Wetlands (6000)	1	1	7	7	5	2	40	0	63
Trans./Utilities Communication (8000)	27	8	22	5	27	27	47	7	170
Total per Basin	**914**	**651**	**655**	**465**	**821**	**535**	**1673**	**575**	**6286**

with historic activities such as peat mining or excavation to increase retention and/or to reduce the ground water levels in adjacent properties. Development is encroaching upon the marsh, with new housing constructed on the east side. In its current state, this marsh still can provide wildlife habitat, although the isolated, fragmented condition of the marsh has greatly reduced the potential.

The 30 acres of forested wetlands appear to be the former headwaters of Spring Branch, which flows from this area south and west to the confluence with Stevenson Creek. These forested wetlands have been substantially altered with dredging, draining, filling, and channelizing. The canopy consists of a mixture of hardwoods and cypress, with slash pine in the drier transitional areas. The vegetation in these wetlands has been impacted by the hydrologic alterations, and nuisance species are now dominant in some areas.

Lower Spring Branch Subwatershed

The Lower Spring Branch Subwatershed is located north and east of the confluence of Stevenson Creek and Clearwater Harbor. This is the smallest of the subwatersheds, at only 465 acres. Although this subwatershed is 80% developed, there are two areas within this subwatershed that offer habitat to wildlife. In addition, portions of the Spring Branch channel still maintain a remnant of riparian habitat in the form of trees and a somewhat natural streambed.

The forested upland area within this watershed is located near the intersection of Sunset Point Road and Betty Lane. This approximately 25-acre parcel has been impacted in the past with clear-cutting and grading. Historic aerial photography (1926) shows that this parcel was cleared and a pond was excavated on the west side, potentially in preparation for development. The southern portion of the parcel supports a stand of second-growth oak and pine with an open understory. Spring Branch borders the east side of this portion of the parcel. The northern, more mesic portion of the parcel supports more nuisance vegetation, especially around the pond and the outer edges of the site. However, there are mature trees in the canopy and native species in the understory and

shrub layer. The vegetation in the pond is dominated by Carolina willow, and appears to be intermittently inundated.

This photo was taken facing north from the ditch that drains the small excavated pond within the forested area at Betty Lane and Sunset Point Drive.

This photo was taken in the mesic forested area, in the southern part near State Street. The vegetation in this area includes slash pine, laurel oak, saw palmetto, and cabbage palm.

Despite the impacted condition of the parcel, it currently provides the only wildlife habitat of any substantial size within the watershed. Recent survey lines cut through the parcel indicate that it may be too late to preserve it, but it has the potential to become locally significant wildlife habitat, as well as a neighborhood recreational area.

Lower Stevenson Creek Subwatershed

This subwatershed is 80% developed in residential, industrial, commercial, and utility/transportation land uses. Fourteen percent of the watershed is identified as recreational, but this includes a ballpark and the Clearwater Country Club. There are no large tracts of undeveloped upland areas that may provide habitat for wildlife, and few areas that would provide wetland habitat. There is a small (approximately 9-acre) parcel of land east of the Douglas Avenue Bridge on the north side of Stevenson Creek that provides the best potential habitat in the subwatershed. The parcel appears to have been a dumping ground for construction material, fill, household waste, and landscape trimmings. The majority of the site is vegetated with nuisance exotic species such as ear tree (*Enterolobium contortisiliquum*), lead tree (*Leucaena leucocephala*), Caesar weed (*Urena lobata*), castor bean (*Ricinus communis*), beggar's tick (*Bidens pilosa*), Australian pine (*Casuarina equisetifolia*), Brazilian pepper (*Schinus terebinthifolius*), and other noxious weeds. Some remnants of native upland vegetation are present on the eastern boundary, adjacent to the auto-salvage yard along the eastern boundary of the undeveloped parcel. Species present in this area include laurel oak (*Quercus laurifolia*), saw palmetto (*Serenoa repens*), cat briar (*Smilax bona-nox*), and wild grape (*Vitis* sp.).

The shoreline of the parcel along Stevenson Creek is vegetated in mangroves, including black (*Avicennia germinans*) and red (*Laguncularia racemosa*). A small mangrove swamp is located on the western side of the property. This swamp is predominantly black mangrove with an open water area in the center. The City is currently in negotiations with the owner to purchase the property containing this parcel.

The photo to the left was taken on the north bank of Stevenson Creek west of the Douglas Avenue Bridge. The view is to the southeast

Stevenson Creek meanders through the Clearwater Country Club golf course on a semi–natural streambed. There have been previous attempts to create marsh habitat on-line with the creek that have been somewhat successful. On-line wetlands are always difficult to create because of the need to accommodate the occasional heavy volumes of water flowing through the stream and the potential for erosion. In addition, maintenance is difficult due to the nuisance exotic vegetation that can be washed in from problem areas upstream. In spite of the drawbacks, the golf course provides one of the best potential areas for habitat improvement, depending upon the available area.

This photo shows the mitigation area within the golf course. The low gabion wall was installed to protect the mitigation area from erosion and the influx of exotic vegetation.

Middle Stevenson Creek Subwatershed

The Middle Stevenson Creek Subwatershed is 90% developed, with golf courses and a few stormwater ponds comprising the remaining ten percent. This subwatershed has the second highest area devoted to commercial enterprises, but no industrial land uses. There are no potential habitat areas with the exception of the golf courses, which provide marginal habitat at best. The creek is armored and channelized through this portion of the watershed, and although these types of improvements may be essential for flood abatement, they do little to enhance water quality and wildlife habitat.

The photo to the left shows a typical section of the creek (Lynn Lake) through the Middle Stevenson Creek Subwatershed. The algal mats on the water surface usually indicate poor water quality.

Hammond Branch Subwatershed

This second largest subwatershed is located on the east side of the watershed, with the majority of the subwatershed lying north of Drew Street. This subwatershed is 87% developed, with a golf course and ball fields again comprising the majority of the undeveloped land. There are three fairly large water bodies in the subwatershed totaling 27 acres. These managed water bodies and two very small freshwater marshes provide the best habitat options in the subwatershed.

The photo to the left shows a view of Lake Hobart facing south. This lake is one of the larger water bodies.

Jeffords Street Subwatershed

The Jeffords Street Subwatershed is located in the eastern portion of the watershed, south of the Hammond Branch Subwatershed. This watershed is 91% developed with several water bodies and a golf course making up the remaining land uses. Crest Lake, the 20+-acre lake in the northern portion of the subwatershed, is located within a city park. This lake and the surrounding shoreline could potentially be enhanced to increase the habitat potential without impacting the park significantly. A discussion of these improvements and Best Management Practices for golf courses is provided in Section 3.

There are several small water bodies in the subwatershed ranging in size from 0.5 to 4.0 acres. These ponds are located within dense residential neighborhoods and likely do not provide more than the most minimal habitat for wildlife. Even small ponds can be improved to enhance the wildlife habitat availability by planting the shoreline with native species and improving water quality by reducing the pollutants in stormwater runoff.

This photograph is a view of Crest Lake from the northeastern corner. The sparseness of the understory vegetation can contribute to erosion and sedimentation in the lake due to stormwater runoff.

Lake Bellevue Branch Subwatershed

The Lake Belleview Subwatershed is located in the southwestern portion of the Stevenson Creek Watershed, with Missouri Road roughly forming the eastern boundary. The subwatershed is 89% developed, with the 33-acre Lake Bellevue comprising another 5% and the adjacent park and playgrounds adding another 5%.

This recreational area (Ed Wright Park) is the only potential wildlife habitat in the Subwatershed, but the habitat is marginal at best. The lake is maintained to keep aquatic weeds from overtaking, however on the west side of the lake, the banks are covered with Brazilian pepper and other noxious invasive plants. These weeds do provide some function acting as a buffer from the heavy traffic on Myrtle Avenue. The northeast corner of the park supports a heavy canopy of mature oaks, but the understory is predominantly a parking area.

There are six small water bodies in the subwatershed, excluding Lake Bellevue. As with the majority of the other small water bodies in the watershed, these are highly maintained, isolated, and located within dense residential neighborhoods. These areas provide marginal habitat at best.

This photograph of Lake Bellview shows the bare shorelines and lack of significant littoral vegetation. The littoral vegetation would provide habitat and water quality benefits.

This photograph was taken on the southwestern corner of the lake and shows the nuisance vegetation infestation. Cleaning up this area would enhance the wildlife habitat provided by this area.

Upper Stevenson Creek Subwatershed

The Upper Stevenson Creek Subwatershed is located in the southeastern portion of the watershed with Missouri Avenue forming the western boundary. This subwatershed is completely built out, with the exception of four small water bodies totaling 7 acres. The creek is completely lined with houses, leaving no options for habitat improvements without purchasing expensive residential property.

This is an example of one the culverts within the Upper Stevenson Creek Subwatershed. This culvert is near the intersection of Hillcrest and Browning.

2.2.3 Wildlife

This highly urbanized area does not provide much habitat for wildlife, other than for generalist species that have adapted to urban environments. Table 2.2-2 provides a list of common faunal species that were observed or are expected to occur in the watershed.

The Backyard Habitat program promoted by the National Wildlife Federation educates citizens on building habitat within their own backyards, which increases the available habitat in urban environments. Details on this program are available on the National Wildlife Federation website.

2.2.4 Endangered and Threatened Species

Endangered and threatened species are those that have been categorized in some way by the respective jurisdictional agencies as meriting special protection or consideration. The state lists of animals are maintained by the Florida Fish and Wildlife Conservation Commission and categorized as endangered, threatened or of special concern. The lists constitute Rules 39-27.003, 39-27.004, and 39-27.005, respectively, Florida Administrative Code.

Table 2.2-2

Wildlife Observed (*) or Expected Within the Stevenson Creek Watershed	
Scientific Name	**Common Name**
Birds	
Accipiter cooperii	Cooper's hawk
*Agelaius phoeniceus**	Red-winged blackbird
*Ajaia ajaja**	Roseate spoonbill.
*Anas fulvigula**	Mottled duck
*Anhinga anhinga**	Anhinga
*Ardea herodias**	Great blue heron
Aramus guarauna	Limpkin
*Bombycilla cedrorum**	Cedar waxwing
Botaurus lentiginosus	American bittern
*Bubulcus ibis**	Cattle egret
*Buteo lineatus**	Red-shouldered hawk
*Butorides virescens**	Green heron
*Cardinalis cardinalis**	Cardinal
*Casmerodius albus**	Great egret
*Cathartes aura**	Turkey vulture
*Ceryle alcyon**	Belted kingfisher
*Chadradrius vociferous**	Killdeer
*Colaptes auratus**	Northern flicker
*Columba livia**	Rock dove
*Coragyps atratus**	Black vulture
*Corvus brachyrhynchos**	American crow
*Corvus ossifragus**	Fish crow
*Cyanocitta cristata**	Blue jay
*Dendroica coronata**	Yellow-rumped warbler
Dendroica palmarum	Palm warbler
*Dryocopus pileatus**	Pileated woodpecker
*Dumetella carolinensis**	Catbird
*Egretta caerula**	Little blue heron
*Egretta thula**	Snowy egret
*Egretta tri-color**	Tricolor heron
*Elanoides forficatus**	Swallow-tailed kite
*Eudocimus albus**	White ibis
*Falco sparverius**	American kestral
Falco peregrinus	Peregrine falcon

*Fulica americana**	American coot

Table 2.2-2 (cont.)

Wildlife Observed (*) or Expected Within the Stevenson Creek Watershed	
Scientific Name	**Common Name**
Birds (cont.)	
*Gallinula chloropus**	Common moorhen
*Geothlypis trichas**	Common yellowthroat
*Ixobrychus exilis**	Least bittern
*Lanius ludovicianus**	Loggerhead shrike
*Larus argentatus**	Herring gull
*Larus atricilla**	Laughing gull
*Larus delawarensis**	Ring-billed gull
Larus philadelphi	Bonapart's gull
*Melanerpes carolinus**	Red-bellied woodpecker
*Mimus polyglottus**	Mocking bird
*Mycteria Americana**	Wood stork
*Nycticorax nycticorax**	Black-crowned night heron
*Nyctanassa violacea**	Yellow-crowned night heron
*Otus asio**	Belted kingfisher
*Pandion haliaetus**	Osprey
*Passer domesticus**	House sparrow
*Parus bicolor**	Tufted titmouse
*Pelecanus occidentalis**	Brown pelican
Phalacrocorax auritus*	Double-crested cormorant
Picoides pubescens*	Downy woodpecker
Plegadis falcinellus	Glossy ibis
*Podilmbus podiceps**	Pied-billed grebe
*Quiscalus major**	Boat-tailed grackle
*Quiscalus quiscula**	Common grackle
Rallus elegans	King rail
Rallus limicola	Virginia rail
*Sterna forsteri**	Forster's tern
*Streptopelia decaocto**	Eastern screech owl
Strix varia	Barred owl
*Sturnus vulgarus**	European starling
*Tachycineta bicolor**	Tree swallow
*Toxostoma rufum**	Brown thrasher
*Turdus migratorius**	American robin
Thryothorus ludovicianus	Carolina wren

*Zenaida macroura**	Mourning dove

Table 2.2-2 (cont.)

Wildlife Observed (*) or Expected Within the Stevenson Creek Watershed	
Scientific Name	**Common Name**
Mammals	
*Dasypus novemcinctus**	Armadillo
*Didelphis virginiana**	Opossum
Lasiurus intermedius	Northern yellow bat
Lontra canadensis	River otter
Peromyscus gossypinus	Cotton mouse
Peromyscus polionotus	Oldfield mouse
*Procyon lotor**	Raccoon
Nycticeius humeralis	Evening bat
*Sciurus carolinensis**	Eastern gray squirrel
Sciurus niger shermanii	Sherman's fox squirrel
Sigmodon hispidus	Hispid cotton rat
Sylvilagus floridanus	Eastern cottontail
Sylvilagus palustris	Marsh rabbit
Tadarida brasiliensis	Brazilian free-tail bat
Reptiles And Amphibians	
Anolis carolinensis	Green anole
Anolis sagrei sagrei	Brown anole
Acris gryllus	Southern cricket frog
Rana sphenocephala	Southern leopard frog
Bufo terrestris	Southern toad
Coluber constrictor	Black racer
Diadophis punctatus	Ring necked snake
Hyla cinerea	Green tree frog
Hyla gratiosa	Barking tree frog
Hyla squirella	Squirrel tree frog
Osteopilus septentrionalis	Cuban tree frog
Pseudemys floridana floridana	Florida cooter
Rana sphenocephala	Southern leopard frog
Sternotherus sp.	Common musk turtle
Thamnophis sirtalis	Common garter snake
Trachemys scripta elegans	Red-eared turtle
Trachemys scripta scripta	Yellow bellied turtle

Table 2.2-2 (cont.)

Wildlife Observed (*) or Expected Within the Stevenson Creek Watershed	
Common Name	**Common Name**
Fish and Shellfish	
Lane Snapper	Spotted Sea trout
Mojarra	Silver Sea trout
Grunt	Red Snapper
Weakfish	Yellowtail Snapper
Gray Snapper	Scad
Atlantic Bumper	Silver Perch
Mutton Snapper	Spot
Lookdown	Atlantic Croaker
Leatherjack	Silver Porgy
Mahogany Snapper	Sand Perch
Permit	Gag Grouper
Black Drum	Stone Crab
Red Drum	Tunicate
Sheepshead	Burrfish
Pinfish	Puffer
Blue Crab	Flounder
Toadfish	Hogfish
Cowfish	Wrasse
Filefish	Spadefish
Sole	Black Seabass
Mullet	Glass Slipper
Parrotfish	Squid Egg Mass
Sergeant Major	Comb Jelly
Snook	Sea Urchin
Gulf Shrimp	Bivalve (U.N.I.D)
Grass Shrimp	Sea Snail (Banded Tulip)
Ghost Shrimp	Sea Hare
Mud Crab	Sea Pork
Hermit Crab	Trunkfish
Arrow Crab	Sea Horse
Pipefish	Spade Crab
Sand Dollar	Feather Bleeny
Lizardfish	Scallop
Spider Crab	Sponge

Table 2.2-2 (cont.)

Wildlife Observed (*) or Expected Within the Stevenson Creek Watershed	
Common Name	**Common Name**
Seabream	Octopus
Shade Crab	Polychete Worms
Scaled Sardine	Sea Snail (Moon Snail)
Wort Jelly	Juv. Flying Gunnard
Horshoe Crab	Squid
Lentil Spider	Calico Crab
Sea Cucumber	Mangrove Snapper
Silverside	Whelk Egg
Brittle Star	Sea Snail (Banded Tulip)

Source: Clearwater Audubon Society (Ms. Jane Williams), and Clearwater Marine Aquarium (Mr. Geoff Lane), field observations (Parsons ES, May 2000), and Florida Natural Areas Inventory, 1996

The state lists of plants are categorized into endangered and threatened and commercially exploited and are administered and maintained by the Florida Department of Agriculture and Consumer Services via Chapter 5B-40, F.A.C. The federal list of animals and plants is administered by the U.S. Fish and Wildlife Service and are published in 50 CFR 17 (animals) and 50 CFR 23 (plants).

Even the most urban environments can support some endangered species. For instance, during the field reviews for this project, white ibis and little blue heron were observed on one of the golf courses within the watershed. Bald eagles have nested in other watersheds within the City of Clearwater, and could nest in the Stevenson Creek watershed if the appropriate habitat were available. Table 2.2-3 lists the endangered, threatened, or species of special concern that occur or potentially occur in the watershed.

Table 2.2-3
Endangered, Threatened, or Special Concern Species Observed (*)
or Potentially Present in the
Stevenson Creek Watershed

Gopher Tortoise	Sherman's fox squirrel*	Florida sandhill crane
Gopher frog	Little blue heron*	Peregrine falcon*
American alligator*	Wood stork*	SE American kestrel
Florida mouse	Tri-colored heron*	Bald eagle*
Eastern indigo snake	Snowy egret*	Burrowing owl
Limpkin*	Roseate spoonbill*	White ibis*

The species identified with an asterisk (*) in the table above have been observed in the watershed by members of the Clearwater Audubon Society. It is highly unlikely that any of these species are successfully breeding in or if viable populations of these species exist within the Stevenson Creek Watershed due to the lack of suitable habitat.