# A HEALTH IMPACT ASSESSMENT OF TRANSIT-ORIENTED DEVELOPMENT AT THE QUITMAN LIGHT RAIL STATION IN HOUSTON, TEXAS

FINAL REPORT

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# EXECUTIVE SUMMARY

## Overview

This study uses a specialized tool—a health impact assessment, or HIA—to evaluate the health impacts of transit-oriented development (TOD) in a neighborhood surrounding a soon-to-be-completed light rail station in Houston, Texas. The station we chose for this pilot assessment is the Quitman station, which is located just north of downtown Houston, at the intersection of Quitman and North Main streets, in a predominately low-income Latino neighborhood called Northside Village. We used the HIA process, which is described in detail in the full report, to assess key health-related TOD indicators—walkability, affordable housing, parks and trails, and mixed-use development—contained in four redevelopment initiatives that have been advanced by different stakeholders for this community. The preliminary findings of our HIA are that a more vigorously health-driven composite TOD initiative would have a positive impact on health not only by preventing or slowing the onset of preventable diseases such as obesity and heart disease, but also by positively affecting factors such as health-related costs, access to health care, opportunities for education and employment, and crime that are integrally related to health status. Our study, which is driven by new and existing data collected especially for this assessment, also suggests that the HIA process itself is a potentially useful tool to help prioritize the recommendations of various initiatives in order to use scarce resources most effectively to maximize the long-term health and vitality of a community.

## The Quitman HIA Team

For this particular HIA, the research team included individuals from Texas Southern University, Houston Tomorrow, Baylor College of Medicine, and Andress & Associates who brought with them expertise in various areas of importance to TOD including urban planning, transportation, policy, advocacy, health, and social and economic equity. The team assessed—from a health perspective—four previously developed TOD urban redevelopment plans for the area around Houston's Quitman station. Thus, this HIA not only collected information about and from the community itself, but also benefited significantly from the work and expertise represented in these four initiatives. These include the (1) Houston Urban Corridor Planning Initiative [1, 2], (2) Northside Livable Centers Study [3], (3) Northside Village Economic Revitalization Plan [4], and (4) Northside Quality of Life Agreement [5]. For the purpose of this HIA, we created a composite plan from the key health-driven goals and objectives of the four initiatives; for brevity, this composite plan is referred to in this report as the "Quitman Station Area Plan," or QSA Plan.

## Transit-Oriented Development

The team chose an HIA of TOD in part because of the opportunity offered by Houston's extensive expansion of its light rail system, the initial corridor of which has exceeded expectations in terms not only of ridership but also of the degree and type of development along its route, much of which has occurred with little or no formal assessment with regard to the health of the impacted communities. In addition, although Houston's lack of zoning creates an especially flexible environment for development, this same environment may create barriers for

factoring in some longer-term goals or neighborhood qualities that are difficult to measure economically but that may be critical to sustainability and health, such as physical activity, preservation of history, affordable housing, and green space. An HIA of TOD provides an opportunity to address more explicitly—often using economic analyses—these health-related issues in the planning stages of public transit and its related urban redevelopment.

What is TOD? It is the creation of compact, walkable communities around transit stations. It is an approach to creating sustainable and livable communities where residents have quality places to live, work, and play. Numerous studies have demonstrated that TOD is a determinant of health. Numerous factors determine whether people are healthy. These include individual characteristics such as gender, and age; lifestyle choices such as diet and exercise; access to health care; and various social determinants. The social determinants of health include socioeconomic conditions such as education, income and employment; and physical conditions, which include both the natural and built environments. In general, TOD addresses the built environment. For example, TOD can make neighborhoods more walkable and provide recreational opportunities, such as parks. In such neighborhoods, people are more likely to be physically active, which can decrease rates of obesity and heart disease. This type of development around transit stations uses urban design—such as pedestrian-oriented lighting, wide sidewalks, and traffic calming—to make neighborhoods safer and usually healthier. For example, successful application of TOD design elements can reduce neighborhood crime and pedestrian-automobile crashes. In addition, TOD can encourage a greater mix of land uses, possibly providing more opportunities for healthy eating and socializing.

## The Health Impact Assessment

An HIA is a dynamic, multidisciplinary process that is used to evaluate objectively the potential health effects of a project or policy before it is built or implemented [6, 7]. Our Quitman TOD study is the first use of an HIA in Texas, although HIAs are increasing used or even required in many municipalities, and several countries have mandated HIAs as part of the regulatory process [8-10]. More specifically, an HIA is a "systematic process that uses an array of data sources and analytic methods and considers input from stakeholders to determine the potential effects of a proposed policy, plan, program, or project on the health of a population and the distribution of those effects within the population" [11].

In the U.S., HIAs have been used to guide such diverse projects as increasing the minimum wage, optimizing the use of fertilizers, increasing graduation rates, guiding efforts to bring of tourism to resource-poor areas, controlling urban noise, and minimizing the adverse health impacts of freeways. In this HIA, we suggest that the process could be beneficially used to guide TOD, as well as help to help various urban redevelopment initiatives work together more effectively. More broadly, the HIA process could be used as a key "filter" to help area decision-makers assess the potential effect of any policies or projects the health of Houston-area residents

## The HIA Methodology

As with most HIAs, ours followed a structured process that included screening, scoping, assessment, recommendations, and evaluation and monitoring. It also included numerous opportunities for meaningful stakeholder participation. Through this process, our HIA considers the capability of the QSA Plan to create

TOD in the Quitman station area, and then examines how the major elements of this Plan—which recommends changes to housing, walkability, retail/mixed use development, and parks and trails—might affect the health of residents in the neighborhood. Our assessment of the QSA Plan, which is qualitative not quantitative, is based on an evaluation of existing conditions and future impacts. Reflecting on the predicted changes, we then developed a set of recommendations designed to mitigate the QSA Plan's negative health outcomes and maximize its potential benefits to health. Finally, in order to understand the effectiveness of this HIA in influencing the decision-making processes surrounding the implementation of QSA Plan, we developed an evaluation and monitoring plan.

**The Quitman Station**

We chose the Quitman station for a number of reasons and after assessment of a number of station areas along METRORail's expansion, any of which would benefit from an HIA. First, the Northside Village area—in which the Quitman station is located—is predominately low-income, Hispanic and Spanish-speaking. Thus, in many ways, it is reflective of the changing demographics of Houston—, which is increasingly Hispanic—and the opportunities and challenges of these changes. It is also a community with a rich and long history, with many historic homes and other buildings, as well as many active community organizations and others working to preserve the community. Northside Village is also still relatively affordable, with many homes available for under $100,000, but its location—just on the northern edge of downtown Houston—makes it increasingly vulnerable to rising prices, acquisition of property by investors who often tear down existing structures, and gentrification that threatens the community's cohesiveness. Indeed, in 2005 Preservation Texas named this area

one of Texas's "most endangered places" [12]. The extension of the central light rail corridor through Northside Village will link the residents of Northside Village with the University of Houston's downtown campus, Rice University, several Houston Community College campuses, the Texas Medical Center, the Museum District, downtown Houston, multiple sports venues, various parks, restaurants, shopping malls, and expanded employment options. At the same time, others in Houston are re-assessing this prime location, and future connectivity via rail. The area is also increasingly regarded as a potential key "gateway" to downtown Houston, especially if visitors who fly into or out of Bush Intercontinental Airport to the north of Houston increasingly use the northern extension of light rail to connect to buses and shuttles serving the airport. As is discussed at some length in the report, the residents of Northside Village also face a disproportionate number of health-related risk factors. For all of these reasons, our team felt that an HIA of the Quitman station area could be particularly valuable to help guide TOD in this neighborhood and possibly to serve as a pilot for additional HIAs of other light rail stations in Houston.

# FORWARD

The Quitman Station Area Plan ("QSA Plan") focuses on changes to the built environment. Although the built environment is a determinant of physical activity, there are numerous other factors, such as individual behavior or economic conditions, that help to determine the true influence of the built environment [13-15]. On its face, each element of QSA Plan, as we explore in the full report, has the potential to affect health. However, we feel it necessary to condition our assessment with reflections on various other factors that may limit or modify the QSA Plan's ability to effect change.

For example, people walk for different reasons, usually for leisure, exercise, or to get to a destination. Depending on why they are walking, the impact of the built environment on physical activity differs [16]. In this HIA, we have not generally addressed individual motivations or decisions that are important dimensions of physical activity and other health-related behaviors in any neighborhood. On the other hand, availability of certain built environment features or amenities, such as useful destinations, play a role in individual choice.

Although access to quality parks, in general, is associated with physical activity, it does not guarantee an increase in physical activity. A number of studies have found that various other factors influence whether or not individuals or populations will use a park and how they will use it [17]. For instance, Babey and associates found that having access to a park did not affect rates of physical activity for people who lived in apartment buildings, lived in an unsafe neighborhood, or were members of a low-income family [18].

How the built environment affects different demographic groups varies. For instance, researchers have found that a higher level of education and greater

income are stronger predictors of lower body mass index (BMI) among white populations than they are among disadvantaged groups [19]. In another study, Cohen and colleagues found that park usage—including the types and levels of physical activity—differed by gender and age [20]. They found that (1) males use parks more than do females, and (2) children and teenagers use parks more than do adults and seniors. A number of other studies have shown that park usage differs between races and ethnic groups [21, 22].

# PROJECT OVERVIEW

As noted in the Executive Summary, Texas Southern University, Houston Tomorrow, Baylor College of Medicine and Andress & Associates collaborated to conduct an HIA of several transit-oriented urban redevelopment plans for the Quitman station area. To facilitate this assessment, we created a composite plan, the Quitman Station Area Plan (QSA Plan). The QSA Plan aggregates the goals and objectives of four different redevelopment initiatives—the Houston Urban Corridor Planning Initiative [1, 2], Northside Livable Centers Study [3], Northside Village Economic Revitalization Plan [4], and Northside Quality of Life Agreement [5]—for the Quitman neighborhood. This composite QSA Plan emphasizes the use of TOD to create a vibrant, economically healthy, growing, and vital neighborhood within ¼ mile of the forthcoming METRORail station at Main and Quitman, which is centrally located in Northside Village, which is itself located on the northern edge of downtown Houston. The HIA examines how the elements of the QAS Plan—including changes to housing, walkability, retail/mixed-use development, and parks and trails—could lead to changes in health for the residents of the neighborhood.

## LIGHT RAIL IN HOUSTON

In the City of Houston, Texas, there is an ongoing initiative to expand light rail public transit (Figure 1). Currently, there is one operating rail line, but under the lead of METRO, the regional transit authority, the plan is to build five more rail lines, resulting in 65 "station-area neighborhoods," which are defined as neighborhoods within ¼ mile of the light rail station [23]. The planned rail lines will connect downtown Houston to the northern, eastern, and southeastern sides of the city. As of June 2012, construction is underway on three of the new lines

(North Line, Southeast Line, and East End Line) and METRO predicts that these lines will open in 2014 [24]. This HIA focuses on the station area for the Quitman station, which is on the North Line (Figure 2) [25]. Our study area is a circular buffer with a ¼-mile radius centered on the Quitman station (Figure 3).

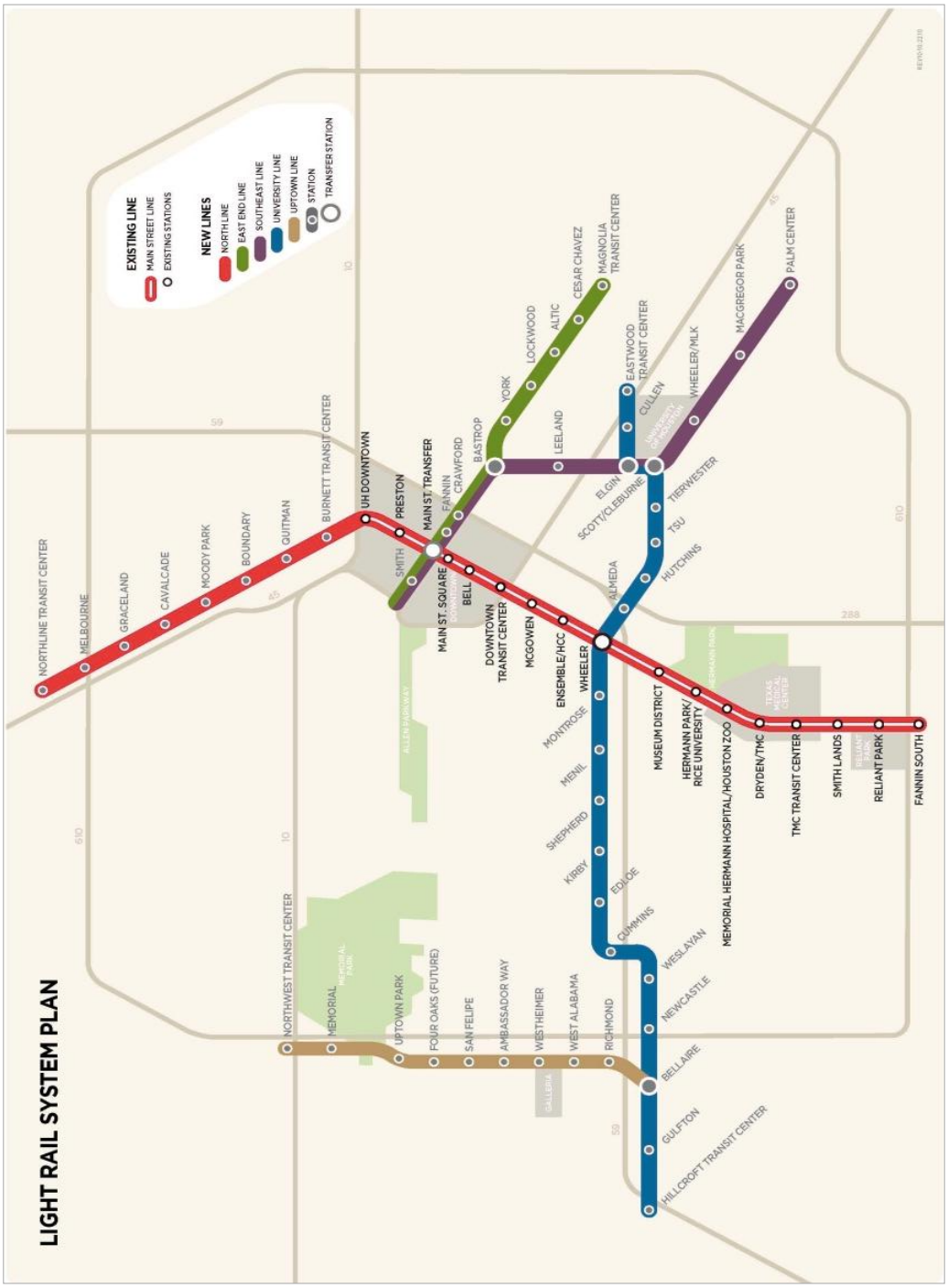


Figure 1:METRO's planned light rail system for Houston, Texas [23].


Figure 2: METRO's North Line light rail route extends the current line north of Houston, Texas. The focus of this HIA is the Quitman station neighborhood [24].

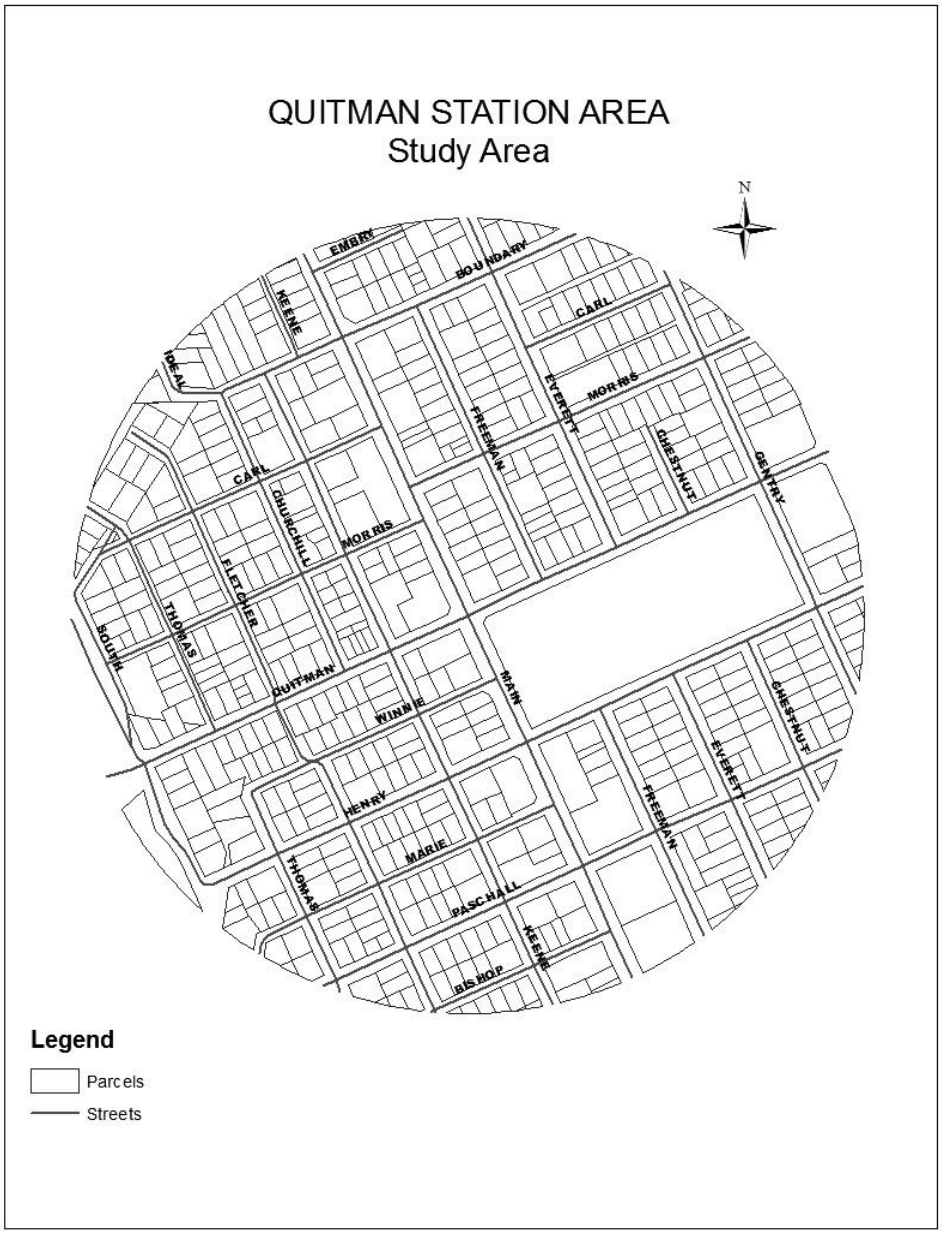


Figure 3: Study area of the HIA of the Quitman station area neighborhood. The study area is based on a circular area defined by a ¼-mile radius centered on the station.

## TRANSIT-ORIENTED DEVELOPMENT

Concurrent with the construction of Houston's new light rail lines, a number of regional governmental, nonprofit, stakeholder and other entities have developed initiatives that primarily focus on creating TOD in many of these station-area neighborhoods. In general, TOD focuses on creating a mix of land use—such as residential, office, retail, civic uses, and entertainment—within easy walking and biking distance from a transit station; this distance is usually defined as 1/4 to 1/2 mile from the station, which generally constitutes a 5–10 minute walk. The mix of uses, combined with thoughtfully designed community spaces, plazas and parks, form a vibrant village-like neighborhood where people can live, work, and play. Such TOD is likely to encourage transit ridership, increase density, improve air quality, and foster a sense of community around station areas with this type of development.

## QUITMAN STATION AREA PLAN

As noted earlier, the QSA Plan is a construct that relies heavily on components from four existing plans that use TOD with the intent to create a vibrant, economically healthy, growing, and vital neighborhood within ¼ of the Quitman station. Our QSA Plan primarily focuses on the following four elements from these initiatives:

### ELEMENT 1: WALKABILITY

The HIA-driven QSA Plan will improve the walkability of the neighborhood. There will be urban design improvements throughout neighborhood. This includes improvements to sidewalks width; streetscaping, including trees and other

pedestrian elements; traffic calming; and parking management. Crime will be reduced, and threats from stray dogs will be minimized.

## ELEMENT 2: AFFORDABLE HOUSING

The HIA-driven QSA Plan will provide the neighborhood with affordable housing. There will be the creation or expansion of a homeowner's assistance program.

## ELEMENT 3: PARKS AND TRAILS

The HIA-driven QSA Plan will enhance neighborhood parks and bike trails. There will be improvements to the existing park, Hogg Park; creation of a new park; and improvement of existing and creation of new biking routes.

## ELEMENT 4: RETAIL AND MIXED-USE DEVELOPMENT

The commercial corridor will be revitalized to serve the neighborhood. There will be a mix of neighborhood retail and services, which will provide residents with access to goods and services and employment opportunities.

As noted, the QSA Plan is not a single, stand-alone plan. Rather, we constructed it by aggregating the goals and objectives of four different redevelopment initiatives, each of which is briefly described below.

The **Northside Quality of Life Agreement** was created in 2010 by LISC GO-Neighborhoods, a collaboration of two community-based organizations: Avenue Community Development Corporation and LISC Greater Houston. Its geographic focus is on Northside Village. The goal of this project is to have the local residents and other stakeholders develop a shared vision for the future of the neighborhood [5].

The **Northside Livable Centers Study** was created in 2010 by the Houston-Galveston Area Council (H-GAC), a regional planning organization. Its geographic focus is the greater Northside Village, which includes the Quitman Station. The goal of this study was to create a sustainable, walkable, mixed-used, neighborhood that has a range of transportation options, including light rail [3].

The **Houston Urban Corridor Planning Initiative**, created in 2008, is one of the City of Houston's Planning and Development Department's initiatives for TOD in the city's light-rail corridors, including the North Corridor, where Quitman is located. It focuses on citywide development regulations and incentives, and on urban design standards [1, 2].

The **Northside Village Economic Revitalization Plan** was created in 2002 by the City of Houston's Planning and Development Department. Its

geographic focus is the larger Northside Village neighborhood. The goal of the plan is to spur economic development through neighborhood revitalization [4].

In order to create the QSA Plan we conducted a content analysis of each of the four initiatives. We examined the goals, objectives, and recommendations to identify which were related to TOD. The relevant parts of each initiative, as identified in the content analysis, are included in Appendix A. Building on the growing body of literature on TOD [26-39], we categorized the individual plan elements into one of four categories: neighborhood walkability, housing, parks and trails, or retail and mixed-use development. For each element, we summarized the content of the plans.

# WHAT IS AN HIA?

*A Health Impact Assessment, or HIA, as defined by the National Resources Council (which it adapted from a definition by the International Association for Impact Assessment) is*

> A SYSTEMATIC PROCESS THAT USES AN ARRAY OF DATA SOURCES AND ANALYTIC METHODS AND CONSIDERS INPUT FROM STAKEHOLDERS TO DETERMINE THE POTENTIAL EFFECTS OF A PROPOSED POLICY, PLAN, PROGRAM, OR PROJECT ON THE HEALTH OF A POPULATION AND THE DISTRIBUTION OF THOSE EFFECTS WITHIN THE POPULATION. [AN] HIA PROVIDES RECOMMENDATIONS ON MONITORING AND MANAGING THOSE EFFECTS [11].

An HIA is thus a tool for explicitly considering health-related issues in decision-making processes before decisions are made and action undertaken [6, 7]. Although HIAs have been widely used in Europe, Australia, and other countries since the 1980s, the use of an HIA is a rather new tool in the United States [40]. There is no single uniform approach to an HIA, but they are all designed to measure the potential positive and negative impacts that could result from the policy or plan under consideration considered [41-43]. Most HIAs involve scoping, screening, assessment, recommendations, reporting, and evaluation and monitoring [10, 11, 44].

**Scoping** establishes the boundaries of the HIA and identifies the health effects to be evaluated, the populations affected, the HIA team, sources of data, methods to be used, and any alternatives to be assessed.

**Screening** establishes the need for and value of conducting an HIA. The central considerations include whether the proposal in question might cause important changes in health, whether health is already a major focus of the decision-making process, whether the legal framework provides an opportunity for health to be factored into the decision, and whether data, staff, resources, and time are adequate to complete a successful HIA in time to provide useful input into the decision-making process (that is, can information be provided within the timeline for the decision). Another consideration is whether the proposal is likely to place a disproportionate burden of risk on vulnerable populations in the affected community. Screening proposals on this basis helps to ensure that the HIA addresses the risk factors that underlie observed disparities in the rates of illness among various populations.

The **assessment** phase includes two tasks. The first is to create a profile of the population affected, including information on the demographics; baseline health status; and social, economic, and environmental conditions that are important to health. The second task is to analyze and characterize effects on health and its determinants for the proposal and for any alternatives under consideration.

**Recommendations** identify specific actions that could be taken to avoid, minimize, or mitigate harmful effects identified during the course of the HIA or to take maximal advantage of opportunities for a proposal to improve health.

**Reporting** is the communication of the findings and recommendations of an HIA to decision-makers, the public, and other stakeholders. It includes the production and dissemination of written materials that document the

HIA process, methods, findings, recommendations, and limitations of the analysis. It also includes the public dissemination of results through other channels, such as meetings with the public, decision-makers, and other stakeholders.

**Evaluation** of whether the HIA has influenced the decision-making process is an important component of HIA. As with any intervention, evaluation is required to see if it has worked. Evaluation of the HIA process is also useful to answer why the HIA worked (or not). **Monitoring** the implementation of the proposal is critical to ensure that any recommendations that decision-makers agreed to, actually occur. Long-term monitoring of the health of populations is sometimes a component of larger HIAs. This monitoring can be used to see if the predictions made during the appraisal were accurate, and to see if the health, or health-promoting behaviors, of the community have improved.

Most HIAs use a broad definition of health to emphasize the idea that a person's health is significantly influenced by their surroundings. Many factors—such as opportunities for employment, income, housing, environment, education, transportation, and access to grocery stores—affect a person's health. These contextual factors are often referred to as the social determinants of health.

Using this broad definition of health, HIAs are used to predict the impacts of a project or policy on health. For example, pollutants from a highway expansion project may directly affect the health of a population. An HIA also considers the indirect effects a project might have on health. For example, where a person lives can determine their access to public spaces and grocery stores, in turn affecting that person's physical activity and nutrition.

Equity is a core concern of HIAs. As part of the HIA process, the assessment of equity focuses on the potential for a project or policy to lead to unequal health impacts on population groups, such as seniors, single parents, low-income families, or people with disabilities. The term "differential impacts" is sometimes used to identify whether the positive or negative impacts of a project or policy may be experienced to a greater extent by one group than by others. The HIA process assesses whether this difference is significant in health terms, whether it is likely to be considered unfair by the affected populations, and whether the project or policy can be modified to eliminate or reduce the differential impact. This is especially true if one group is seen to carry a higher burden of disadvantage or risk of being disadvantaged. For example, when major roads are constructed through poor, older neighborhoods and avoid more wealthy communities, low-income populations may experience more of the negative consequences of that road project.

The HIA process promotes equity by specifically measuring impacts on vulnerable populations. Furthermore, the HIA process can also promote equity through its efforts to engage stakeholders. An HIA could promote democracy, improve the quality of decisions, educate the public, legitimize decisions, promote community empowerment, and value local knowledge. The HIA process does this by:

- including significant community/public participation;
- creating recommendations that maximize benefits and mitigate harms; and
- requiring accountability through monitoring and evaluation of how the HIA influences subsequent decisions.

## ORGANIZATION OF THE REPORT

The report is organized into the following parts:

- Methodology: an explanation of the key steps of our Quitman-area HIA and a summary of the stakeholder engagement activities.
- A profile of the socioeconomic characteristics and health status of the current residents of the Quitman study area.
- Analyses for each of the four main TOD elements—neighborhood walkability, housing, parks and trails, and retail and mixed-use development—of the QSA Plan. For each of these four elements, the report includes a literature review describing the relationship between the TOD elements and health, a presentation of the existing conditions, and an assessment of the potential health impacts.
- A set of recommendation designed to maximize the health benefits and mitigate unintended negative consequences of the QSA Plan.
- A plan for monitoring the impacts of the recommendations resulting from the HIA of the QSA Plan.

# METHODOLOGY OF THE QUITMAN AREA HIA

There were five components to this HIA of the QSA Plan: screening, scoping, assessment, recommendations, and evaluation and monitoring.

## SCREENING

The goal of the screening process was to determine whether or not an HIA would be feasible and useful for the Quitman area and, more broadly, to TOD at each of the METRO light rail station areas. As part of the screening process, we identified decision makers who could implement the plan, and developed overall goals for the HIA. As we describe in our later section on stakeholder engagement, we meaningfully engaged many of these decision-makers and stakeholders throughout this HIA.

The Health Impact Assessment (HIA) of the Quitman Station Area Plan (QSA Plan) tries to influence planning, regulatory, and non-regulatory decisions that affect the potential for TOD. Implementing TOD in Houston will be a dynamic process. There are three key decision-making contexts:

**Planning:** developing neighborhood-station plans and regional sustainable development plans

## SCOPING

During the scoping phase, through stakeholder participation and a review of the literature on HIAs and TOD, we defined the study area, identified key community concerns related to how the QSA Plan could affect neighborhood,

residents and their health, and decided to focus on understanding the impacts to young children, seniors, Hispanics, and persons with a limited education [6, 7, 11, 42, 44-55].

**OVERALL GOALS FOR THE QUITMAN HIA**

*To educate local decision-makers about the health impacts of TOD*

*To motivate decision-makers to develop specific TOD implementation strategies*

*To motivate decision-makers to consider health impacts when making decisions that may impact successful TOD implementation*

*To encourage smart growth in Houston*

*To help Houston become a healthy and equitable community*

**KEY DECISION-MAKING GROUPS FOR THE QUITMAN HIA.**

*PUBLIC AGENCIES*

- *City of Houston: Planning and Development, Health and Human Services, and Housing Authority*
- *Harris County: Public Health and Environmental Services*
- *METRO: Metropolitan Transit Authority*
- *Houston-Galveston Area Council (H-GAC)*

*PUBLIC OFFICIALS*

- *City of Houston City Council and Planning Commission*

*PRIVATE DEVELOPERS*

*LOCAL COMMUNITY ORGANIZATIONS*

- *Community-based organizations including, but not limited to, Avenue CDC and LISC Greater Houston*
- *Resident/neighborhood organizations including, but not limited to, Near Northside BOND*
- *Local economic development organizations including, but not limited to, the Greater Northside Management District, and the Hispanic* Chamber of

## ASSESSMENT

For the assessment phase, we first developed a detailed research model for the QSA Plan HIA to explore the concerns identified during the scoping. The model was based around four key concerns, which we expressed as questions: (1) what are the existing conditions? (2) how would the QSA Plan change the conditions? (3) how would those changes affect health?, and (4) what are the key sources of data and appropriate research methods to conduct the study? For each concern, we developed a set of specific research questions, data sources, and analysis methods. We then collected and analyzed data and reviewed the relevant literature to determine how the QSA Plan would most likely affect the health of area residents.

Detailed information of our methodological approach is included in each assessment section.

## RECOMMENDATIONS

Working with our stakeholders, we developed a set of recommendations intended to maximize the positive health benefits and mitigate any negative impacts.

## EVALUATION AND MONITORING

The monitoring plan is intended to evaluate both the impacts and outcomes of the HIA. In terms of impacts, it is designed to explore how the actual HIA affected the decision-making process for the QSA Plan. In terms of outcomes, it focuses on measuring changes to the built environment, a determinant of health.

Our HIA employed stakeholder engagement to meet three objectives:

(1) to develop the HIA research design through participation in the scoping and screening process;

(2) to collect and triangulate primary data on existing conditions with secondary, sociodemographic data sets in the assessment process; and

(3) to build support for the recommendations and increase community capacity to implement the recommendations.

We used key informant interviews, small group meetings, and electronic exchanges to engage with individuals, stakeholders, and community groups. Table 1 summarizes the groups or individuals with whom we met, as well as the relevant HIA phase.

For the interviews, we used reputational sampling to identify individuals and organizations. All of those interviewed represented larger organizations including the City of Houston Planning & Development Department, City of Houston Health and Human Services Department, Harris County Public Health & Environmental Services, METRO, Avenue CDC, LISC Greater Houston, Near Northside BOND, Greater Northside Management District, and de Madres a Madres, Inc.

We held small group meetings with (1) parents whose children attend Ketelsen Elementary School, (2) parents whose children attend a local childcare program (YMCA), (3) members of a community-based health committee (Go Northside

Health Team), and (4) City of Houston Councilperson Ed Gonzalez, who represents Northside Village, and his staff.

We held large group meetings with (1) representatives from various government agencies—particularly those involved with transit, planning, and public health, along with key leaders from the community, and (2) professionals and students from the transit, urban planning, and public health fields.

TABLE 1: SUMMARY OF STAKEHOLDER INVOLVEMENT IN THE QUITMAN HIA PROCESS.

| GROUP/INDIVIDUALS | SCREENING | SCOPING | ASSESSMENT | RECOMMENDATIONS |
|---|---|---|---|---|
| Avenue CDC | ✓ | ✓ | ✓ | ✓ |
| LISC Greater Houston | ✓ | ✓ | ✓ | |
| Go Northside Health Team | ✓ | ✓ | ✓ | ✓ |
| Greater Neighborhood Management District | | ✓ | ✓ | ✓ |
| METRO | ✓ | ✓ | ✓ | ✓ |
| City of Houston Department of Planning | ✓ | ✓ | ✓ | ✓ |
| City of Houston Health and Human Service | ✓ | | | |
| Harris County Public Health and Environmental Services | ✓ | | | |
| Near Northside BOND | | ✓ | ✓ | ✓ |
| de Madres a Madres | | ✓ | ✓ | |
| Parents associated with YMCA childcare | | ✓ | ✓ | |
| Parents associated with Ketelsen Elementary School | | ✓ | ✓ | |
| Professionals in planning, health, transit | | | | ✓ |
| Elected officials | | | | ✓ |

***During the <u>screening</u> phase, we sought stakeholder input on issues, including:***

- **What is the decision-making context for TOD and the QSA Plan?**
- What is the timeline for TOD and the QSA Plan?
- What aspects of TOD and the QSA Plan should this HIA address?
- What vulnerable populations should this HIA address?

***During the <u>scoping</u> phase, we sought stakeholder input on issues, including:***

- What are their concerns?
- Which are the most important concerns to address in this HIA?
- Do they have suggestions on data sources, including additional individuals with whom we should meet?
- Are they willing to participate as local knowledge sources of data (for the assessment)?

***During the <u>assessment</u> phase, we sought stakeholder input on issues, including:***

- What is the potential for creating a "Main Street" district of small, mostly locally owned, businesses, including retail, restaurants, and services? What are the opportunities and obstacles?
- How adequate is the current mix of retail?
- How well served, by health-related services in the neighborhood, are vulnerable populations?
- Do many kids walk to elementary school? Why don't more children walk to school?
- Do many residents walk for non-work trips? Why don't more residents walk?
- How safe is the pedestrian environment? Where are the accident hot spots? What are the main hazards?
- How affordable is the neighborhood?
- What are the forecasted trends for housing in the neighborhood? What is the ideal percentage of affordable housing? What is considered affordable in the Quitman area?
- What is necessary to sustain/produce sufficient affordable housing in the area?
- What is the potential for displacement?
- In minimizing displacement, what is the potential importance of homeowner assistance programs (e.g., assistance with home maintenance such as replacing a roof or painting, or lo

***During the <u>recommendation</u> phase, we sought stakeholder input on issues, including:***

- What are their ideas (recommendations) for minimizing harm and maximizing benefits of TOD and the QSA Plan?
- Which recommendations are the most important/least important? Why?
- Who would be responsible for implementing the recommendations?
- How can we build support for implementing the recommendations?
- What are potential obstacles to implementing the recommendations?
- What else has to happen to implement the recommendations?

# QUITMAN STATION-AREA NEIGHBORHOOD DEMOGRAPHICS AND HEALTH

The health and quality of life of a community and its residents is deeply rooted in and tied to the quality of the social, political, economic, and physical context. Observed demographics highlight how the results of these forces are distributed by both socioeconomic status and area of residence [56]. The concept of neighborhood varies across fields with definitions taken from sociology, urban geography, and anthropology. However, for purposes of our Quitman HIA, a neighborhood is a relatively small geographical area where people live, which researchers and decision-makers use for analysis and planning purposes, and which residents make use of in order to access activities of daily living [57].

## CURRENT DEMOGRAPHICS OF RESIDENTS

Data are from the 2005–2009 American Communities Survey [58]. The Quitman station-area neighborhood is measured as two Harris County, Texas, census tracts: # 2103 and #2104.

### RACE AND ETHNICITY

The Quitman neighborhood is almost entirely Hispanic, with most residents being of Mexican origin.

## AGE

Children under 18 years of age account for 30% of all residents, and the elderly—persons 65 years of age or older—account for 10%.

## EDUCATIONAL ATTAINMENT

More than half (52%) of the residents 25 years of age and older are not high school graduates.

## INCOME AND BENEFITS

The median household income is $25,482 (in 2009 dollars). Nineteen percent of the households receive food assistance (food stamps or SNAP benefits).

## POVERTY

Approximately 35% of Quitman-area residents have income below the poverty level. In terms of vulnerable populations, over half (54%) of area children (under the age of 18) live below the poverty level; one out of every four (25%) persons 65 years of age or older live below the poverty level; and 73% of female-headed families with children under the age of 18 have income that places them below the poverty level.

## ACCESS TO A VEHICLE

More than one out of every five (22%) households do not have access to a vehicle.

In order to create a health status profile, we used data from the following sources

> St. Luke's Episcopal Health Charities 2008 Community Health Reports: Near Northside Neighborhood (data are for the entire Northside Village) [12]; Health of Houston Survey 2010, Institute for Health Policy, The University of Texas School of Public Health (data are for the entire Northside Village) [59];
>
> Texas Department of State Health Services, Center for Health Statistics, Texas Behavioral Risk Factor Surveillance System (data are for Harris County) [60]; and Centers for Disease Control and Prevention (CDC) Behavioral Risk Factor Surveillance System Survey Data, and U.S. Physical Activity Statistics (data are for Harris County) [61, 62].

As is apparent in Tables 2 and 3, significant health disparities and other issues related to poor health are prevalent in Northside Village, which includes the Quitman station area.

TABLE 2: HEALTH STATUS OF QUITMAN STATION AREA RESIDENTS.: SELECTED HEALTH AND ENVIRONMENTAL ISSUES FOR NORTHSIDE VILLAGE RESIDENTS ONLY.

| **Northside Village Adults (≥ 18 yr)1** | | |
|---|---|---|
| **Self-reported health status** | Fair or poor health | 36% |
| **Access to health care** | Facing barriers to health care access | 25% |
| | No health insurance | 45% |
| | No dental insurance | 32% |
| **Environmental problems noted** | Stray dogs or cats | 62% |
| | Water pollution from harmful chemicals and runoff | 9% |
| | Drinking water has odd look, odor or taste | 22% |
| | Dumping waste in empty lots or ditches | 49% |
| | Fumes, smells and smoke from traffic | 20% |
| | Fumes, smell and smoke from industry | 12% |
| **Health screening (women)** | Unscreened for breast cancer (40–74 yr) | 42% |
| | Unscreened for breast cancer (21–65 yr) | 29% |
| **Northside Village Children (0–17 yr)1** | | |
| **Obesity** | Unhealthy weight (overweight or obese) | 57% |
| **Access to health care** | Facing barriers to health care access | 19% |
| | No health insurance | 19% |

Source: Health of Houston Survey 2010, Institute for Health Policy, The University of Texas School of Public Health, UTHealth. Public Use Data File. Accessed at https://sph.uth.tmc.edu/research/centers/ihp/health-of-houston-survey-2010 on 1/20/12.

Nineteen percent of children in Northside Village, for example, do not have health insurance, and the same percentage (19%) face barriers in accessing health care. More than half (57%) of area children are either obese or overweight. Among Quitman-area adults, just over 1/3 say that they have fair or poor health, nearly half (45%) do not have health insurance, and 25% face barriers to health care access. Compared with the U.S. and with the City of Houston, the death rates for heart disease, cerebrovascular disease (various types of brain dysfunction, such as stroke-related dementia, related to diseases of the blood vessels supplying the brain), diabetes, and motor vehicle accidents are higher in the Quitman area. In addition, a relatively high percentage of Northside Village residents noted environmental problems—such as stray dogs and cat, air pollution and dumping of trash—within the neighborhood.

TABLE 3: HEALTH STATUS OF QUITMAN STATION AREA RESIDENTS: SELECTED MORTALITY RATES[1] FROM NORTHSIDE VILLAGE, THE CITY OF HOUSTON, AND HARRIS COUNTY.

| | Northside Village[2] | City of Houston[2] | Harris County[3] |
|---|---|---|---|
| **Heart disease** | 288.4 | 262.0 | 192.2 |
| **Cerebrovascular disease** | 87.9 | 76.0 | 49.6 |
| **Diabetes** | 40.2 | 28.0 | 25.0 |
| **Motor vehicle accidents** | 16.9 | 13.2 | 12.7 |

[1] Age-adjusted annual average deaths per 100,000 population.

[2] Source: Northside Village/Near Northside Super Neighborhood, Community Health Profiles 1999–2003, City of Houston, Department of Health and Human Services, Office of Surveillance and Public Health Preparedness.

[3] Source: Health Facts Profiles: Harris County, Center for Health Statistics, Texas Department of State Health Services, 2008

## THE RELATIONSHIP BETWEEN NEIGHBORHOOD WALKABILITY AND HEALTH

The layout, or design, of a neighborhood is a determinant of physical activity; higher rates of physical activity are associated with more walkable neighborhoods [63, 64]. Walkable neighborhoods typically have higher residential density, an adequate land-use mix (primarily of housing and retail), wide sidewalks, connected streets, shade trees, and low crime.

The impact of the built environment on physical activity is not uniform for all population groups. For some, the built environment is a major determinant for physical activity, whereas it is not as important for other groups. For instance, Pearce and Maddison found that improvements to neighborhood walkability were a strong indicator of increased physical activity especially among disadvantaged populations [65].

Neighborhood crime affects walkability. Residents who live in neighborhoods that they perceive to have high crime have lower rates of physical activity [66-68]. One way to mitigate crime is through urban design that increases walkability. For instance, installing pedestrian-scale lighting, in which the lights are relatively low and oriented towards sidewalks, can help reduce the fear of crime.

According to Dellinger and Staunton, traffic safety is a key determinant of whether or not children will walk or bike to school [69]. They found that in order to increase the number of children who walk or bike to school, traffic safety must be improved. Another study found that the presence of trees, higher land-use

mix, shorter trips, and male gender were positively associated with an increased likelihood of walking or biking to school [15].

## METHODOLOGY FOR EXISTING CONDITIONS FOR NEIGHBORHOOD WALKABILITY

In order to explore the Quitman neighborhood's current level of walkability, we interviewed local stakeholders and conducted a walkability audit, which is a field study that uses observation to assess the existing conditions. We used a modified version [70]of the Pedestrian Environment Data Scan (PEDS) tool, which was developed by Clifton and Livi Smith. The PEDS tool is a walking audit methodology designed to use observation by trained staff to measure attributes of the built environment that impact the walkability of a neighborhood, including sidewalk conditions, road conditions, traffic calming and safety devices, building design, trees and lighting [71]. The original PEDS tool records the average conditions of both sides of a block; we modified the tool so that we could separately record the conditions for each side of each block. We also included measures of stormwater design and the presence of stray animals. The Quitman HIA-modified PEDS tool is reproduced in Appendix B. Under the supervision of the Quitman HIA's project director, Laura Solitare, graduate students in Texas Southern University's Urban Planning and Environmental Policy Department conducted the field survey. Prior to conducting the field survey, Dr. Solitare trained the students in the use of the PEDS instrument. They assessed the conditions of all blocks within ¼ mile of the intersection of Quitman and Main streets, i.e., the study area. If a block was partially within the study area, the entire block was included in the modified PEDS assessment. A summary of the key findings are presented in Table 4; maps derived from the collected data were also generated (Appendix C).

## FINDINGS ON EXISTING CONDITIONS FOR NEIGHBORHOOD WALKABILITY

Currently, the neighborhood is not particularly walkable. The walkability audit found that there are many obstacles to walking in the neighborhood. The conditions of the majority of the sidewalks do not generally support walking, as they are narrow, incomplete, and often blocked by barriers, such as parked cars or garbage cans. Most of the street lighting is oriented towards the roads, not towards pedestrians. Most blocks have few, if any, trees shading the sidewalk. Additionally, the conditions of the majority of the roads do not support walkability. There are few traffic calming devices, crossing aids, or painted crosswalks. From interviews with Quitman-area residents, we also found that many residents perceive the area to be unsafe for children to walk or bike. Residents were particularly concerned about the routes to schools, which they felt were unsafe because of the danger of pedestrian-vehicle accidents.

## ASSESSMENT OF IMPACTS OF THE QSA PLAN ON NEIGHBORHOOD WALKABILITY

The QSA Plan—which again, is a combination of four different initiatives—includes elements that would improve sidewalk conditions, enhance the pedestrian environment (with trees, art and destinations), and increase safety. If these elements are implemented, the QSA Plan will positively affect the walkability of the neighborhood, which will likely result in health benefits associated with increased physical activity, such as reduced rates of obesity and diseases related to insufficient exercise. However, the degree of improvements may be small, since the QSA Plan lacks specific elements aimed at increasing residential density, which is an essential component for walkability.

The potential for achieving these positive health impacts is limited. Most significantly, the plan does not offer strategies for implementation of any of the

elements. Nor does it address many of the critical attributes of neighborhood walkability; missing from the plan are sidewalk improvements on every street/block, and additional traffic calming devices. These elements were not notably included in the four individual initiatives.

Table 4. Walkability audit: Summary of existing conditions1 for the Quitman station area neighborhood (all blocks within or intersected by study area buffer; N = 1502). *Note: The audit was conducted using the Houston TOD HIA-modified version of PEDS [70, 71]*

| | |
|---|---|
| **Land Use** | |
| Only residential | 57% |
| No residential | 13% |
| **Vacant Parcels** | |
| Has vacant parcels | 29% |
| **Stormwater Infrastructure** | |
| Curb and gutter both sides | 37% |
| Ditch and swale both sides | 56% |
| **Presence of Sidewalks** | |
| Both sides of block | 69% |
| **Condition of Sidewalks** | |
| Both sides in good condition | 5% |
| **Complete Sidewalks For Entire Block** | |
| Both sides | 45% |
| **Walkway Obstructions** | |
| Blocks where path was blocked by parked car, garbage can, or greenery | 37% |
| **Buffers between Sidewalk and Road** | |
| Buffers on both sides | 78% |
| **Curb Cuts** | |
| Present at both ends, on both sides | 20% |
| **Presence of Dogs** | |
| Dogs, loose/roaming | 13% |
| **Road Conditions** | |
| Good | 40% |
| Fair or Poor | 55% |
| Under repair | 5% |
| **Traffic Control Devices** | |
| None in block | 31% |
| **Crossing Aids** | |
| None in block | 67% |
| **Trees: Sidewalk Shading** | |
| Many trees | 2% |
| None or very few trees | 80% |
| **Cleanliness: Presence of Litter/Graffiti** | |
| Good | 14% |
| Fair | 61% |
| Poor | 25% |
| **Attractive for Walking** | |
| Agree/strongly agree | 25% |
| **Attractive for Biking** | |
| Agree/strongly agree | 19% |
| **Safe for Walking** | |
| Agree/strongly agree | 59% |
| **Safe for Biking** | |
| Agree/Strongly Agree | 39% |

## THE RELATIONSHIP BETWEEN AFFORDABLE HOUSING AND HEALTH

Housing affects health in many ways [72]. According to a report from the Office of the U.S. Surgeon General:

> Homes' structural and safety features can increase risk for injuries, elevate blood lead levels, and exacerbate other conditions. Poor indoor air quality contributes to cancers, cardiovascular disease, asthma, and other illnesses. Poor water quality can lead to gastrointestinal illness and a range of other conditions, including neurological effects and cancer. Some chemicals in and around the home can contribute to acute poisonings and other toxic effects [73].

People who live in substandard housing have higher rates of many diseases and injuries, and low-income minorities are significantly more likely to live in inadequate housing [74] and more likely to suffer from housing-related illnesses [75]. For the Quitman HIA, we used the National Center for Healthy Housing's definition of substandard housing, which is "housing conditions that cause significant illness, injury, and deaths" [76]. This can be housing that is non-compliant with local housing and building codes, deteriorated units that need significant repair, and dilapidated units that are beyond repair.

Having an adequate supply of affordable and safe housing is important for health [77]. When housing is affordable, people have a greater percentage of their income to spend on other needs, including fresh foods and health care [78, 79]. Pollack and colleagues surveyed more than 10,000 residents in the Philadelphia area and found a statistically significant association between housing affordability and health [80]. They found that people who lived in unaffordable housing had increased odds of poor self-rated health,

hypertension, arthritis and cost-related nonadherance to heath care regimens, but did not have increased risk for a number of other health problems such as heart disease, diabetes, asthma, and obesity.

In their review of the literature on the impacts of housing improvement on health, Thomson and associates found that most home improvements, such as increasing energy efficiency and repairing leaks, improved health [27, 81]. However, affording the improvements is a challenge for many. Housing repair assistance programs, such as grants for repairs or rehabilitation, are often critical for helping low-income minorities and seniors (particularly those who are low-income) maintain a healthy home [26, 29, 32].

There is conflicting evidence about the effects of homeownership and health, especially among low-income populations [82, 83]. Two of the main general hypotheses are that (1) homeowners have better psychological health than do renters, and (2) difficulties making mortgage payments are associated with poor health. However, Rohe and associates note that evidence supporting the positive impacts may be limited to specific populations or housing conditions and that ownership may have other negative impacts, such as damage to psychological or physical health and decreased ability to escape distressed neighborhoods [82].

## METHODOLOGY FOR EXISTING CONDITIONS FOR AFFORDABLE HOUSING

In addition to data from the 2005–2009 American Communities Survey, we used 2010 Harris County Appraisal District (HCAD) data to explore the housing conditions [58, 84]. Data from HCAD includes extensive information on residential and commercial properties in Harris County, Texas. We extracted data from the "Real Property, 2010 Certified Values" data file. We used GIS

software to determine which parcels were within ¼ mile of the intersection of Quitman and Main streets. Our GIS dataset included a streets layer and the HCAD parcel layer. We used the software to create a ¼-mile radius buffer centered on the intersection of Quitman and Main streets, and then included in our subsequent analyses all parcels that were either fully or partially within the buffer.

## FINDINGS ON EXISTING CONDITIONS FOR AFFORDABLE HOUSING

***Home Ownership***. Owner-occupancy of homes was 39%, and renter-occupancy was 61%. Owner occupancy is an indicator of community involvement and the likelihood of repairing a home. It is also positively associated with physical activity among seniors *[38]*, and with decreased pediatric injuries in low-income populations *[85]* .

***Age of Housing.*** Ninety-four percent of the single-family homes within the Quitman study area were built before 1950. Age and condition of housing , sometimes in combination with additional risk factors such as income or race/ethnicity, is often an indicator of potential substandard housing. Housing built before 1950 is a commonly used proxy measure for potential lead-based paint hazards *[35, 86]*. A recent multilevel analysis of housing, socioeconomic factors and blood-lead levels (BLLs) among Houston children (≤ 6 yr) found that children who resided in the Northside Village SuperNeighborhood (N = 1,518) and had a BLL obtained between 1/1/2004 and 12/31/2008 were more likely to have elevated BLLs than children who lived in other parts of Houston (N = 53,811), with 4.7% of Northside Village children having BLLs ≥ 10 µg/dL, compared with 1.9% for children residing in other parts of Houston [87]. Older homes with deteriorating lead paint are thought to be responsible for most of

this difference, although other sources of lead, such as from lead-based ceramics, contaminated soil, industrial emissions, and leaching of lead from old pipes into drinking water may also play a role.

***Overcrowding.*** Four percent of owner-occupied homes are overcrowded and 12% of renter-occupied homes are overcrowded. Overcrowding in a home is associated with higher rates of infectious diseases, chronic diseases, and mental health illnesses *[39, 88]*. A common measure of overcrowding is based on the number of occupants per room in a home, if the number of occupants per room is greater than 1.0, and then the housing unit is overcrowded.

***Mortgage Status.*** Of the owner-occupied homes in the Quitman study area, 31% are with a mortgage, meaning that 7 out of 10 owner-occupied homes were owned without a mortgage. With the economic crisis, mortgage status is an indicator of the potential for a homeowner to face foreclosure, which studies have shown is associated with increased stress and depression, and less access to health care [89, 90].

***Housing Affordability.*** The Quitman HIA uses the U.S Department of Housing and Urban Development's standard definition of affordable housing: to be affordable, monthly housing costs (including mortgages or rent, real estate taxes, utilities and fuel), must be no more than 30% of a family's annual household income. Overall, 54% of the households in the Quitman study area live in homes that are not affordable. For owner-occupied homes with a mortgage, 41% are not affordable. For owner-occupied homes without a mortgage, 15% are not affordable. For renter-occupied homes, 60% are not affordable. Housing affordability is associated with health. When housing is affordable, people have more money available for other necessities, such as food and health care *[91-94]*.

***Housing Stock.*** There are 377 single-family homes, 27 duplexes (two-family), and three three-family homes. The average house is 1,392 square feet with an assessed value, in 2010, of $73,892. The average lot size is 0.12 acres (just under 1/8 of an acre). The oldest house was built in 1898 and the newest house was built in 2009. The great majority of residential properties (93%) were assessed as being of "low" quality.

***Homeowner Assistance Programs.*** There are several programs aimed at assisting low-income and/or elderly homeowners with housing repairs and weatherization. The programs, offered by public agencies and nonprofit organizations, cover large geographic areas and do not specifically target the Quitman station neighborhood. Examples of the programs include the following.

> The City of Houston administers the Single Family Home Repair Program. This program, which serves the entire city, offers assistance for emergency repairs, rehabilitation, and reconstruction.
>
> Sheltering Arms offers the Weatherization Assistance Program. This program provides very low-income households with weatherization assistance to make homes more energy efficient, which in turn generally lowers utility bills.
> The City of Houston has a Residential Energy Efficiency Program that provides low-income households with weatherization assistance to make homes more energy efficient.
>
> Rebuilding Together - Houston, a nonprofit organization, provides home repair and renovation services to low-income homeowners in need, such

as the elderly, individuals with disabilities, veterans, and people impacted by natural disasters.

The City of Houston's Bureau of Community and Environmental Health offers a Lead-Based Paint Hazard Control Program that offers lead hazard reduction to qualified pre-1978 housing units where young children with an elevated BLL reside. These inspection and remediation services also address asthma triggers and safety issues, using the principles of the Healthy Homes program.

## ASSESSMENT OF IMPACTS OF THE QSA PLAN ON AFFORDABLE HOUSING

The QSA Plan for housing will have limited positive impacts on health. The plan does not specifically address residential density nor does it specifically call for new housing. Although the QSA Plan does include developing affordable housing, it does not offer any specific direction for developers in terms of location, number of units, type of units, or level of affordability. Without direct mandates for affordable housing, along with specific efforts to address gentrification, the percent of affordable housing units in the Quitman area is likely to decrease, raising existing housing burdens on the current population and potentially leading to involuntary displacement.

The plan's general goal for promoting homeowner repair assistance is undefined, and thus it is unclear how it will affect housing conditions in the Quitman area. However, any repair program does have the potential to reduce the number of substandard homes and thus improve health.

## THE RELATIONSHIP BETWEEN PARKS AND TRAILS AND HEALTH

Public parks and trails are important for health. Parks and trails provide opportunities for physical activity and social interactions [28, 34, 60, 61, 95]. The two main attributes of parks that contribute to their ability to support physical activity are the conditions of the park and proximity to users' homes.

The conditions of a park or trail are important determinants of levels of physical activity for different populations. Better conditions, including the safety of the park and neighborhood and the amenities at the park, usually, but not always, result in higher rates of physical activity [62, 96]. For instance, a study by Colabianchi and colleagues found that the number of persons using the playground as well as the levels of physical activity were greater at renovated playgrounds than at unrenovated playgrounds [97].

Having a public park or trail near one's home, particularly in minority communities, is essential for promoting physical activity [98-100]. Researchers have found that people who have access to a park within walking distance of their home are more likely to engage in moderate to vigorous physical activity [18, 101-103]. Cycling rates, which are affected, in part, by bike trails, differ by income, car ownership, and ethnicity, with non-Hispanic whites accounting for the majority of all bike trips [96]. Furthermore, the presence of green space in the local environment is associated with improved health and increased social interactions of neighborhood residents [60, 104, 105].

## METHODOLOGY FOR EXISTING CONDITIONS FOR PARKS AND TRAILS

We reviewed the City of Houston's Bikeway Program to determine the location of bike trails and we reviewed maps from the City of Houston's Department of Parks and Recreation to determine the location of parks. We evaluated the existing conditions of Hogg Park using the Physical Activity Resource Assessment (PARA) tool (Appendix D), an observational tool that can be used to evaluate physical activity resources of urban parks. We used interviews with Ketelsen Elementary School administrators and a representative of the SPARK School Program to determine the plans for the playground at Ketelsen Elementary.

## FINDINGS ON EXISTING CONDITIONS FOR PARKS AND TRAILS

There are no current bike paths/trails in the neighborhood. The neighborhood has two parks: Hogg Park and a playground at Ketelsen Elementary School. Hogg Park is in poor condition, does not have amenities, and is underutilized. The Ketelsen playground is currently under renovation. When it is completed, it should have amenities that make it a good quality playground for school-age children. The playground serves both the elementary school and the neighborhood. It is open to the public on weekends, early evenings, and most of the summer, but it is closed when the school is in session.

## ASSESSMENT OF IMPACTS OF THE QSA PLAN ON PARKS AND TRAILS

Our review found the current existing conditions for parks and trails to be inadequate for fostering physical activity. The QSA Plan includes elements that would result in additional parks and trails and improve the conditions of current parks. If these elements are implemented, the QSA Plan will positively affect physical activity of residents, which will result in health benefits associated with

increased physical activity, such as reduced rates of obesity and diseases related to a lack of exercise.

The potential for achieving these positive health impacts is limited. Most significantly, the QSA Plan does not offer strategies for implementation of any of the elements. It does not have any specific directives for the location of new parks, a process to determine the amenities offered at the parks, or a bike safety program.

## THE RELATIONSHIP BETWEEN RETAIL AND MIXED USE DEVELOPMENT AND HEALTH

Mixed land use is the presence of different, but complementary, land uses, such as housing, retail, and open space, located in close proximity, in one building, a block, or a neighborhood. Mixed land use is important for healthy urban neighborhoods. Research has found that mixed land use promotes physical activity and is associated with obesity: as the land use mix increases, obesity decreases [106, 107].

Neighborhood retail focuses on providing for customers that live in the immediate neighborhood. Typically this includes convenience goods, personal services and, ideally, a supermarket. Neighborhood retail is important for healthy urban neighborhoods [108, 109]; it can be a source of fresh foods, jobs, and opportunities for social interaction.

Supermarkets are less likely to be located in poorer neighborhoods. Thus, poor and minority communities have limited access to affordable, fresh foods [109]. Food availability in a neighborhood is associated with the consumption of fruit and vegetables; persons are more likely to eat healthy fresh foods when those foods are available in their neighborhood [110]. Studies have found that if the availability of food stores increases, then body mass index, which is a measure of obesity, decreases [16, 110, 111].

Neighborhood food environment includes food availability, prices, and the physical and social environment of the stores. Zenk and associates found that improved neighborhood food environments—not just food availability and

reasonable prices—were associated with increased food acquisition behaviors among low-income African American women in Chicago, Illinois [112].

Community gardens promote health in several ways, including providing access to healthy fresh foods, increasing physical activity, and building social capital [113, 114].

## METHODOLOGY FOR EXISTING CONDITIONS FOR RETAIL AND MIXED-USE DEVELOPMENT

We used data from St. Luke's Episcopal Health Charities 2008 Near Northside Neighborhood report [12], our own field observations, and stakeholder interviews to determine the existing retail and services.

## FINDINGS ON EXISTING CONDITIONS FOR RETAIL AND MIXED USE DEVELOPMENT

The neighborhood hosts a multiservice community center, an emergency shelter, a regional HIV support clinic, and a public library, but otherwise it has limited community services and retail. In terms of retail food, there are a few restaurants, mainly fast food, but there are no fresh food outlets in the neighborhood; however, just beyond the boundaries, there is a full service grocery store. There are no current farmers' markets or community gardens.

Our evaluation of the existing conditions indicates that there is an inadequate land use mix, in particular, the retail mix is lacking. The QSA Plan includes elements that promote mixed land use and community gardens. If the elements are implemented, the QSA Plan will improve the mix and provide increased access to fresh foods, which will positively affect the health of residents.

The potential for achieving these positive health impacts is limited. Most significantly, the plan does not offer strategies for implementation of any of the elements, nor does it include specific incentives and infrastructure support to encourage retail to provide access to a variety of sources of high quality, nutritious, and affordable food. Although increased mixed land use will be beneficial, the neighborhood food environment will not necessarily improve.

# RECOMMENDATIONS

The following recommendations seek to maximize and achieve the positive health outcomes that could result from the goals and objectives of the QSA Plan, to mitigate potential negative impacts, and to overcome various limitations of the composite QSA Plan.

The first set of recommendations focus on overall neighborhood redevelopment, including the planning process, content of plans, opportunities for meaningful participation, and implementation strategies. The remaining recommendations focus on the four TOD elements: walkability, affordable housing, parks and trails, and retail mix.

For each recommendation, we have identified the potential lead organization(s).

Since there are several community-based organizations (CBOs) within the Northside Village that have the potential to take the lead, we have purposely chosen, for most of the recommendations, not to name an organization, with the exception of when we have identified CBOs that function citywide.

We preface our walkability recommendations with one overall comment. We have created several maps (Appendix C) of the existing conditions that we documented with our neighborhood walkability audit. We suggest that stakeholders, working to implement the recommendations, review the maps to gain a detailed understanding of the location of the walkability challenges.

Last, although we have identified CBOs to lead and otherwise oversee the implementation of these recommendations, the majority of our recommendations build on recommendations already identified to promote

TOD and/or healthy, sustainable neighborhoods—in this instance focusing on the area around the Quitman light rail station and, more broadly, the Northside Village community. The Northside Village, as we noted in the demographic section, is primarily a low-income Hispanic community. By most measures affordable housing still exists in this community, as do many positive attributes of the community including actively involved community organizations, close proximity of three schools to the Quitman station, and a rich cultural and historical heritage. At the same time, the location of Northside Village—within walking distance from downtown Houston and soon to be linked by the city's core light rail line to not only the downtown, but midtown, the museum area, the world's largest medical center and four major sports arenas—means that this community is at risk of gentrification and of increasing land values that could make continuing to live in the community unattainable for many. The use of an HIA to help coordinate efforts based on the QSA Plan, our specific recommendations, and subsequent stakeholder feedback offer a tremendous opportunity to provide a template for not only this neighborhood but for other station-area TODs along the expanding METRORail system, helping Houston to become a healthier and more sustainable city. Specific implementation strategies are a crucial component of the ultimate success of our HIA TOD recommendations for the Quitman station area. Such detail, however, is largely beyond the scope of this HIA, the primary purpose of which is to help re-align QSA Plan development elements with our HIA. Fortunately, the CBOs we have identified have a history of implementing and fostering beneficial change and broad-based collaboration, and there is growing body of literature and case histories on HIA and TOD implementation to help with this phase [8, 10, 115-119]. In our Evaluation and Monitoring section, we include a number of specific

questions that will help to evaluate the success of the implementation of the Quitman HIA recommendations for TOD in the station area.

## OVERALL NEIGHBORHOOD DEVELOPMENT RECOMMENDATIONS

- Develop a specific neighborhood-wide transit-oriented plan that is comprehensive and long term and includes defined goals, objectives, and implementation strategies.

  Lead Organizations: CBOs City of Houston Planning and Development

- Maintain and expand the meaningful involvement of residents and local businesses in decision-making.

  Lead Organizations: CBOs, METRO, City of Houston Planning Commission, Greater Northside Management District, and Houston Hispanic Chamber of Commerce

- Promote and facilitate the development of community gardens.

  Lead Organizations: CBOs, Urban Harvest, and Recipe for Success

- Develop procedures to assure there is monitoring and enforcement of construction so that it complies with existing sidewalk regulations and environmental health laws.

  Lead Organizations: City of Houston, Public Works and Engineering, Planning and Development Services, Code Enforcement, METRO

- Install complete sidewalks for all blocks.

  Lead Organizations: City of Houston Public Works and Engineering and CBOs

- Plant and maintain trees on all streets throughout the neighborhood.

  Lead Organizations: CBOs, Trees for Houston, and METRO

- Remove sidewalk barriers, such as garbage cans and parked cars.

  Lead Organizations: CBOs and City of Houston Inspections & Public Services, Department of Neighborhoods

- Install pedestrian safety devices at key intersections, along community identified walking routes.

  Lead Organizations: City of Houston Public Works and Engineering, Neighborhood Traffic Management Program

- Install traffic calming devices at key intersections, along community identified walking routes.

  Lead Organizations: City of Houston Public Works and Engineering, Neighborhood Traffic Management Program

- Develop a plan to address issues related to both stray and secured dogs.

  Lead Organizations: CBOs and Academic and Policy Research Organizations

## AFFORDABLE HOUSING RECOMMENDATIONS

- Develop incentives or requirements to protect affordable housing from demolition or conversion to higher cost housing.

  Lead Organizations: City of Houston, City Council and City of Houston Housing and Community Development

- Develop an affordable housing ordinance for replacement development.

  Lead Organizations: City of Houston Housing and Community Development

- Develop an affordable housing ordinance for in-fill development.

  Lead Organizations: City of Houston Housing and Community Development

- Create an incentive program to develop affordable housing.

  Lead Organizations: City of Houston, City Council

## PARKS AND TRAILS RECOMMENDATIONS

- Redevelop Hogg Park, start by conducting a needs assessment of current population to determine the preferred functions and facilities.

  Lead Organizations: The Parks Board and City of Houston Parks and Recreation

- Include a pre-school element at SPARK park.

  Lead Organizations: Spark School Park Program

- Create additional bike routes to expand coverage and connectivity of routes.

  Lead Organizations: City of Houston, Public Works –Bikeway Program and Bike Houston

- Create bike safety programs, including providing bike helmets for youth.

  Lead Organizations: CBOs, Texas Medical Association, and Bike Houston

## RETAIL MIX RECOMMENDATIONS

- Develop a neighborhood economic development plan that focuses on creating a thriving neighborhood commercial district and supporting small neighborhood businesses.

  Lead Organizations: Greater Northside Management District and Houston Hispanic Chamber of Commerce

- Develop incentives to encourage the use of traditional local businesses and small business owners in the area.

  Lead Organization: Greater Northside Management District

- Establish community oversight process to select commercial tenants in large projects.

  Lead Organization: Greater Northside Management District

- Create an Ethnic Cultural Heritage District that would be used in marketing campaigns to draw customers.

Lead Organizations: Greater Northside Management District and Houston Hispanic Chamber of Commerce

- Establish a CSA (Community Supported Agriculture) program to bring in products form local farmers and distribute to families.

  Lead Organizations: CBOs

- Create a neighborhood commercial development ordinance that strengthens pedestrian-oriented design standards and guidelines

  Lead Organizations: City of Houston Planning and Development and Greater Northside Management District

- Work with near-by full service grocery store to implement a transportation and/or food delivery service

  Lead Organizations: CBOs

- Create a weekly farmers' market that provides access to fresh produce and other foods

  Lead Organizations: Greater Northside Management District, CBOs, and Urban Harvest

# EVALUATION AND MONITORING

The evaluation will examine (1) the impact of this HIA on the decision-making process for implementing the QSA Plan, (2) the impact of this HIA on influencing other decision-making processes in Houston, and (3) changes in health determinants that are spurred by the implementation of the recommendations. Project staff will conduct the evaluation.

In terms of assessing the impacts of the HIA on the decision-making process, this monitoring plan covers two broad categories of impacts: (1) how this HIA affected the QSA Plan and (2) how this HIA led to greater support for consideration of health in formal decision-making processes in the Houston region.

## IMPACTS OF THE HIA ON THE QUITMAN STATION-AREA PLAN

*Monitoring Questions*

- Did the HIA influence the decision-making?
- Were any of the recommendations implemented?
- Did the HIA build consensus for the need for a more detailed, implementation-focused plan?

## IMPACTS OF THE HIA ON HOUSTON DECISION-MAKERS USE OF HIAS FOR OTHER PROJECTS

*Monitoring Questions*

- Did the HIA lead to greater institutional support for consideration of health in formal decision-making processes? Are there any efforts to institutionalize HIA?
- Is there evidence that regulatory agencies or community or stakeholder groups have taken actions to use HIAs on other projects, plans, or policies?

## CHANGES IN HEALTH DETERMINANTS

*Monitoring Questions*

- How has the level of walkability changed in the neighborhood? How does this impact physical activity rates for young children, seniors, Hispanics, and persons with a limited education?
- How has the availability of affordable housing changed in the neighborhood? How have the conditions of the housing stock changed? How do these changes affect access to health care and healthy foods for young children, seniors, Hispanics, and persons with a limited education?
- How have the parks and trails changed in the neighborhood? How do the changes affect physical activity rates for young children, seniors, Hispanics, and persons with a limited education?
- How has the land use mix changed in the neighborhood? What additional retail and services are available? How do the changes affect the neighborhoods' food environment?

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# APPENDICES

## APPENDIX A. EXCERPTS FROM THE FOUR PLANS INCORPORATED INTO THE QUITMAN STATION AREA PLAN (QSA PLAN).

**Plan #1.**

Northside Livable Centers Study, Final Report, August 2010, prepared by: Van Meter Williams Pollack LLP [3].

PEDESTRIAN AND BICYCLE AMENITIES

Sidewalks

Throughout the study area, enhanced sidewalks are needed to replace dilapidated, overly narrow or non-existent current sidewalks. The Northside Livable Centers Study (NLCS) recommends focusing enhanced sidewalks along existing arterials as well as one block in from transit corridors as outlined in the Houston Urban Corridors Plan. Enhanced sidewalks include wider walking areas, different paving patterns, street trees, benches and other street furniture and new lighting.

Pedestrian Activated Crosswalks

A key principle of the NLCS, as desired by the community, is safe and efficient crossings of the METRORail tracks along North Main Street and Fulton Street. Pedestrian-activated crosswalks are currently planned in conjunction with most METRORail stations along the corridor. In addition to these planned connections, the NLCS recommends additional pedestrian-activated crosswalks at the following locations:

Henry and North Main Streets: This is an important crossing for students at Ketelsen Elementary School.

### Bicycle Routes

A bicycle route along Quitman Street would be a key east-west route for the central portion of the neighborhood and help to connect the "heart" of Northside including Jefferson Davis High School and the Carnegie Library with the planned METRORail station at Quitman and North Main as well as the proposed Little White Oak Bayou trail system. This route could also extend east and west of the neighborhood to help integrate surrounding communities directly into the METRORail system.

The NLCS also recommends creating a bicycle path along the Little White Oak Bayou., as well as the creation of a system of hike/bike trails adjacent to Little White Oak Bayou, connecting to existing off-street bicycle trails to the north and planned bicycle trails to the south. This bicycle route would become the main north-south connector through Northside, helping to integrate the neighborhood more strongly with downtown Houston and surrounding areas. The NLCS also recommends key connection points to the proposed trail to easily access existing single-family neighborhoods throughout Northside.

## PARKS AND OPEN SPACE

### Create an Open Space Corridor

The NLCS recommends the creation of a hike and bike trail network adjacent to Little White Oak Bayou including restoration of natural areas and direct neighborhood connections.

Neighborhood Parks

The NLCS recommends the creation of small parks throughout the neighborhood. It does not propose exact locations.

Transit Plazas

The NLCS recommends transit plazas at North Main and Quitman streets, at both the southeast and northeast corners. Transit plazas are small gathering places near rail stations that can act as important gateways into the Northside neighborhood. These spaces can be designed with seating, public artwork, space for vendors, shade structures, fountains and other place-making elements. The plazas can also be designed to have kiss-and-ride spaces and bus stops that allow integration with the planned METRORail line.

NLCS RECOMMENDATIONS

Land Use and Urban Form

Higher density mixed-use (retail emphasis)

The NLCS recommends property along key neighborhood arterials to be redeveloped over time with a mixed-use retail emphasis. This designation generally refers to higher density development with active retail uses on the ground floor and housing, service, or office uses above. The areas recommended for higher-density mixed-use development include:

North Main Street from Burnett to Quitman streets

Quitman from Everett to Tackaberry streets

Fulton from Morris to Hays streets

Medium density mixed-use

The NLCS recommends that areas be redeveloped over time with a medium-density mixed-use emphasis. This designation generally refers to new development with a mixture of uses, either vertically or horizontally on a site. These uses will typically focus on housing, service, retail or office uses. The areas recommended for medium-density mixed-use development include:

Larger properties on the north side of Burnett Street

North Main Street from Quitman to Boundary streets

Public Improvements

Revise the Quitman station kiss-and-ride parking lot to include a transit plaza element.

Provide short-term parking and a transit plaza at Boundary and North Main streets.

Provide public artwork including decorative fencing and landscaping appropriate and matching the general streetscape at the transformer location near Boundary and Fulton streets.

Locate 10-foot shared sidewalk/trailways where possible and provide street trees at 30 foot on center.

Establish plazas and small open spaces within publicly owned METRO remnant properties along the rail corridor.

**APPENDIX A continued. Excerpts from the four plans incorporated into the Quitman station area plan (QSA Plan).**

**Plan #2.**

North Corridor-specific Report, Houston Urban Corridor Planning: Phase II and III, City of Houston, May 2008 [1, 2].

EXISTING PARKS

Hogg Park

The protection and enhancement of existing parks is crucial to the pedestrian realm. Enhancements could include landscape upgrading, improved pedestrian and cycling access and upgraded facilities.

POTENTIAL STREETSCAPE

North Main and Quitman Streets

The Near Northside Revitalization Plan identifies potential walkable commercial corridors where retail and services are on a neighborhood scale. These corridors provide connections to adjacent neighborhoods and walking/biking trails. They are to be designed to create a pleasant environment for pedestrians and cyclists. Improvements could include street planting, safe and connected sidewalks, pedestrian scale lighting and amenities such as benches, trash receptacles and transit shelters.

**APPENDIX A continued. Excerpts from the four plans incorporated into the Quitman station area plan (QSA Plan).**

**Plan #3.**

Northside Quality of Life Agreement, LISC Go Neighborhoods, LISC Greater Houston and Avenue Community Development Corporation, 2010 [5].

FAMILY INCOME AND WEALTH

Create awareness, strengthen the partnerships, and build the capacity of the Northside Financial Opportunity Center to help residents access resources to increase their financial literacy and family well-being.

Support and grow fundamental educational resources, such as ESL, GED, and college preparation classes.

Expand community job training, career development, and placement programs to prepare residents for, and employ them in, growing sectors of the economy.

Support and expand wealth-building programs in our community, including financial education and home ownership programs.

Focus on local business development by providing support to small businesses and entrepreneurs, while working to attract new businesses.

MOBILITY

Work with METRO to increase outreach and enhance our community's access to METRO services.

Develop a "Northside Transit Map" to be installed throughout the community.

Reconnect the community to downtown by improving pedestrian comfort and safety in the Hernandez Tunnel; Support the establishment of plazas, pocket parks, and small open spaces adjacent to the rail line.

Work with METRO and our community partners, especially youth programs, to improve the appearance of infrastructure associated with the light rail line.

HOUSING

Create an outreach and education initiative to connect homeowners to home repair programs.

Develop affordable housing that meets the area's diverse housing needs and complements the existing character of the neighborhood.

Pursue mixed-use developments in proximity to the light rail corridor, including retail and higher-density housing serving a range of incomes.

YOUTH AND EDUCATION

Expand the community's free after-school and summer programs for children and youth of all ages.

Provide a mentor to every ninth-grade student at Jeff Davis High School.

Provide more choices to students entering middle school by attracting a charter school to the community.

HEALTH

Build community gardens to increase access to healthy food and good nutrition;

Provide community classes and workshops on gardening, nutrition, composting, canning, cooking, and the benefits of healthy foods.

Strengthen and support the Near Northside Healthy Community Partnership.

Improve and expand existing parks and trails to increase our access to healthy recreation.

Secure facilities and resources to implement community-based health and wellness programs to address the challenges across generations in our community.

Enhance access to health care through health fairs and referrals.

Support the establishment of a pediatric clinic in the community.

HISTORY AND ART

Protect and preserve important historic districts and landmarks in the community.

Create the Northside Public Art and History Taskforce.

Develop a public art plan for the community.

Attract or incubate an arts program for youth in the community;

Create an oral history project that documents the stories of the neighborhood.

CONNECTIONS

Increase residents' awareness of the resources and services available.

Bring organizations, residents, and youth together to improve the community.

Improve Moody Park so it becomes the "heart" of the community.

SAFETY

Work with civic clubs, residents, business owners, and the Houston Police Department to create a Neighborhood Watch/Citizens Patrol Program.

Strengthen the relationship between the Northside Village community and law enforcement.

Reduce gang activity in the community through partnerships.

Reduce stray dogs and cats in the community.

INFRASTRUCTURE

Create an Infrastructure Leadership Committee to educate and engage residents in advocating for Northside infrastructure goals.

Enhance walkability and safety by improving sidewalks throughout the community;

Re-establish the Super Neighborhood Council to shape the Northside Super Neighborhood Action Plan (SNAP).

Improve street lighting, particularly in poorly lit areas, to enhance safety.

Evaluate and prioritize storm sewer and drainage system improvements.

**APPENDIX A continued. Excerpts from the four plans incorporated into the Quitman station area plan (QSA Plan).**

**Plan #4.**

Northside Village Economic Revitalization Plan, City of Houston Planning & Development Department, June 2002 [4].

LAND USE STRATEGIES

Transition industrial establishments in residential areas to diverse, residential friendly uses.

Discourage the development, or retention of industrial establishments within the community.

Redevelop with potential of a future light rail line in mind.

Improve the community's parks.

Develop linear parks.

TRANSPORTATION STRATEGIES

Improve the community's transit facilities and services.

Improve the connectivity of the community to Downtown and other adjoining areas.

Improve the community's pedestrian infrastructure.

Improve the community's bikeway network.

COMMUNITY CHARACTER STRATEGIES

Reinforce the single-family housing character of the community's neighborhoods.

Create a stronger community identity.

Create a more beautiful Northside Village.

COMMUNITY SERVICES AND INFRASTRUCTURE STRATEGIES

Create safe, efficient roadways and sidewalks.

Create an effective storm drainage system.

Enhance community safety.

Create top quality educational programs.

Provide more community-recreation/educational facilities.

ECONOMIC DEVELOPMENT STRATEGIES

Bring a wider range of neighborhood-scale businesses to the community.

Make Northside a shopping and restaurant destination.

Educate Northside Village residents to improve their "employability."

HOUSING STRATEGIES

Preserve the single-family housing character of the community.

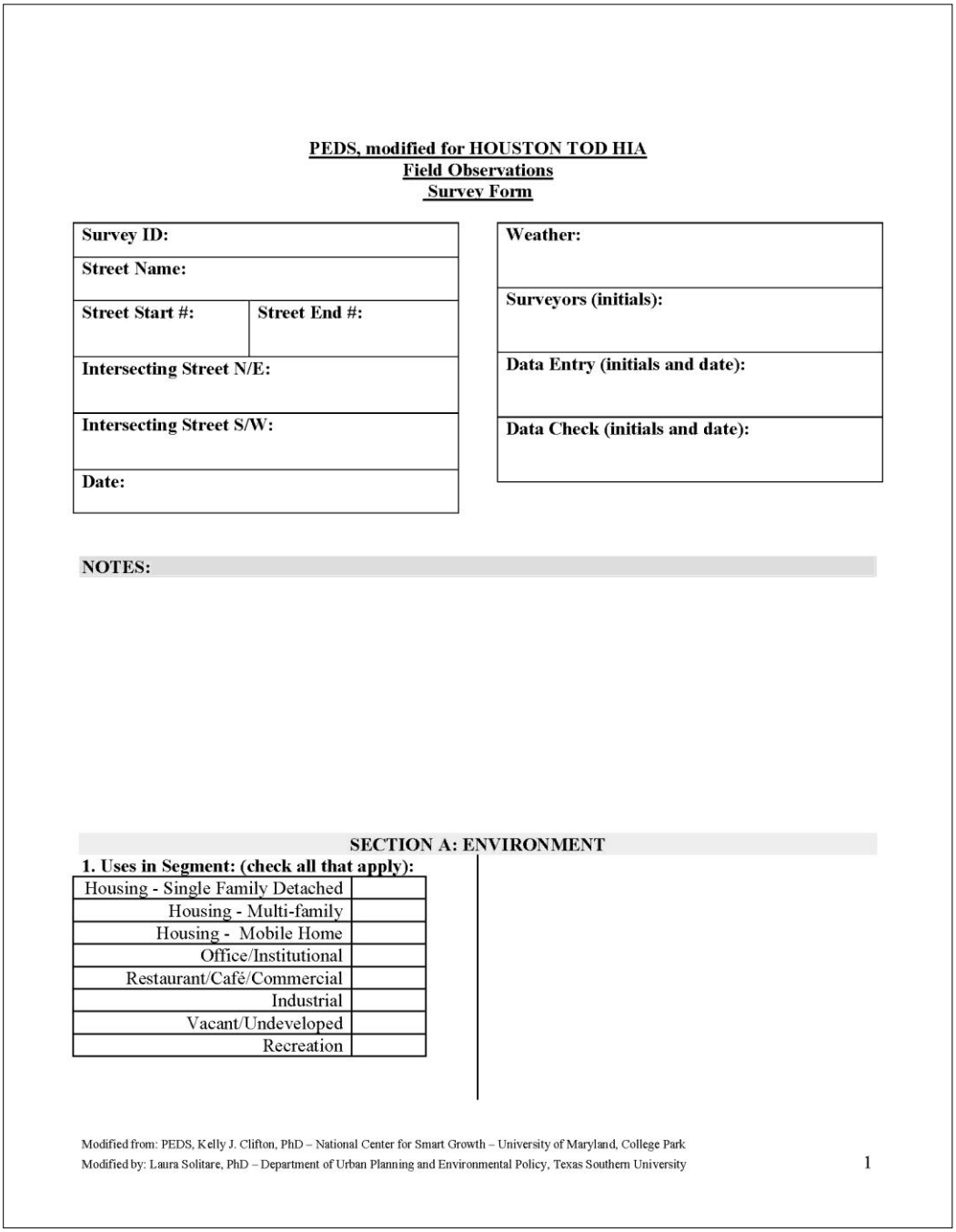
Improve housing conditions and avoid displacement of the current population.

Meet the diverse housing needs of the community.

Maintain affordability of the community's housing units.

## *Appendix B. Houston TOD HIA-modified version of the Pedestrian Environmental Data Scan (PEDS) tool*

[70, 71]



**PEDS, modified for HOUSTON TOD HIA**
**Field Observations**
**Survey Form**

| | |
|---|---|
| **Survey ID:** | |
| **Street Name:** | |
| **Street Start #:** | **Street End #:** |
| **Intersecting Street N/E:** | |
| **Intersecting Street S/W:** | |
| **Date:** | |

| |
|---|
| **Weather:** |
| **Surveyors (initials):** |
| **Data Entry (initials and date):** |
| **Data Check (initials and date):** |

**NOTES:**

**SECTION A: ENVIRONMENT**

**1. Uses in Segment: (check all that apply):**

| | |
|---|---|
| Housing - Single Family Detached | |
| Housing - Multi-family | |
| Housing - Mobile Home | |
| Office/Institutional | |
| Restaurant/Café/Commercial | |
| Industrial | |
| Vacant/Undeveloped | |
| Recreation | |

Modified from: PEDS, Kelly J. Clifton, PhD – National Center for Smart Growth – University of Maryland, College Park
Modified by: Laura Solitare, PhD – Department of Urban Planning and Environmental Policy, Texas Southern University

1

**Appendix B continued. Houston TOD HIA-modified version of the Pedestrian Environmental Data Scan (PEDS) tool.**

[70, 71]

**SECTION B: PEDESTRIAN FACILITIES for this section assess <u>each side</u> of the street <u>separately</u>: 1) North <u>or</u> East <u>&</u> 2) South <u>or</u> West**

**2. Stormwater Management:**

| N/E | | S/W |
|---|---|---|
| | Curb and Gutter | |
| | Ditch/ Swale | |
| | Both | |
| | Nothing Visible | |

**3. Type/s of Pedestrian Facility: (check all that apply)**

| N/E | | S/W |
|---|---|---|
| | No Path ***(if only "no path", skip to Q. 13)*** | |
| | Paved Trail | |
| | Sidewalk | |
| | Pedestrian Street | |

**4. Path Material: (check all that apply)**

| N/E | | S/W |
|---|---|---|
| | Asphalt | |
| | Concrete | |
| | Paving Bricks or Flat Stone | |
| | Gravel | |
| | Dirt or Sand | |

**5. Path Condition/Maintenance:**

| N/E | *bumps/cracks/holes (b/c/h)* | S/W |
|---|---|---|
| | Poor – many b/c/h | |
| | Fair – some b/c/h | |
| | Good – very few b/c/h | |
| | Under repair | |

**6. Path Obstructions: (check all that apply)**

| N/E | | S/W |
|---|---|---|
| | Poles or Signs | |
| | Parked Cars | |
| | Greenery | |
| | Garbage Cans | |
| | Other (enter info in Notes) | |
| | None | |

**7. Buffers between Road and Path: (check all that apply)**

| N/E | | S/W |
|---|---|---|
| | Fence | |
| | Trees | |
| | Hedges/Plants/Landscaping | |
| | Grass | |
| | None | |

**8. Path Distance from Curb:**

| N/E | | S/W |
|---|---|---|
| | At edge | |
| | < 5 feet | |
| | > 5 feet | |

**<u>Note: If no sidewalk (Q. 4), skip to (Q. 13)</u>**

**9. Sidewalk Width:**

| N/E | | S/W |
|---|---|---|
| | < 4 feet | |
| | Between 4 - 8 feet | |
| | > 8 feet | |

**10. Curb Cuts:**

| N/E | | S/W |
|---|---|---|
| | None | |
| | One end of segment only | |
| | Both ends of segment | |
| | In-between ends | |

**11. Sidewalk Completeness/Continuity:**

| N/E | | S/W |
|---|---|---|
| | Sidewalk is Complete | |
| | Sidewalk is Incomplete | |

**12. Sidewalk Connectivity to Other Sidewalks/Crosswalks:**

| N/E | | S/W |
|---|---|---|
| | Number of Connections | |

Modified from: PEDS, Kelly J. Clifton, PhD – National Center for Smart Growth – University of Maryland, College Park
Modified by: Laura Solitare, PhD – Department of Urban Planning and Environmental Policy, Texas Southern University

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**Appendix B continued. Houston TOD HIA-modified version of the Pedestrian Environmental Data Scan (PEDS) Tool.**

[70, 71]

## SECTION C. ROAD ATTRIBUTES

**13. Condition of Road:**

| | |
|---|---|
| Poor (many bumps/cracks/holes) | |
| Fair (some bumps/cracks/holes) | |
| Good (very few bumps, etc) | |
| Under repair | |

**14. Number of Lanes:**

| | |
|---|---|
| Minimum # of lanes to cross | |
| Maximum # of lanes to cross | |

**15. Posted Speed Limit:**

| | |
|---|---|
| None Posted | |
| Posted Speed (mph) | |

**16. On-Street Parking:**

| | |
|---|---|
| Parking Prohibited Sign | |
| Marked Parking | |
| Unmarked Parking – check only if cars are parked | |
| None | |

**17. Off-Street Parking Lot Spaces:**

| | |
|---|---|
| 0 | |
| 1 - 5 | |
| 6 - 25 | |
| 26 + | |

**18. Must You Walk Through A Parking Lot To Get To Most Buildings?**

| | |
|---|---|
| Yes | |
| No | |

**19. Presence of Medium to High Volume Driveways:**

| | |
|---|---|
| 0 | |
| 1 | |
| 2 to 4 | |
| > 4 | |

**20. Traffic Control Devices:**
**(check all that apply)**

| | |
|---|---|
| Traffic Light | |
| Stop Sign | |
| Traffic Circle | |
| Speed Bumps | |
| Chicanes or Choakers | |
| None | |

**21. Crosswalks:**

| | |
|---|---|
| None | |
| 1 to 2 | |
| 3 to 4 | |
| > 4 | |

**22. Crossing Aids:**
**(check all that apply)**

| | |
|---|---|
| Pavement Markings | |
| Yield to Pedestrian Paddles | |
| Pedestrian Signal | |
| Median/Traffic Island | |
| Curb Extension | |
| Overpass / Underpass | |
| Pedestrian Crossing Warning Sign | |
| Flashing Warning Light | |
| Share the Road Warning Sign | |
| None | |

**23. Bicycle Facilities:**
**(check all that apply)**

| | |
|---|---|
| Bicycle Route Signs | |
| Striped Bicycle Lane Designation | |
| Visible Bicycle Parking Facilities | |
| Bicycle Crossing Warning | |
| No Bicycle Facilities | |

Modified from: PEDS, Kelly J. Clifton, PhD – National Center for Smart Growth – University of Maryland, College Park
Modified by: Laura Solitare, PhD – Department of Urban Planning and Environmental Policy, Texas Southern University

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## Appendix B continued. Houston TOD HIA-modified version of the Pedestrian Environmental Data Scan (PEDS) Tool

[70, 71]

### SECTION D. WALKING / CYCLING ENVIRONMENT

**24. Roadway/path lighting: (check all that apply)**

| | |
|---|---|
| Road-oriented lighting | |
| Pedestrian-oriented lighting | |
| Other lighting | |
| No lighting | |

**25. Amenities: (check all that apply)**

| | |
|---|---|
| Public Garbage Cans | |
| Benches | |
| Water Fountain | |
| Street vendors/vending machines | |
| No Amenities | |

**26. Are there Street Name Signs?**

| | |
|---|---|
| Yes | |
| No | |

**27. Number of Trees Shading Walk Areas:**

| | |
|---|---|
| None or Very Few | |
| Some | |
| Many/Dense | |

**28. Degree of Enclosure:**

| | |
|---|---|
| Little or No Enclosure | |
| Some Enclosure | |
| Highly Enclosed | |

**29. Powerlines along Segments:**

| | |
|---|---|
| Distribution line | |
| Transmission line | |
| Both | |
| None | |

**30. Overall cleanliness and building maintenance – litter, graffiti, and broken facilities** (l/g/bf)

| | |
|---|---|
| Poor – much l/g/bf | |
| Fair -- some l/g/bf | |
| Good – no l/g/bf | |

**31. Articulation in Building Design:**

| | |
|---|---|
| Little or No Articulation | |
| Some Articulation | |
| Highly Articulated | |

**32. Building Setbacks from Sidewalk:**

| | |
|---|---|
| At Edge of Sidewalk | |
| Within 20 Feet of Sidewalk | |
| More than 20 Feet from Sidewalk | |

**33. Bus Stops: (check all that apply)**

| | |
|---|---|
| Bus Stop With Shelter | |
| Bus Stop With Bench | |
| Bus Stop With Signage Only | |
| No Bus Stop | |

**34. Presence of dogs: (check all that apply)**

| | |
|---|---|
| Secured, by leash or fence | |
| Roaming loose in neighborhood | |
| If roaming/loose dogs, how many? | |

**35. Presence of outdoor cats:**

| | |
|---|---|
| Yes | |
| No | |

### SECTION E. SUBJECTIVE ASSESSMENTS

| SUBJECTIVE ASSESSMENT | Strongly Agree | Agree | Disagree | Strongly Disagree |
|---|---|---|---|---|
| **36. Segment is attractive for walking** | | | | |
| **37. Segment is attractive for cycling** | | | | |
| **38. Segment feels safe for walking** | | | | |
| **39. Segment feels safe for cycling:** | | | | |

Modified from: PEDS, Kelly J. Clifton, PhD – National Center for Smart Growth – University of Maryland, College Park
Modified by: Laura Solitare, PhD – Department of Urban Planning and Environmental Policy, Texas Southern University

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***Appendix C. Selected maps of walkability and housing conditions in the Quitman station HIA study area.***

Please refer to the text for assessment methodology and to Table 4 for summary statistics of the walkability audit.

List of maps:

Vacant Properties

Stormwater Infrastructure

Presence of Sidewalks

Sidewalk Completeness

Sidewalk Obstructions

Sidewalk Curb Cuts

Traffic Control Devices

Crossing Aids

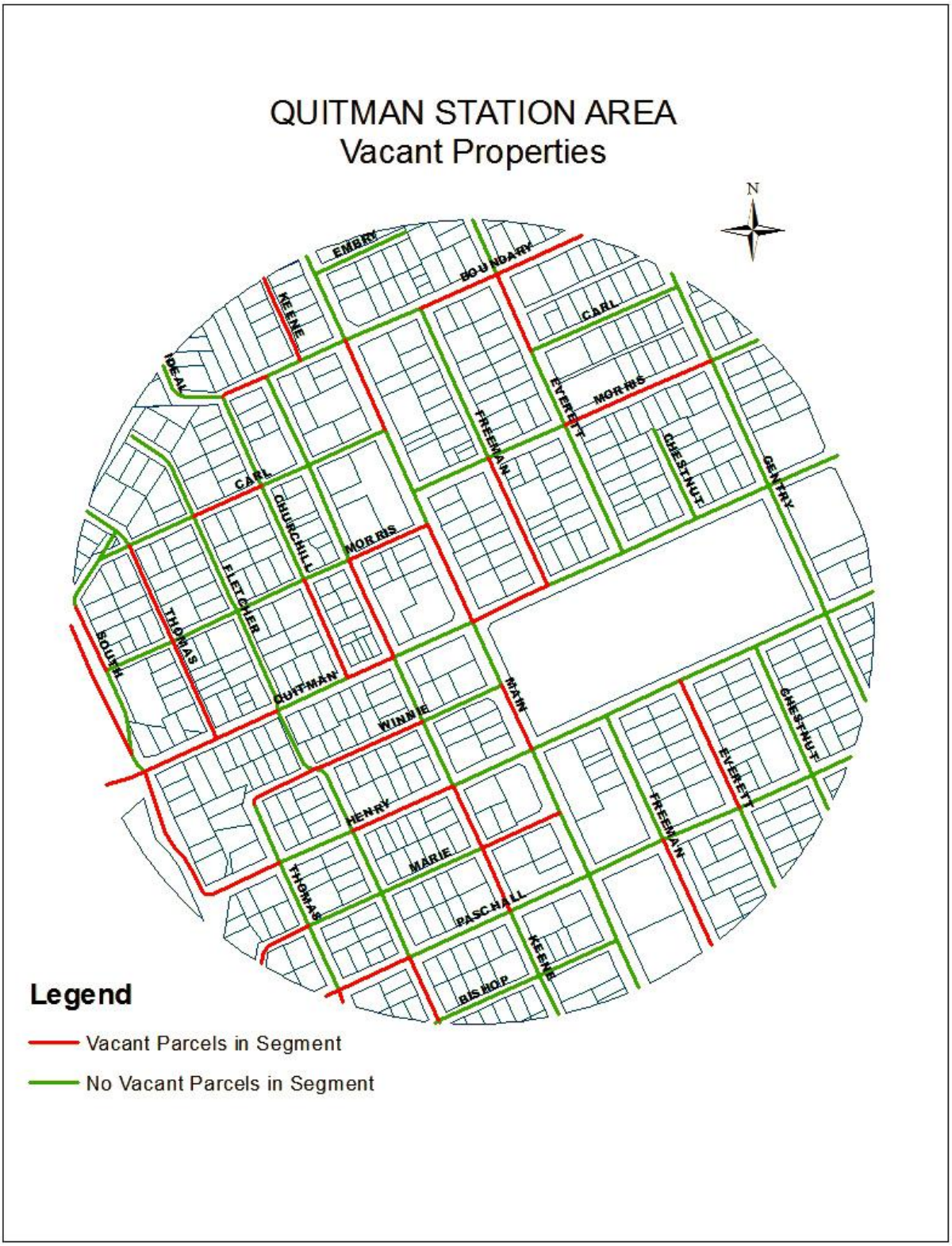
Pedestrian Area Tree Coverage

Secured Dogs

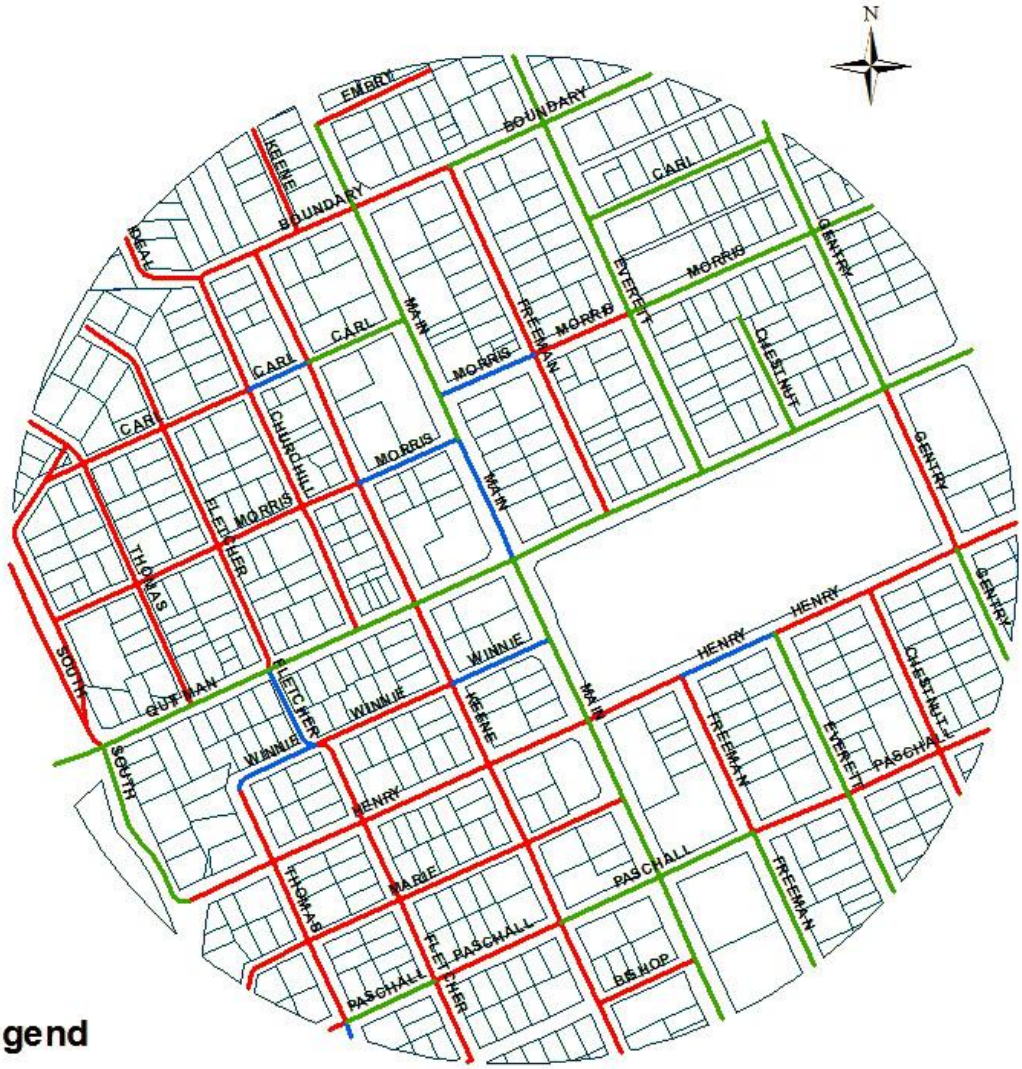
Roaming Dogs

Owner Occupied Housing

Physical Quality of Housing

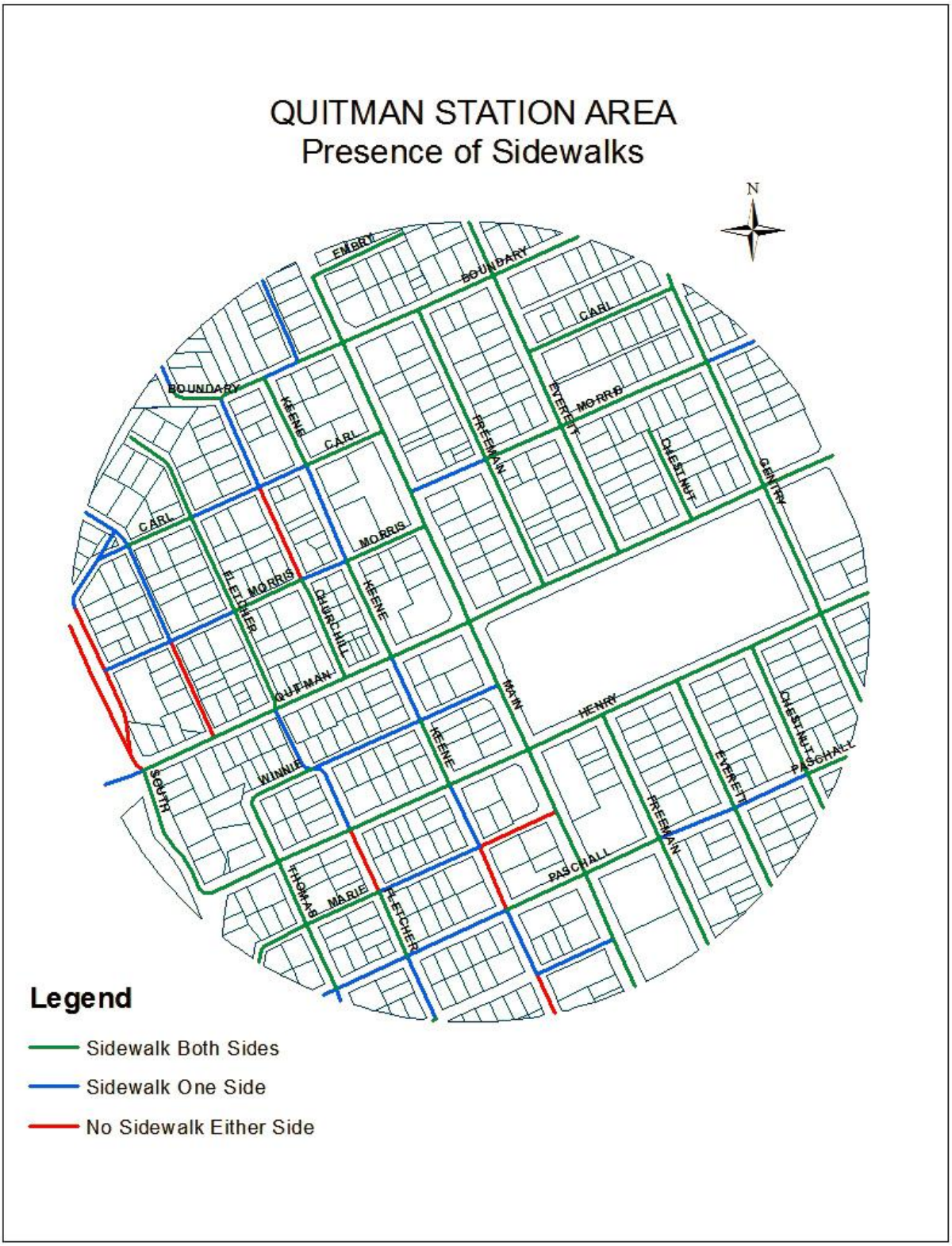

QUITMAN STATION AREA
Vacant Properties
N
EMBRY
BOUNDARY
KEENE
IDEAL
CARL
EVERETT
MORRIS
FREEMAN
CHESTNUT
GENTRY
CHURCHILL
FLETCHER
THOMAS
SOUTH
QUITMAN
WINNIE
MAIN
HENRY
MARIE
PASCHALL
BISHOP
Legend
Vacant Parcels in Segment
No Vacant Parcels in Segment

# QUITMAN STATION AREA
## Stormwater Infrastructure




**Legend**

- Curb and Gutter Both Sides
- One Side Curb and Gutter Other Side Ditch and Swale
- Ditch and Swale Both Sides

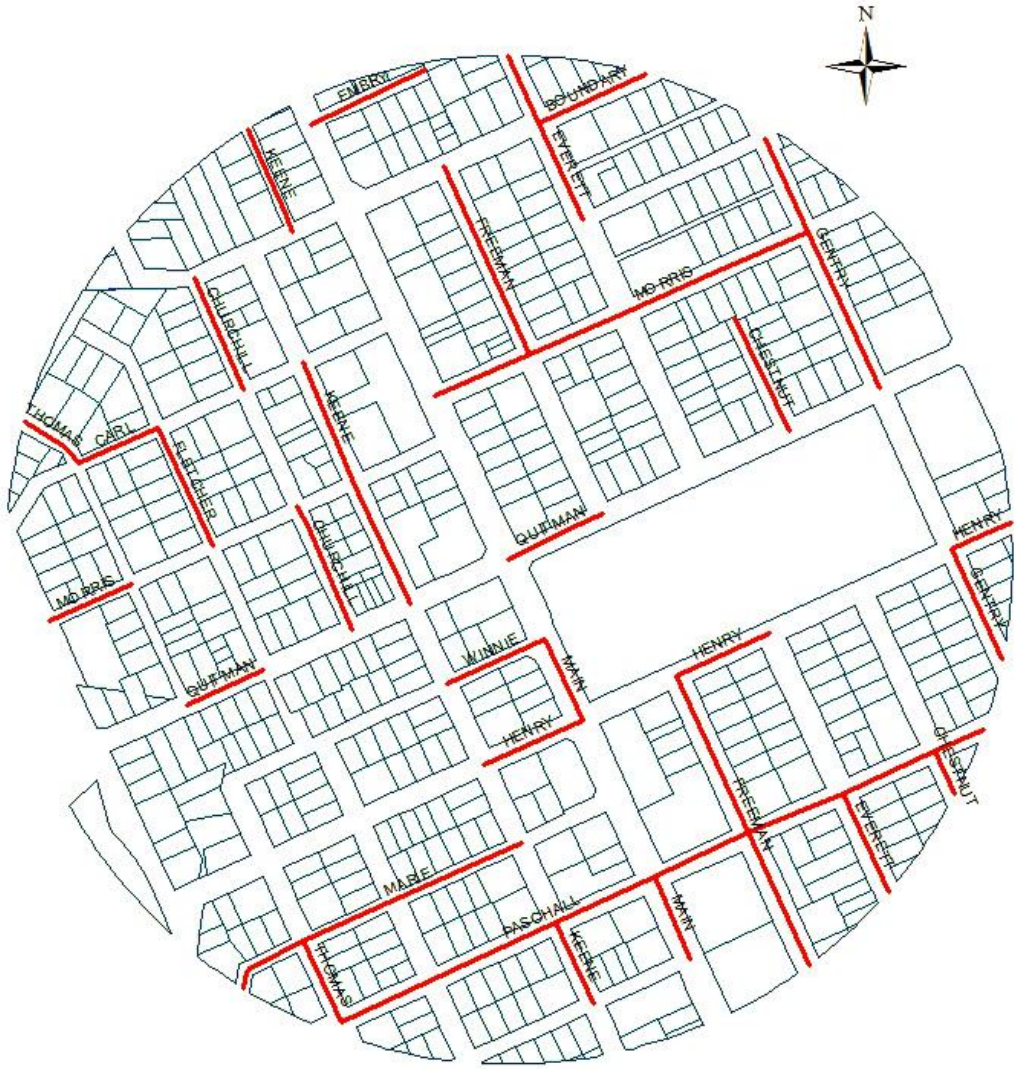

QUITMAN STATION AREA
Presence of Sidewalks
N
EMBRY
BOUNDARY
CARL
KEENE
FREEMAN
EVERETT
MORRIS
CHESTNUT
CENTRY
FLETCHER
CHURCHILL
QUITMAN
MAIN
HENRY
WINNIE
SOUTH
PASCHALL
THOMAS
MARIE
Legend
Sidewalk Both Sides
Sidewalk One Side
No Sidewalk Either Side

# QUITMAN STATION AREA
## Sidewalk Completeness


**Legend**

Complete Sidewalk, Both Sides

# QUITMAN STATION AREA
## Sidewalk Obstructions




**Legend**

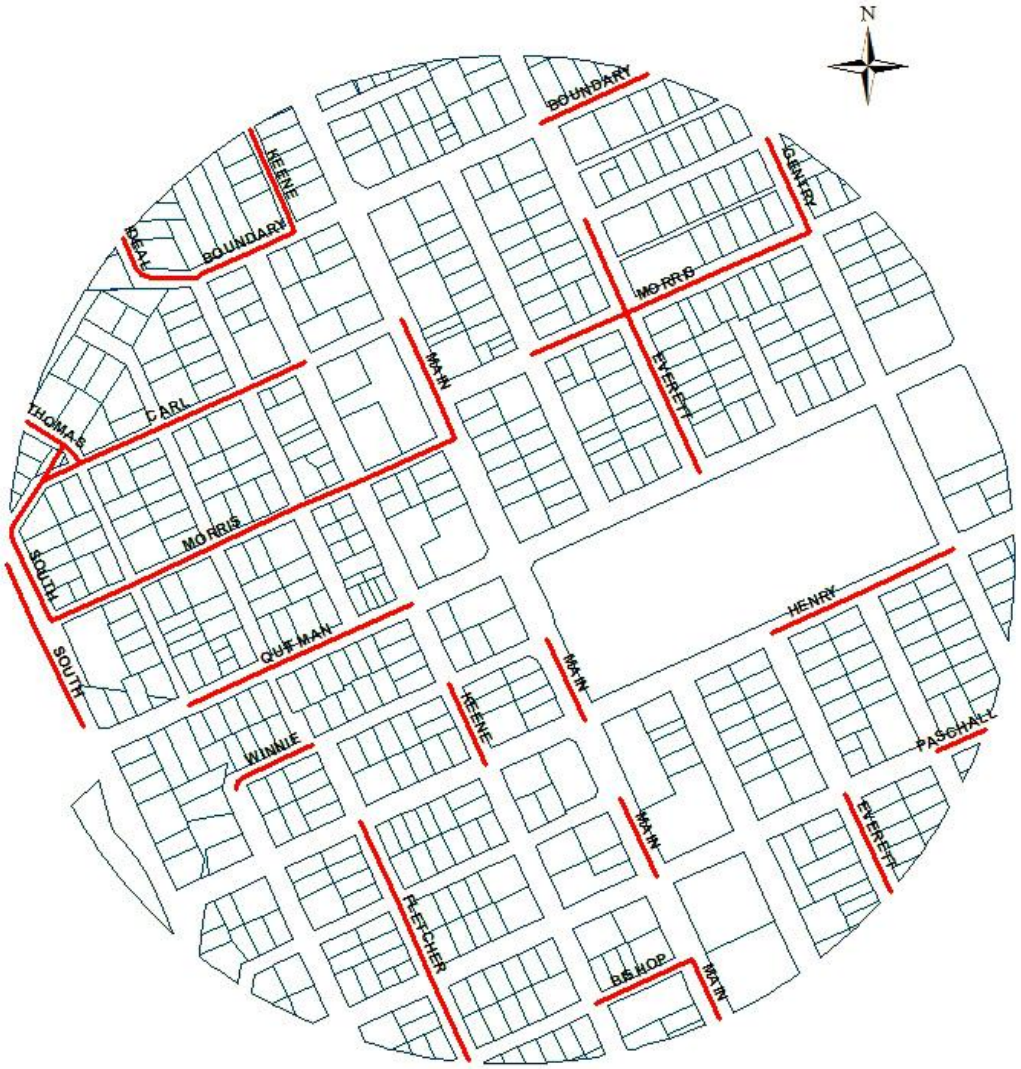
Path Obstructed by Either Parked Car, Garbage Can, or Greenery

# QUITMAN STATION AREA
## Sidewalk Curb Cuts


**Legend**

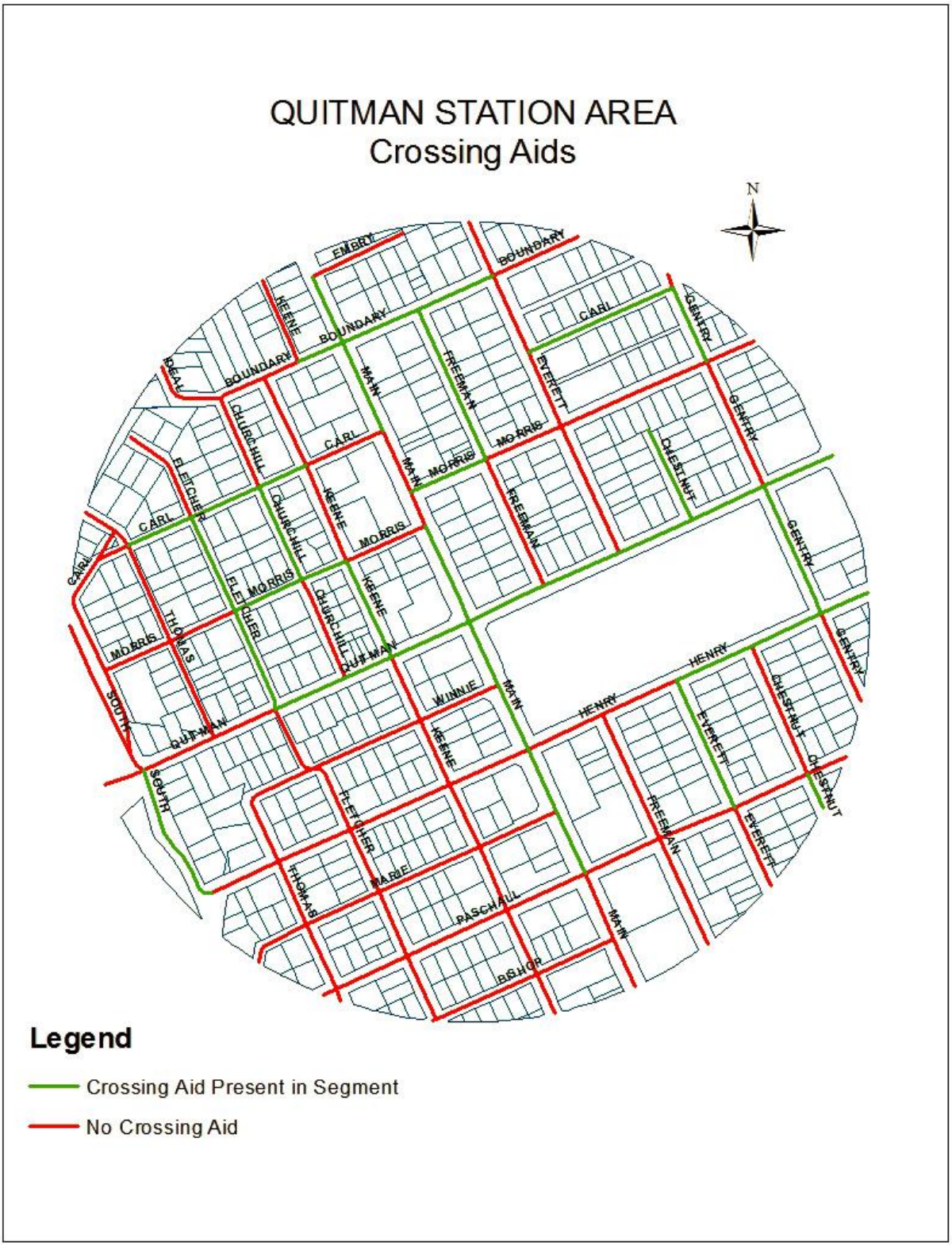
Curb Cuts at Both Ends, Both Sides

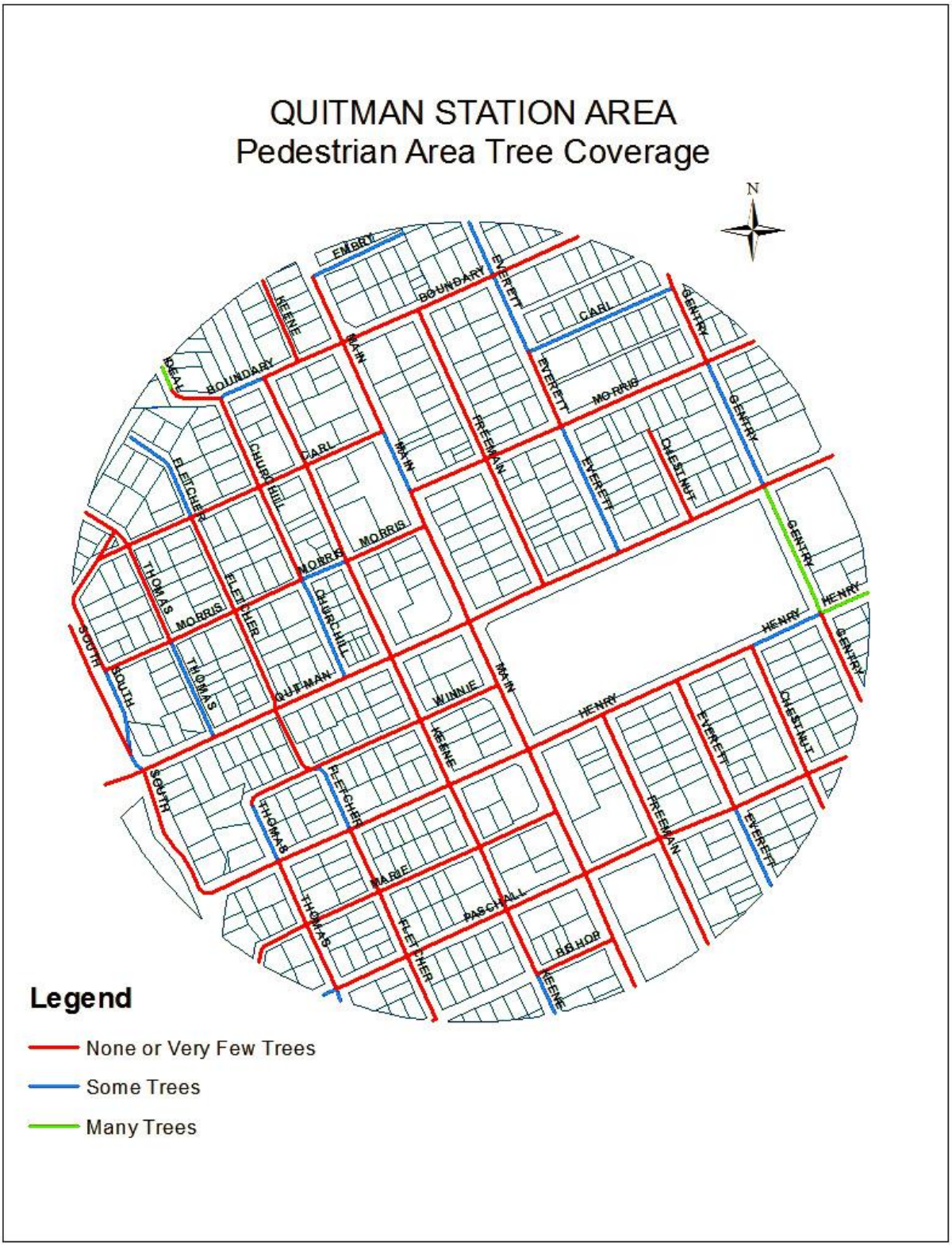
# QUITMAN STATION AREA
## Traffic Control Devices



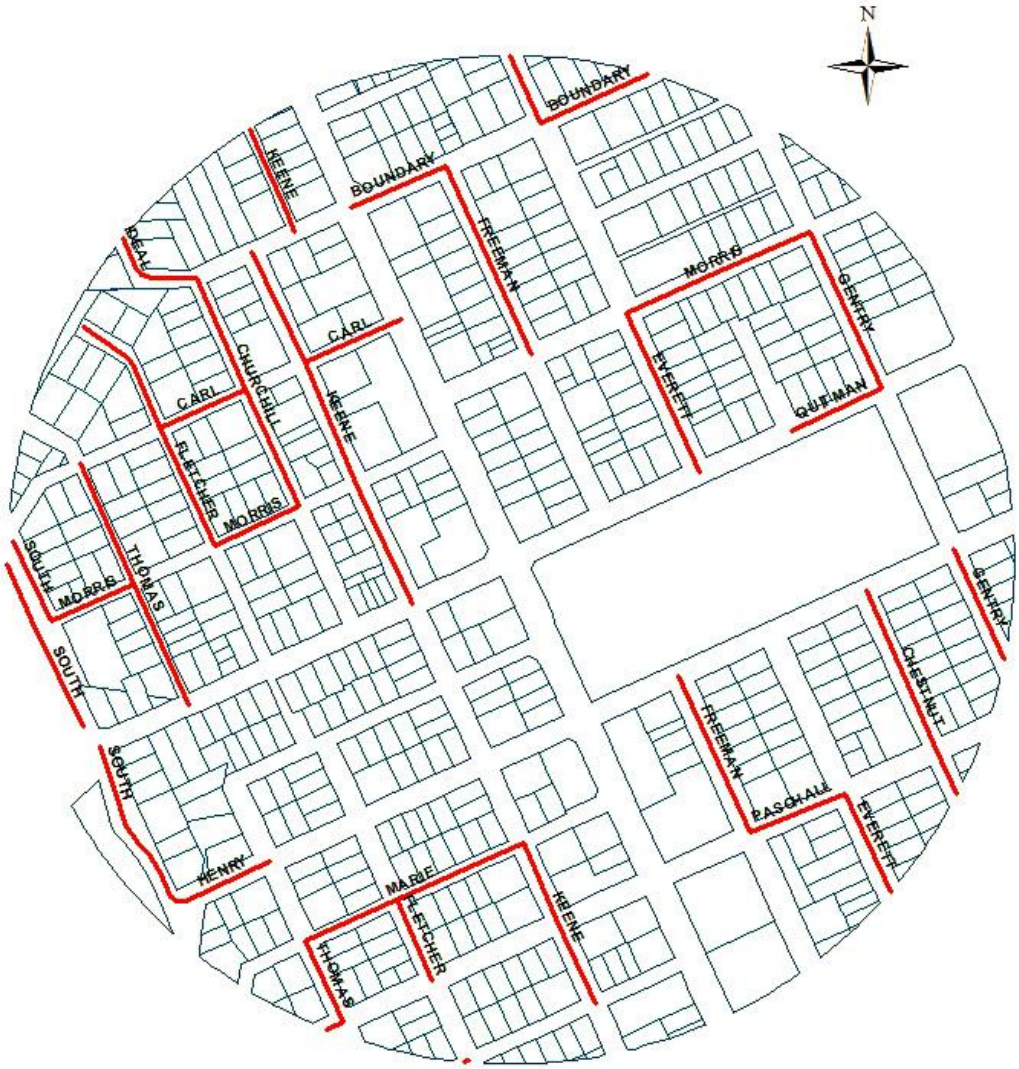

**Legend**

No Traffic Control Devices in Segment


QUITMAN STATION AREA
Crossing Aids
N
EMBRY
BOUNDARY
KEENE
IDEAL
CARL
GENTRY
MAIN
FREEMAN
EVERETT
MORRIS
CHURCHILL
FLETCHER
CHESTNUT
THOMAS
QUITMAN
SOUTH
WINNIE
HENRY
MARIE
RASCHALL
BISHOP
Legend
Crossing Aid Present in Segment
No Crossing Aid


QUITMAN STATION AREA
Pedestrian Area Tree Coverage
N
EMBRY
BOUNDARY
EVERETT
CARL
GENTRY
KEENE
MAIN
IDEAL
BOUNDARY
MORRIS
FREEMAN
CHURCH HILL
CARL
FLETCHER
MAIN
EVERETT
CHESTNUT
GENTRY
THOMAS
MORRIS
FLETCHER
CHURCH HILL
MORRIS
HENRY
SOUTH
SOUTH
THOMAS
QUITMAN
WINNIE
MAIN
HENRY
GENTRY
KEENE
EVERETT
CHESTNUT
SOUTH
FLETCHER
THOMAS
FREEMAN
EVERETT
MARIE
PASCHALL
THOMAS
FLETCHER
BISHOP
KEENE
Legend
None or Very Few Trees
Some Trees
Many Trees

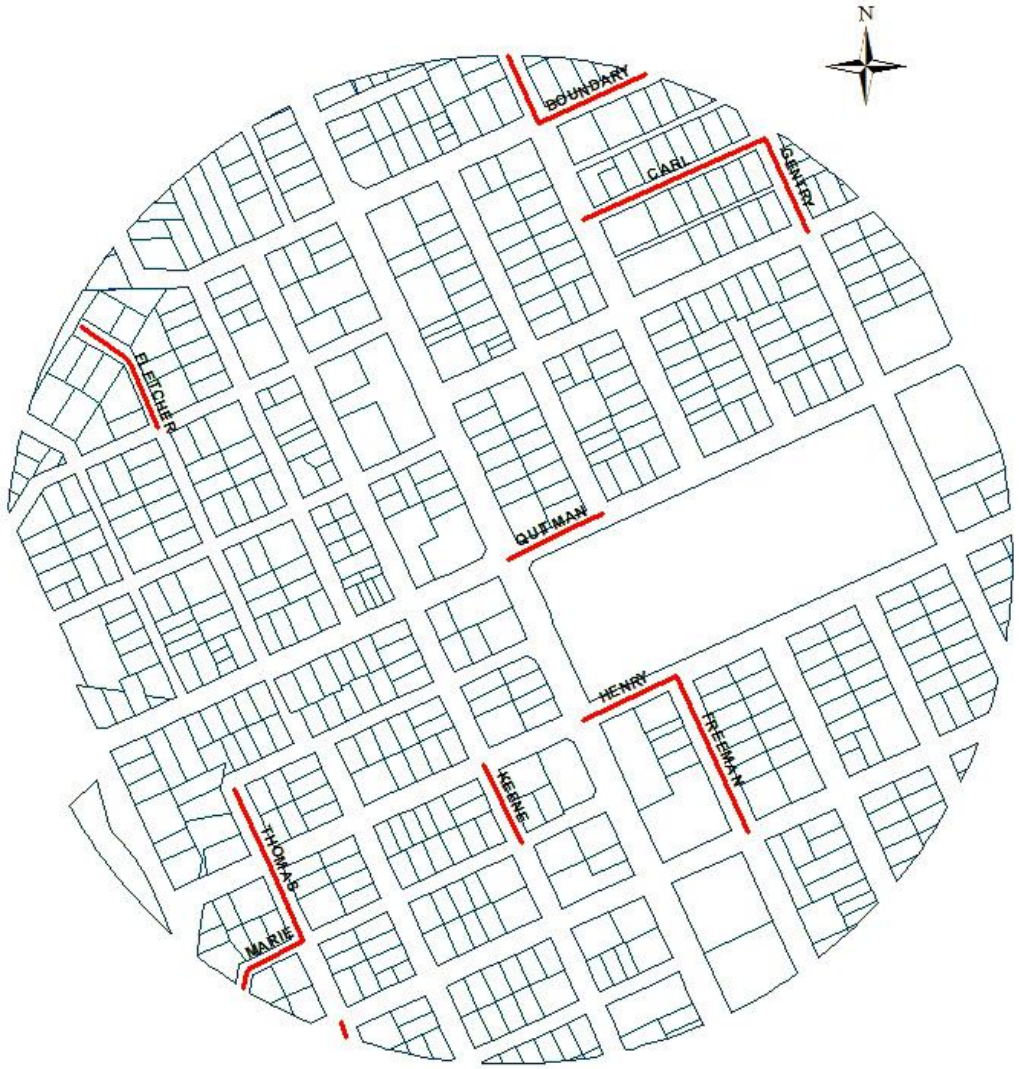
# QUITMAN STATION AREA
## Secured Dogs




**Legend**

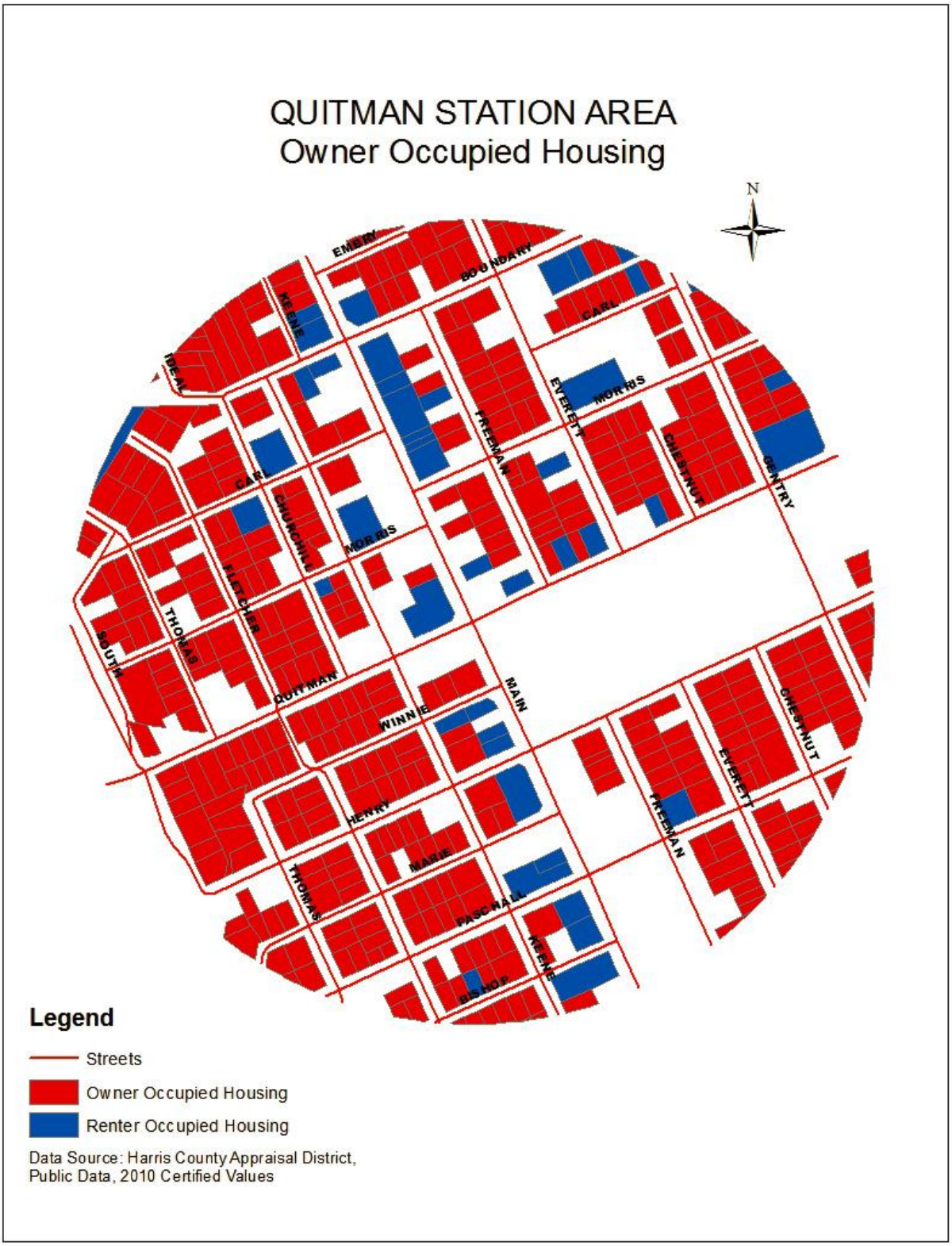
Dogs Present, Secured

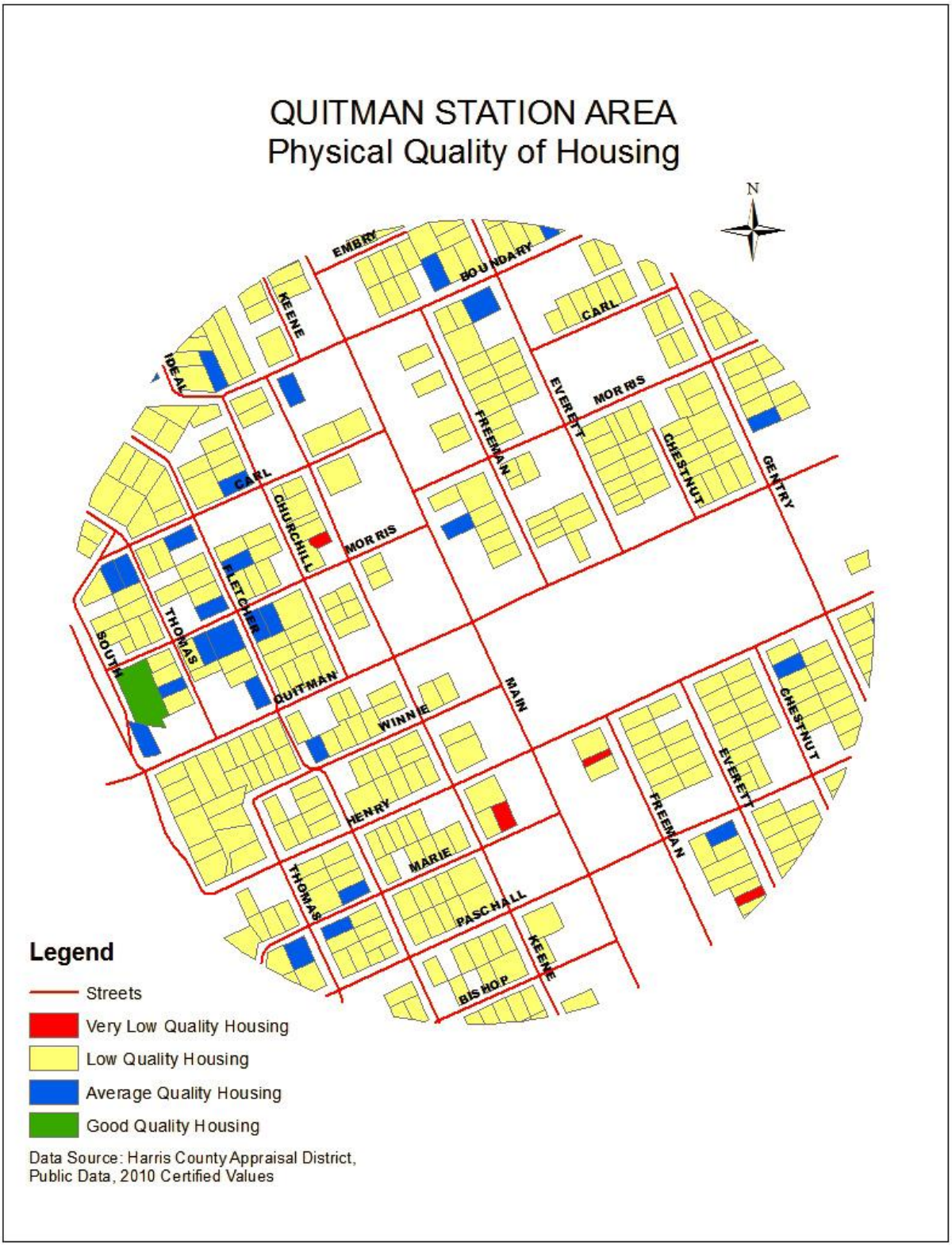
# QUITMAN STATION AREA
## Roaming Dogs




**Legend**

Roaming Dogs


QUITMAN STATION AREA
Owner Occupied Housing
N
EMERY
BOUNDARY
KEENE
IDEAL
CARL
EVERETT
MORRIS
FREEMAN
CHESTNUT
GENTRY
CHURCHILL
FLETCHER
THOMAS
SOUTH
QUITMAN
WINNIE
MAIN
HENRY
MARIE
PASCHALL
BISHOP
Legend
Streets
Owner Occupied Housing
Renter Occupied Housing
Data Source: Harris County Appraisal District,
Public Data, 2010 Certified Values


QUITMAN STATION AREA
Physical Quality of Housing
N
EMBRY
BOUNDARY
KEENE
IDEAL
CARL
EVERETT
MORRIS
FREEMAN
CHESTNUT
GENTRY
CHURCHILL
FLETCHER
THOMAS
SOUTH
QUITMAN
WINNIE
MAIN
HENRY
MARIE
PASCHALL
BISHOP
Legend
Streets
Very Low Quality Housing
Low Quality Housing
Average Quality Housing
Good Quality Housing
Data Source: Harris County Appraisal District,
Public Data, 2010 Certified Values

## *Appendix D. The Physical Activity Resource Assessment (PARA) instrument.*

[120, 121]

| | | |
|---|---|---|
| 1) **Date** _____ | 2) **Data col** _____ | 3) **HD/PA Resource ID** _____ |
| 4) **Time**<br>**start:**_____<br>**stop:**_____ | 5) **Phone Call**<br>**departure:**_____<br>**arrival:**_____ | |
| 6) **Type of Resource**<br>**1** fitness club **2** park<br>**3** sport facility **4** trail<br>**5** community center **6** church<br>**7** school<br>**8** combination _____ | | 7) **Approximate Size:** **1** sm **2** med **3** lg<br>8) **Capacity (indoor)** _____<br>9) **Cost**<br>**1** Free<br>**2** Pay at the door<br>**3** Pay for only certain programs<br>**4** Other _____ |
| 10) **Hours** a) open _____ b) close _____ | | |
| 11) **Signage** – Hours yes ☐ no ☐ | | 12) **Signage** – Rules yes ☐ no ☐ |

| **Feature** | **Rating** | | | | **Amenity** | **Rating** | | | |
|---|---|---|---|---|---|---|---|---|---|
| 13) Baseball field | 0 | 1 | 2 | 3 | 26) Access Points | 0 | 1 | 2 | 3 |
| 14) Basketball courts | 0 | 1 | 2 | 3 | 27) Bathrooms | 0 | 1 | 2 | 3 |
| 15) Soccer field | 0 | 1 | 2 | 3 | 28) Benches | 0 | 1 | 2 | 3 |
| 16) Bike Rack | 0 | 1 | 2 | 3 | 29) Drinking fountain | 0 | 1 | 2 | 3 |
| 17) Exercise Stations | 0 | 1 | 2 | 3 | 30) Fountains | 0 | 1 | 2 | 3 |
| 18) Play equipment | 0 | 1 | 2 | 3 | 31) Landscaping efforts | 0 | 1 | 2 | 3 |
| 19) Pool > 3 ft deep | 0 | 1 | 2 | 3 | 32) Lighting | 0 | 1 | 2 | 3 |
| 20) Sandbox | 0 | 1 | 2 | 3 | 33) Picnic tables shaded | 0 | 1 | 2 | 3 |
| 21) Sidewalk | 0 | 1 | 2 | 3 | 34) Picnic tables no-shade | 0 | 1 | 2 | 3 |
| 22) Tennis courts | 0 | 1 | 2 | 3 | 35) Shelters | 0 | 1 | 2 | 3 |
| 23) Trails – running/biking | 0 | 1 | 2 | 3 | 36) Shower/Locker room | 0 | 1 | 2 | 3 |
| 24) VB courts | 0 | 1 | 2 | 3 | 37) Trash containers | 0 | 1 | 2 | 3 |
| 25) Wading Pool < 3 ft. | 0 | 1 | 2 | 3 | | | | | |

| **Incivilities** | **Rating** | | | | **Incivilities** | **Rating** | | | |
|---|---|---|---|---|---|---|---|---|---|
| 38) Auditory annoyance | 0 | 1 | 2 | 3 | 44) Graffiti/tagging | 0 | 1 | 2 | 3 |
| 39) Broken glass | 0 | 1 | 2 | 3 | 45) Litter | 0 | 1 | 2 | 3 |
| 40) Dog refuse | 0 | 1 | 2 | 3 | 46) No grass | 0 | 1 | 2 | 3 |
| 41) Dogs Unattended | 0 | 1 | 2 | 3 | 47) Overgrown grass | 0 | 1 | 2 | 3 |
| 42) Evidence of alcohol use | 0 | 1 | 2 | 3 | 48) Sex paraphernalia | 0 | 1 | 2 | 3 |
| 43) Evidence of substance use | 0 | 1 | 2 | 3 | 49) Vandalism | 0 | 1 | 2 | 3 |

**Comments:**