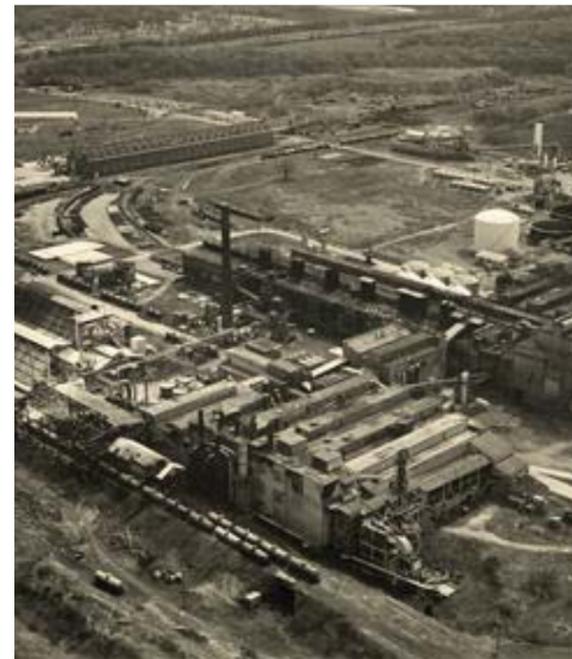
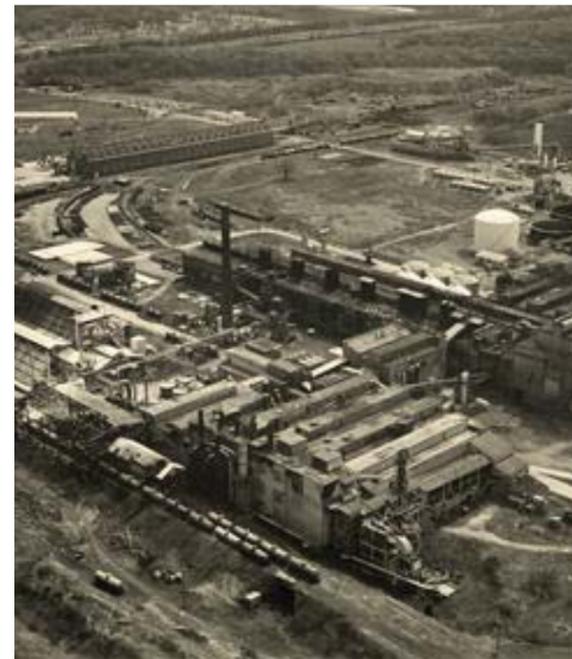


# tennessee valley authority



Muscle Shoals Reservation  
strategic development plan

February 10, 2012



Muscle Shoals Reservation  
strategic development plan

# intro

01

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## acknowledgements

This document was assembled by the following team members:

**Architectural and Planning Consultant**  
Lord, Aeck and Sargent Architecture  
1201 Peachtree Street, NE, Suite 300  
Atlanta, GA 30361  
877.929.1400  
www.lordaecksargent.com

**Planning Consultant**  
Urban Collage  
121 Luckie Street NW Suite 200  
Atlanta, GA 30303  
404.586.0277

**Marketing Consultant**  
RLCO Real Estate Advisors  
106 E. Sixth Street Suite 900  
Austin, TX 78701  
512.215.3156

Susan Turner  
Eric Brock  
Jay Silverman

Bob Begle  
Dennis Madsen  
Niti Gajjar

Ben Hudgins  
Michael McLaughlin  
Catherine Fitzgerald

The report was produced with considerable input and assistance by the following entities:

**Tennessee Valley Authority**

Larry Softley  
Jon Riley  
Bill Threlkeld  
Craig Linhoss  
Loretta McNamee  
Tony Hopson  
Stan Davis

Ron Williams  
Bill Adams  
Jason Brake  
Heidi Smith  
John Bradley  
Kathy McKinley  
Kelly Love

**North Alabama Cooperative District**

Bill Howard  
Nathan Willingham  
Keith Jones  
Forrest Wright  
Melissa Bailey

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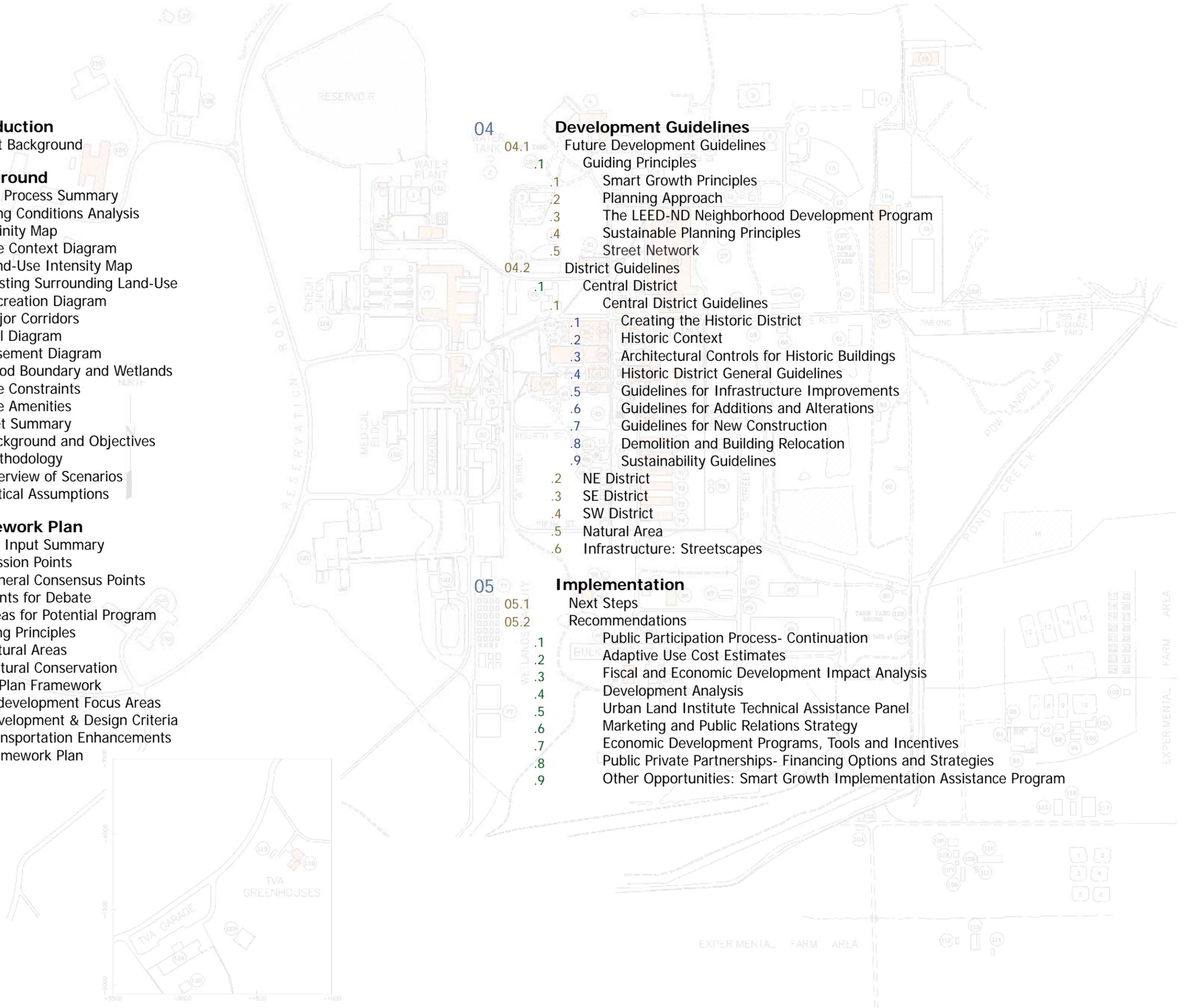
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### 01 Introduction

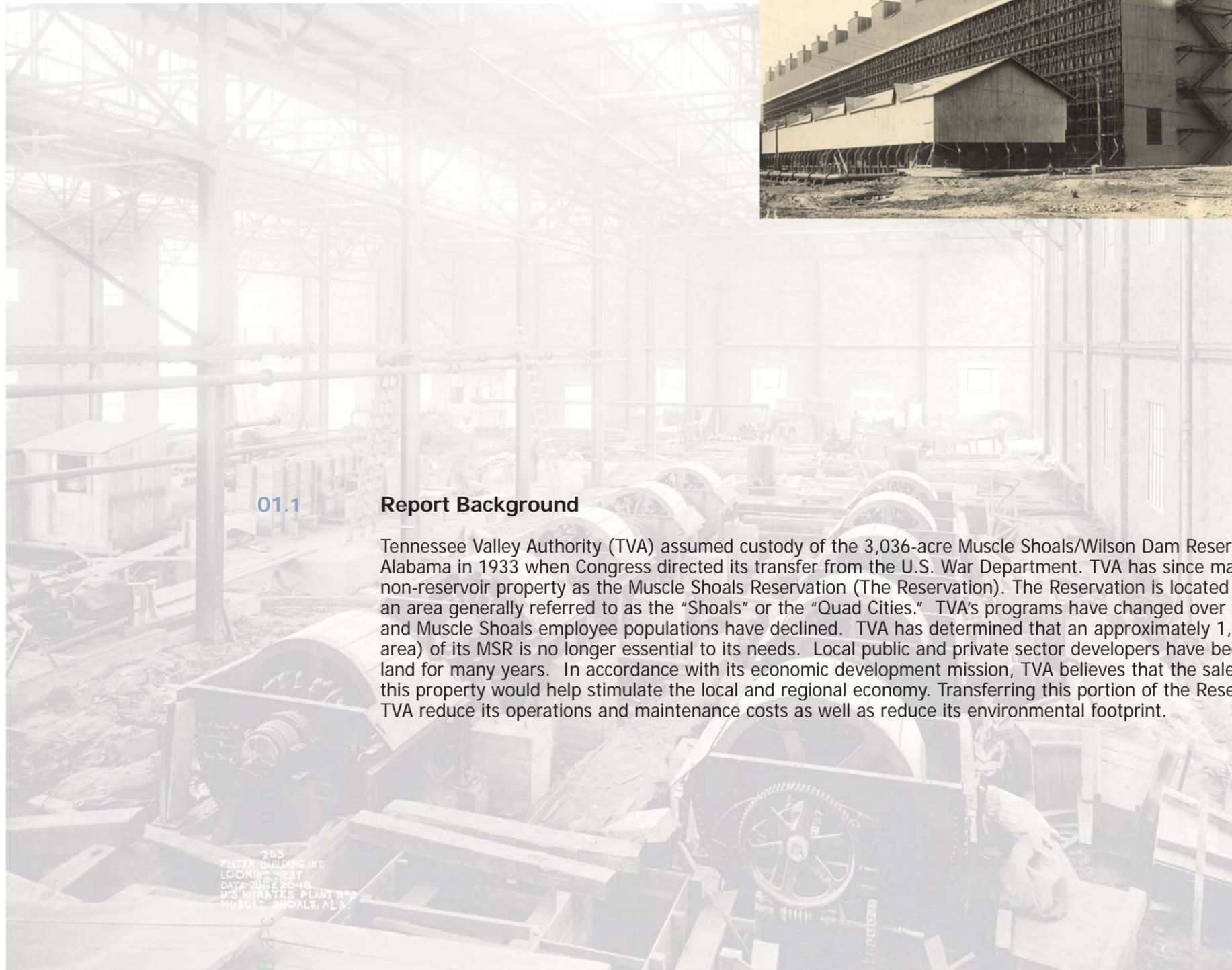
This Study is a follow-up to the Muscle Shoals Reservation Adaptive Re-use Study, Conditions / Market / Planning / Implementation report completed for the Tennessee Valley Authority (TVA) on July 31, 2009. The 2009 study recommendations included a Public Participation Process, a Comprehensive Master Plan, and Design and Development Criteria.

TVA since identified the need for a single entity to represent the Shoals community in this effort, and the local officials formed the Northwest Alabama Cooperative District (NACD) for that purpose. This group is comprised of representatives from the cities of Florence, Muscle Shoals, Sheffield, and Tuscumbia and from Colbert and Lauderdale counties. TVA has committed to work with and through the NACD on the possible redevelopment.

The Design Team, led by Lord, Aeck & Sargent, Inc. was requested to provide the following:

- Engage the local population in the dialogue and understanding of the potential economic opportunities through a series of stakeholder and public meetings, the recording of comments, ideas and public "vision" statements in graphic and written format, and providing synthesis of public input into a final interpretive plan or framework. This plan will serve as the roadmap for any potential redevelopment consistent with the EIS. Concepts for uses on the property will be identified.
- The scope of the work includes a minimum of two public meetings, one in Colbert County, AL, and one in Lauderdale County, AL, for the purpose of soliciting input on the future development of the Redevelopment Area. A final presentation to the public will be required as well. Locations will be provided and paid for by TVA and the NACD.
- Design guidelines for new construction located within a reasonable distance from the listed buildings in the historic area, requiring any such construction to be compatible with the massing, size, scale, and character that define architectural features of the first and second architectural periods. The plan is to include architectural controls for listed buildings in the historic area, based on the Secretary of the Interior's Standards for the Treatment of Historic Properties.

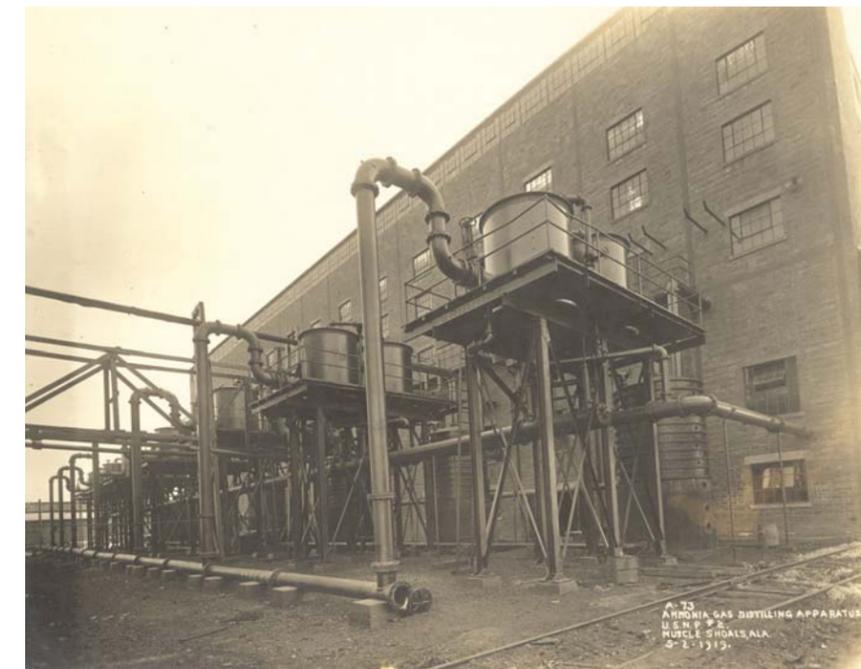
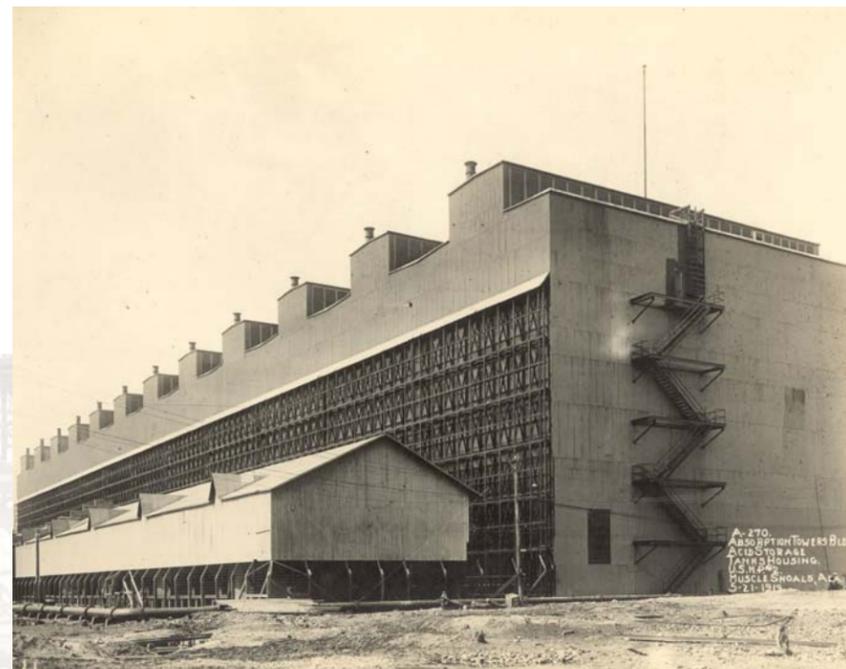
Other components considered in the plan are the natural resources, parks and walking trails, zoning, streets, rail, river access opportunities and a summary analysis of economic viability of the various alternatives.



## 01.1

### Report Background

Tennessee Valley Authority (TVA) assumed custody of the 3,036-acre Muscle Shoals/Wilson Dam Reservation in Colbert County, Alabama in 1933 when Congress directed its transfer from the U.S. War Department. TVA has since managed 2,600 acres of this non-reservoir property as the Muscle Shoals Reservation (The Reservation). The Reservation is located in northwest Alabama in an area generally referred to as the "Shoals" or the "Quad Cities." TVA's programs have changed over time and the Valley-wide and Muscle Shoals employee populations have declined. TVA has determined that an approximately 1,400-acre portion (study area) of its MSR is no longer essential to its needs. Local public and private sector developers have been requesting use of this land for many years. In accordance with its economic development mission, TVA believes that the sale and redevelopment of this property would help stimulate the local and regional economy. Transferring this portion of the Reservation would also help TVA reduce its operations and maintenance costs as well as reduce its environmental footprint.



353  
FILTER BUILDING INT.  
LOOKING WEST  
DATE: 5-11-1919  
U.S. WAR DEPT. PLANT NO. 1  
MUSCLE SHOALS, ALA.

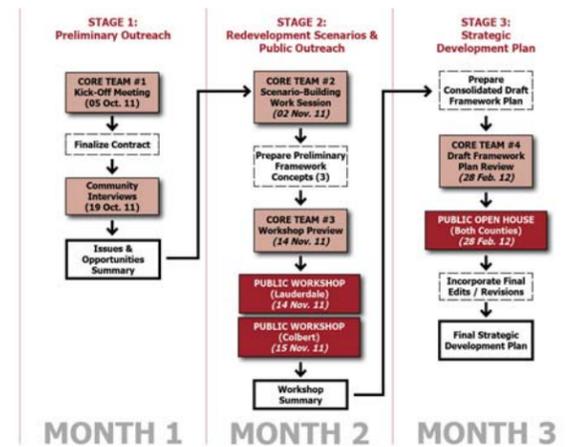
02.1 Public Process Summary

Recognizing the Authority's desire for an involved and transparent process, the strategic plan was developed through a multi-phase and multi-channel approach. Despite the relatively abbreviated schedule, the multiple channels were engaged to ensure a wide variety of public input and to solicit as many different viewpoints as possible.

The primary point of contact and comment was the Client Team. This group, consisting of roughly a half-dozen staff from TVA and NACD, met with consultants to ensure that the project itself was meeting milestones and complying with regulations, as well as to suggest groups and individuals who would be most productive for engagement.

A Core Team was also formed, to serve as the primary sounding board for project decisions. The team consisted of approximately 15 individuals from disparate organizations – TVA, NACD, the cities and counties – who met four times during the course of the planning. The main functions of the Core Team were to review and vet any plans, suggestions, recommendations or presentations before they were made public, and to help build consensus among their respective constituencies. They were also asked to help craft and refine some of the preliminary ideas, and to frame up some of the approaches.

In addition to the formal groups, the outreach also met with over 20 "stakeholders" in Community Interviews. These were individuals and organizations that were socially, financially and politically active within and around the Shoals. They included local real estate developers, business owners, institutional representatives from local hospitals and higher education facilities, the state historic preservation office, the local visitor and tourism bureau, and environmentalist groups, among others. The meetings occurred at the TVA offices, and were between the individuals/groups and one to three of the consultant team members. This was to give the interviewees an opportunity for candor that might not exist in a more public format.



MUSCLE SHOALS RESERVATION STRATEGIC PLAN :: Muscle Shoals, AL  
Lord Aeck Sargent Architecture - Urban Collage, Inc. - Robert Charles Lesser and Co.

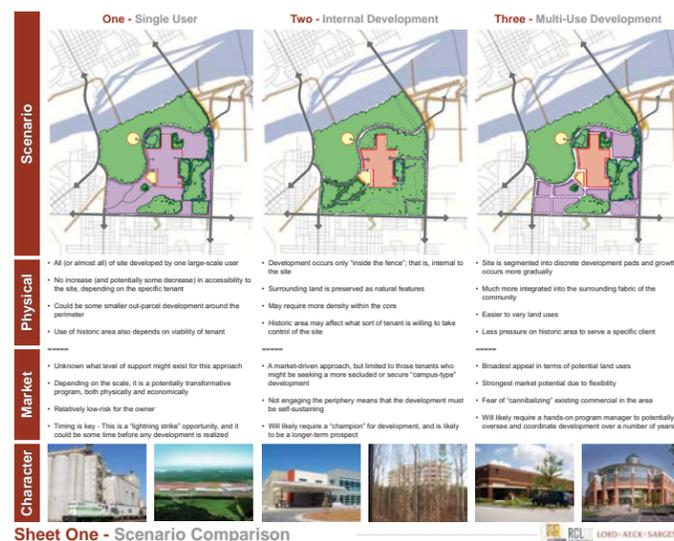


Finally, the cornerstone of the community outreach was the public workshops. Two rounds of meetings were held to provide a forum for any and all interested community members to come and review the work of the planning team, and to provide their own ideas and vision for how the Reservation might (or might not) change over the future. In the first round of workshops, an informational presentation – covering existing physical and market conditions - was followed by a series of hand-on exercises that allowed participants to review, comment upon and ultimately edit a series of preliminary scenarios for redevelopment. Two versions of this same event were held, one in each county on back-to-back nights, and there were well over forty attendees at each. This helped with a sense of equity, and also made it more accessible for many of the citizens. After reviewing the input from these sessions, a second public open house was held to present the draft framework plan, show how prior comments were integrated into the plan, and to solicit additional input.

The multiple phases represented an approach geared toward sustaining consistent and engaged input throughout the duration of the project. The initial phase – “Preliminary Outreach” – sought targeted responses from key members of the community to help add detail and insight to the broader effort of information gathering. It began with a Core Team meeting to help frame up the scope and discuss any existing conditions of note. The Core Team also assisted in identifying groups and individuals for the Community Interviews, which were likewise held during the first phase. The nature of these was important to helping the planning team identify social, financial and political issues that might have a bearing on the planning process.

In the second phase – “Redevelopment Scenarios and Public Outreach”, the Core Team reconvened to review the planning consultants’ preliminary findings and to help frame up principles by which scenarios might be developed. A follow-up meeting with the Core Team reviewed these principles and the draft scenarios that were developed through them. These scenarios were then used as “conversation starters” at the first round of public workshops. The scenarios dealt, in one way or another, with some of the key constraints of the site, giving workshop participants a visual of how certain decisions on development impacted the site and its surroundings. After the two workshops, and a follow-up conference call with the Client Team, the second phase transitioned to the third, and final phase.

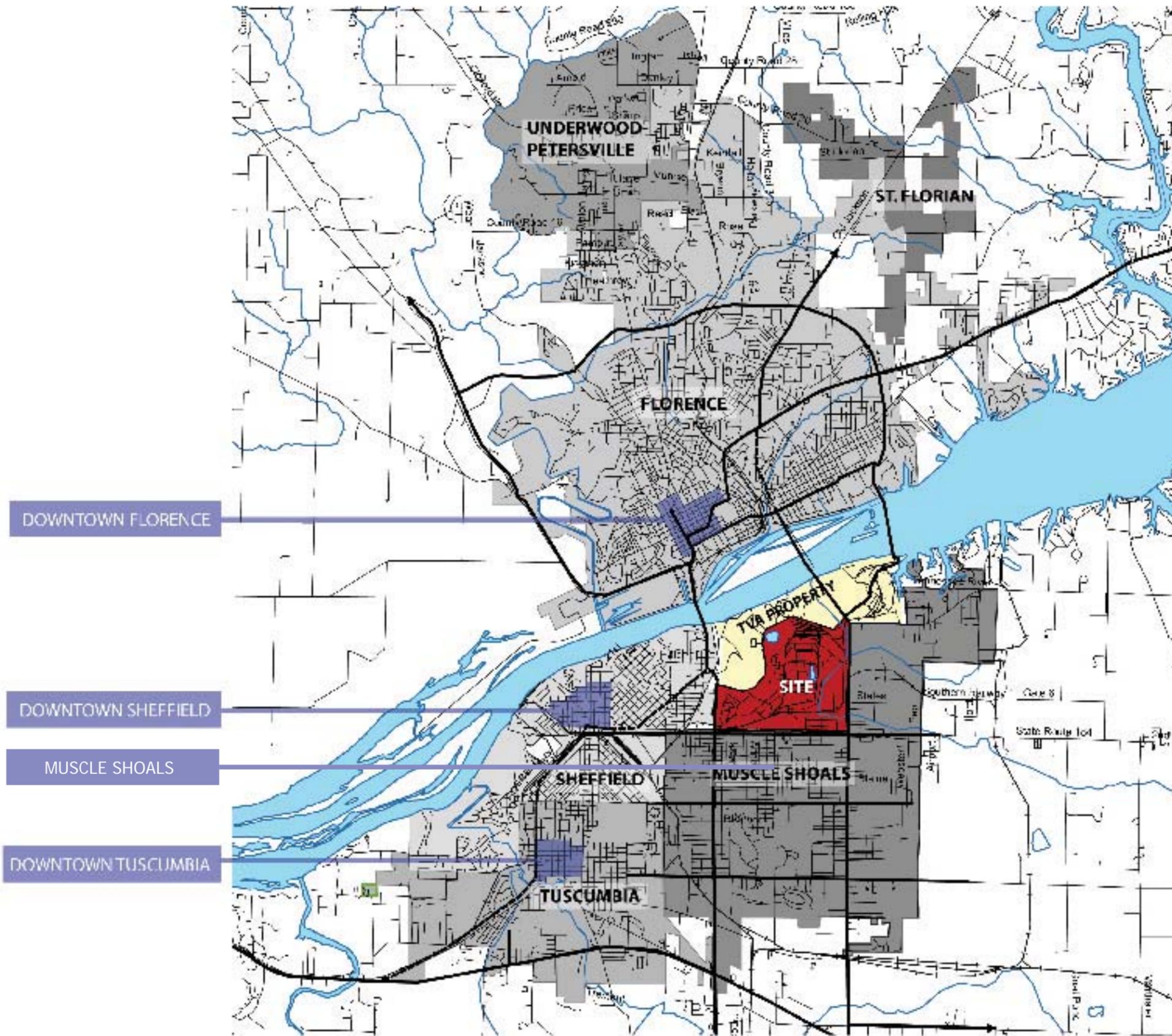
In the final phase – “Strategic Development Plan” – the planning consultants worked with the Client Team to analyze and refine the public input, in order to develop a draft Strategic Plan. This plan would be presented for comment and edits at one final Core Team meeting, and then rolled out in a final public Open House.



### 02.2 Existing Conditions Analysis

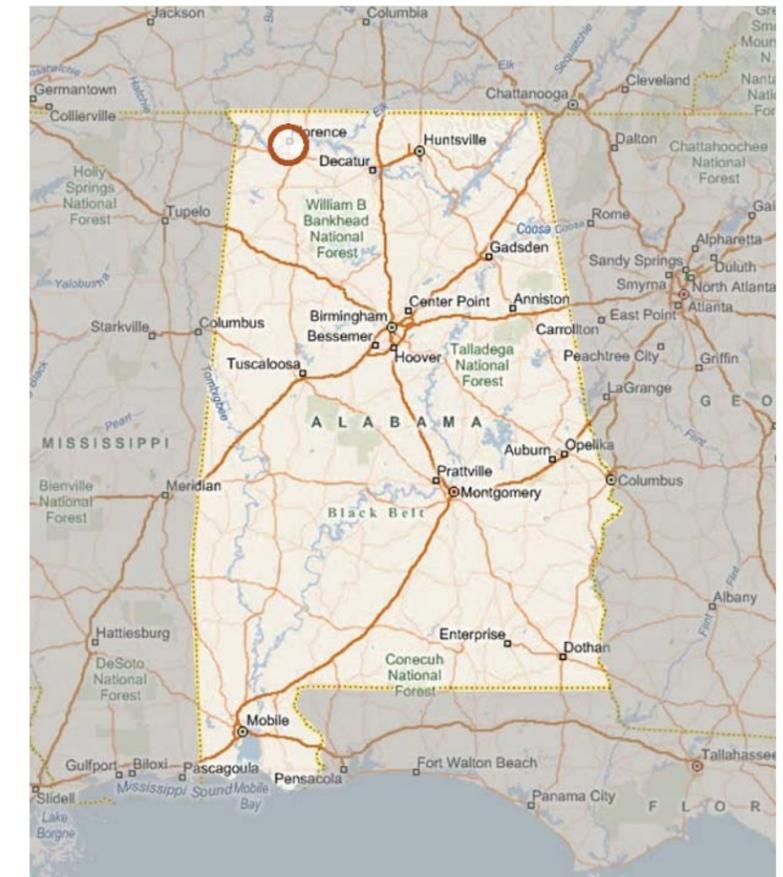
The planning effort for the site began with a detailed analysis of influential factors from the surrounding district as well as important characteristics of the site. The research material included historic maps, archived records, United States Geological Survey Data, Surrounding District Plans, Zoning Information and Demographic Data. The following pages graphically summarize this background information.

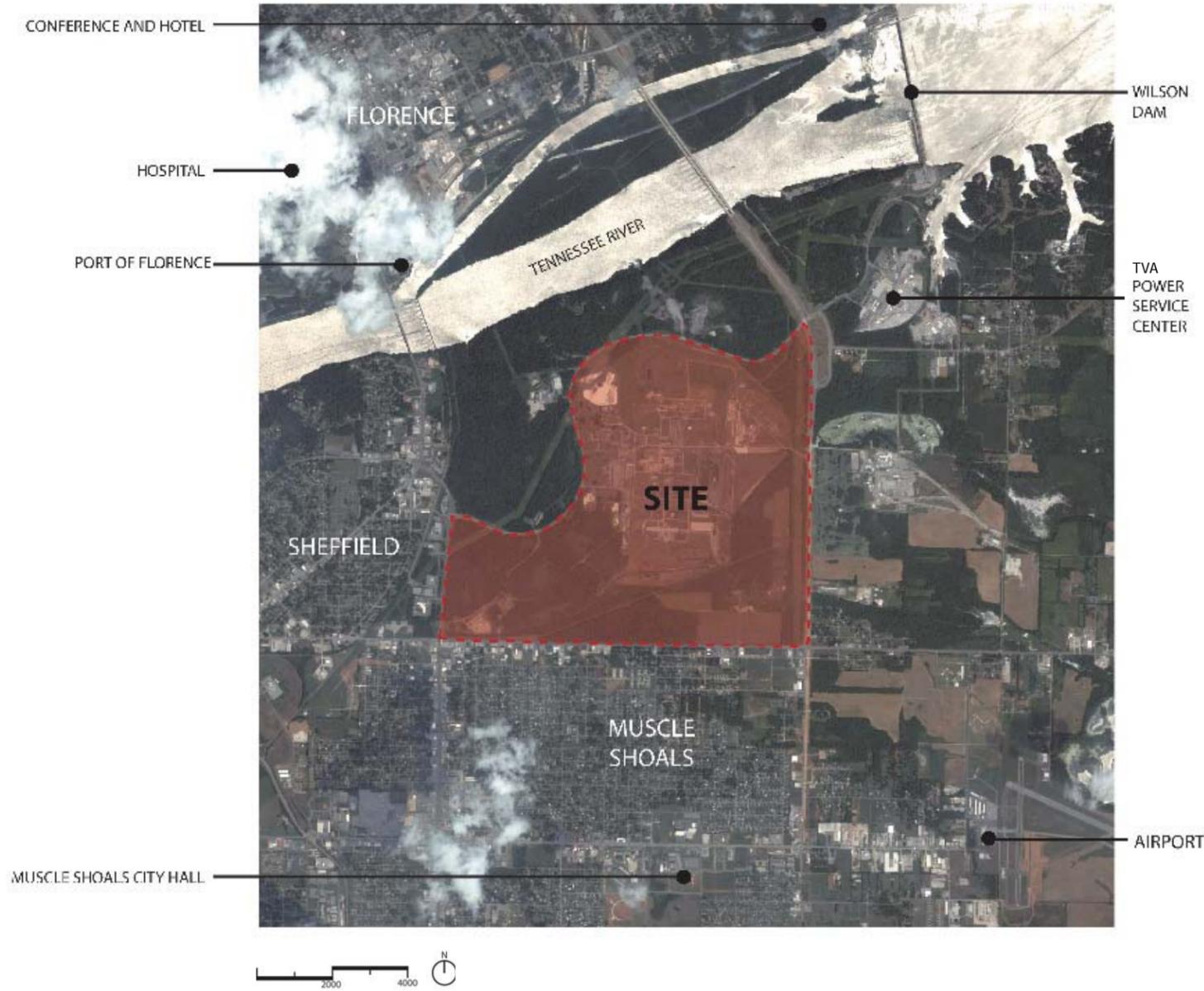
02.2.1 Vicinity Map



02.2.1 Vicinity Map

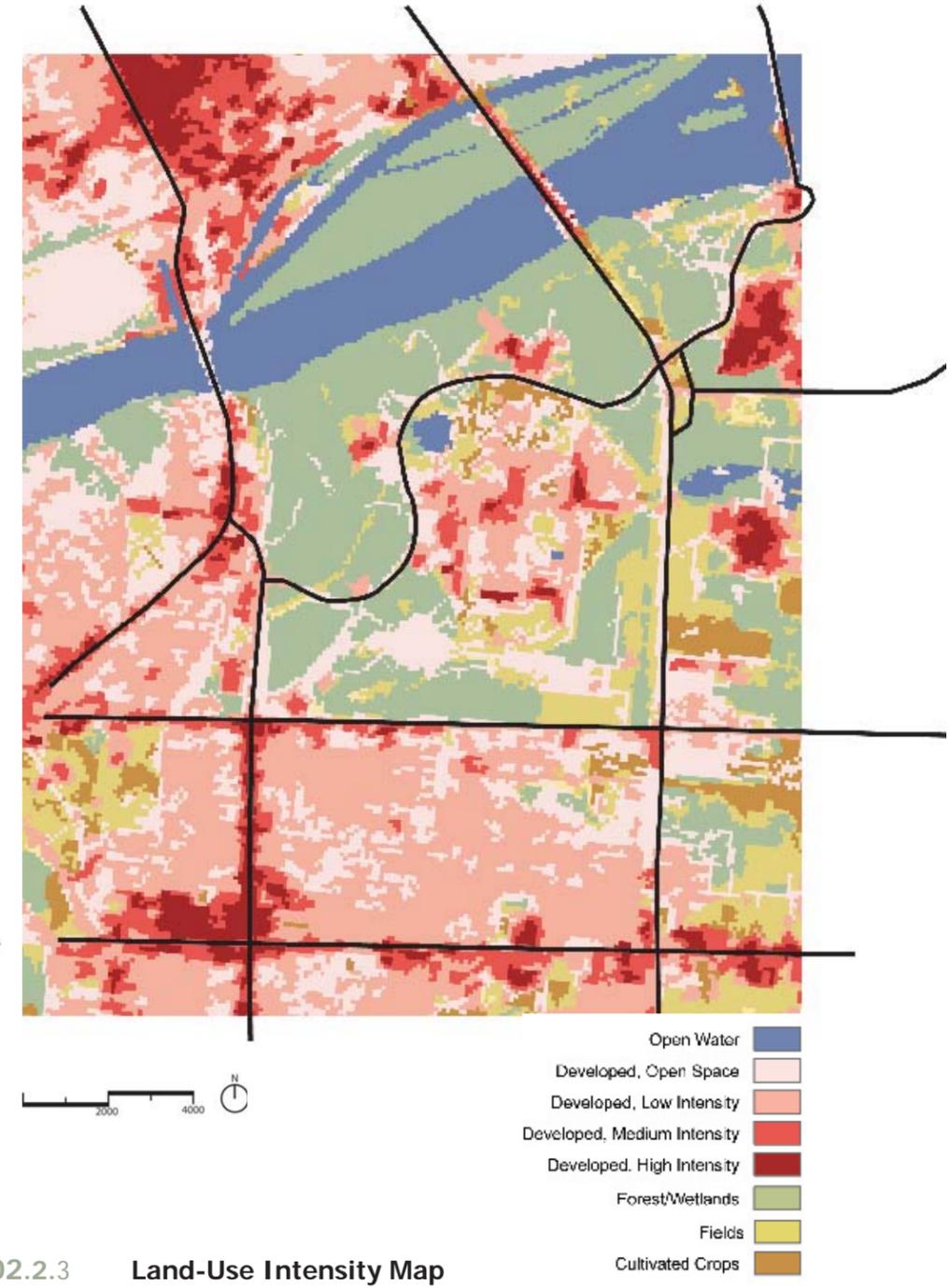
The study area (indicated in red), representing a portion the TVA Muscle Shoals Reservation, consists of approximately 1,400 Acres in the Shoals Area of Northwest Alabama. The site is bounded by North Wilson Dam Road to the East, Woodward Avenue to the West, Second Street to the South, and Reservation Road to the North and West. This map illustrates that the site area is nearly equivalent to the area of the combined central business districts of the cities of Florence, Muscle Shoals, Sheffield and Tuscumbia.





**02.2.2 Site Context Diagram**

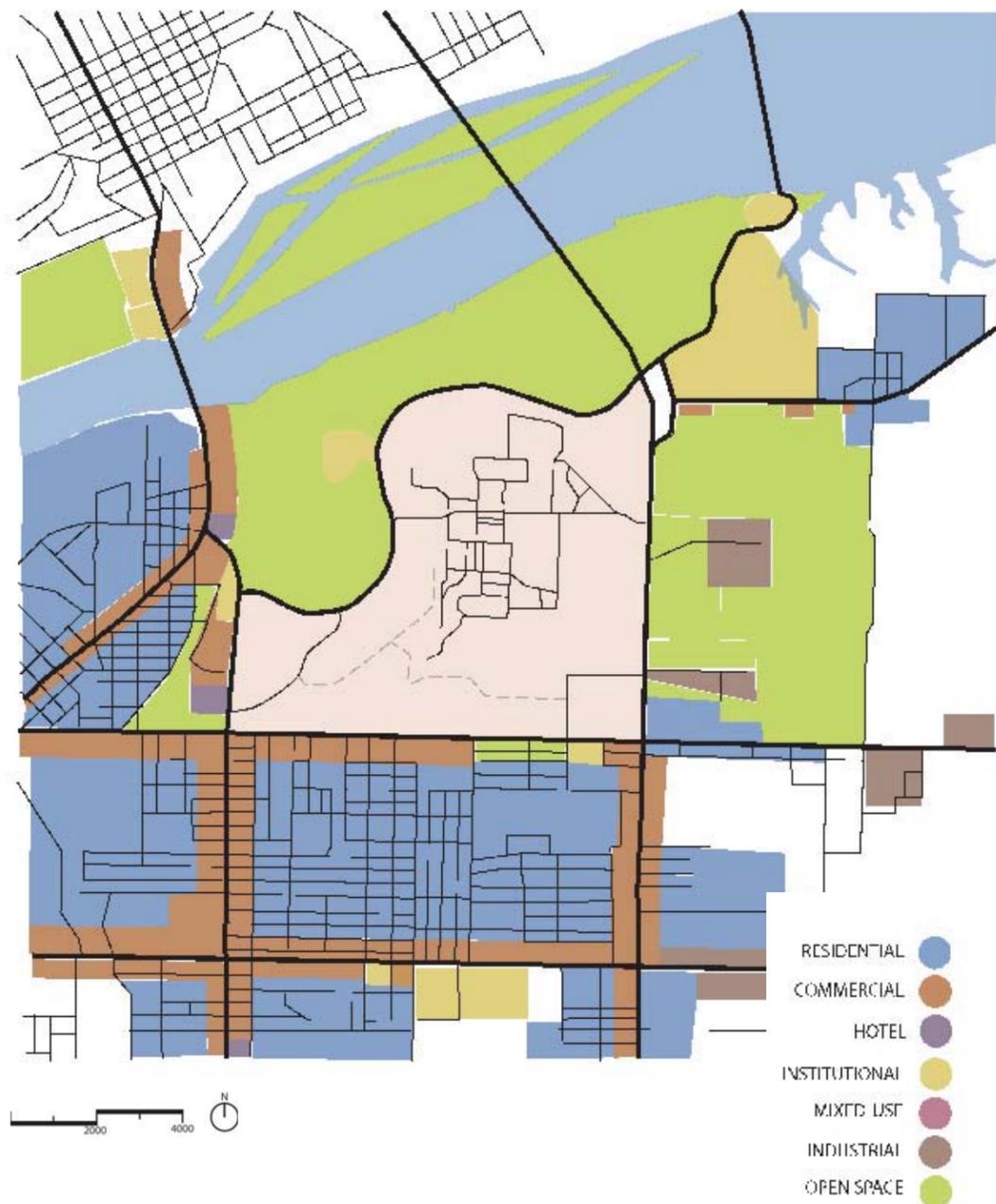
This map shows the proximity of the site to major features in the area. It also indicates the density and character of the surrounding properties.



**02.2.3 Land-Use Intensity Map**  
(source: U.S. Geological Survey)

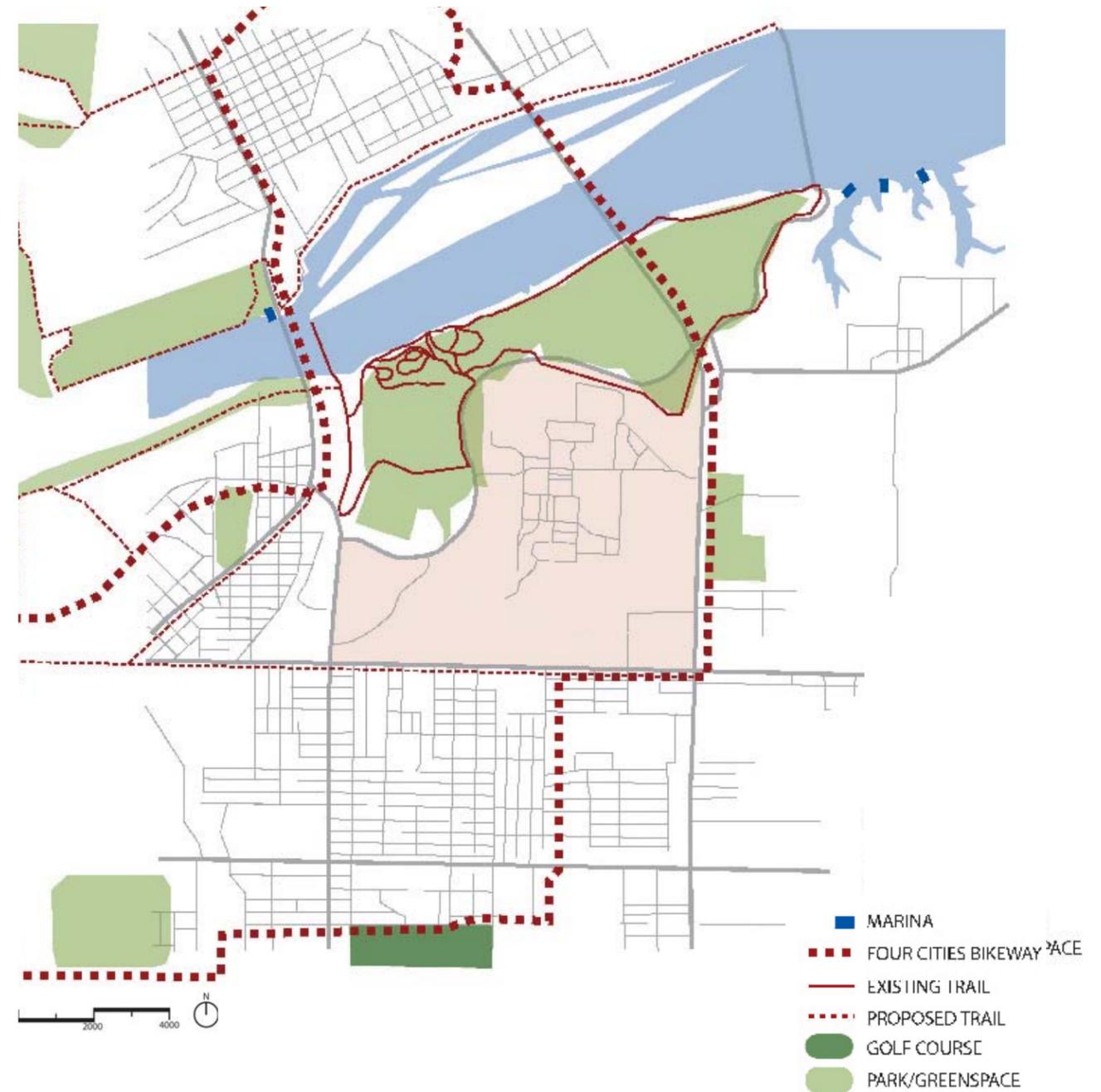
This map indicates the current conditions of land on the site and in the surrounding area. The area on the Northwest side of Reservation Road is primarily wooded with some open green space and a few existing structures currently planned to remain. It is important to note the wooded character of the majority of the site, in contrast with the balance of the immediate surroundings.

The planning team felt that this is an important consideration when moving forward with redevelopment of the site.



#### 02.2.4 Existing Surrounding Land-Use

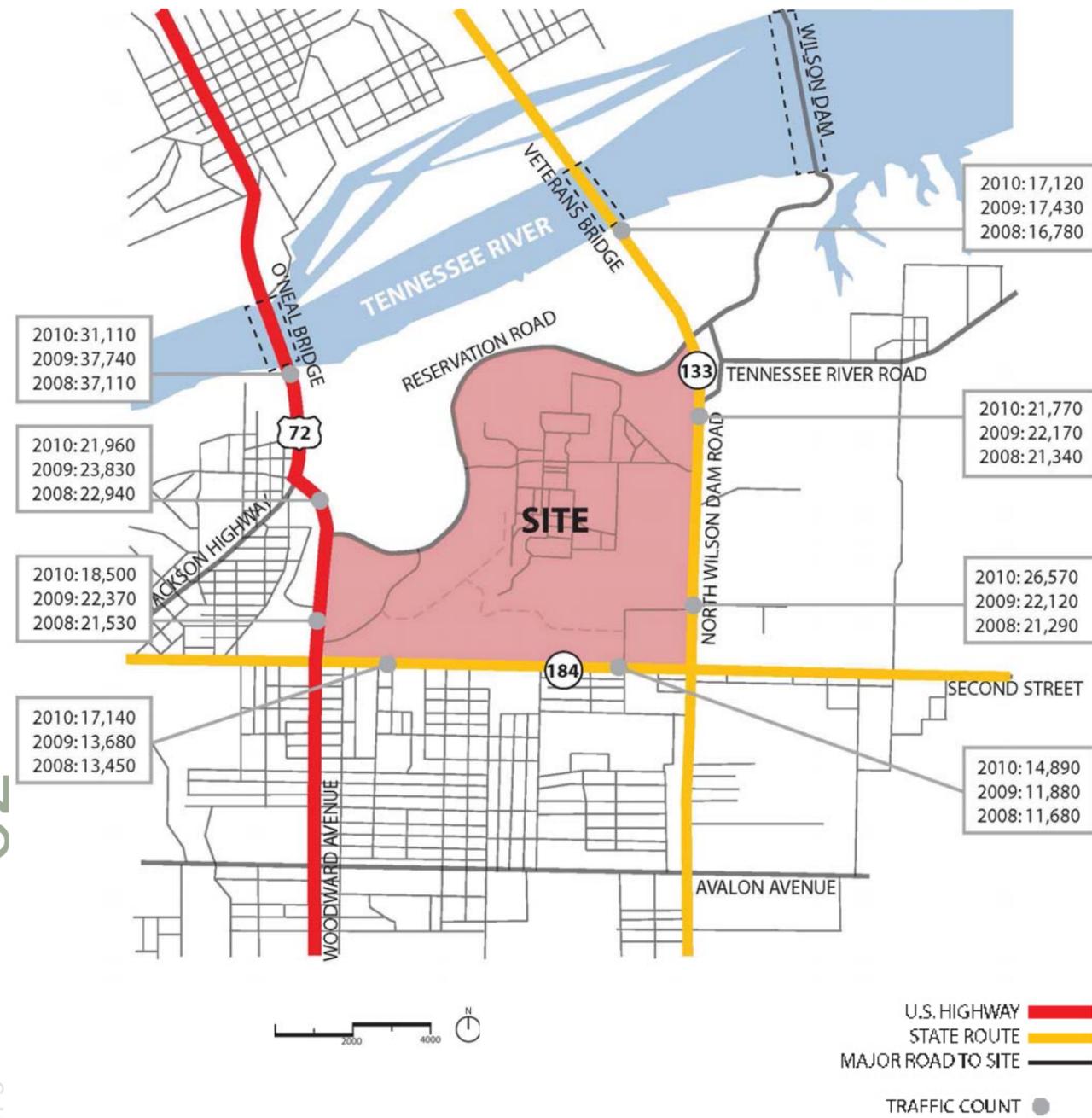
The site is surrounded primarily by existing low-density (one and two story with surface parking) commercial uses along the major corridors, that are basically compatible with the present zoning requirements for their respective parcels. The majority of the surrounding area consists of primarily low density (single-family) residential use with some industrial uses and open space. The area on the Northwest side of Reservation Road is planned to remain as permanent open space for public use.



#### 02.2.5 Recreation Diagram

(source: Sheffield Revitalization & Redevelopment Plan  
Shoals Environmental Alliance)

This diagram indicates the existing and proposed recreation areas and network of trails that surround the site. Existing and proposed parks as well as former golf courses are also indicated. The existing trail networks have been routed primarily around the study area, based on security concerns related to current and former uses. Any future plans should be developed to better connect the site to the surrounding bikeway and trail networks.



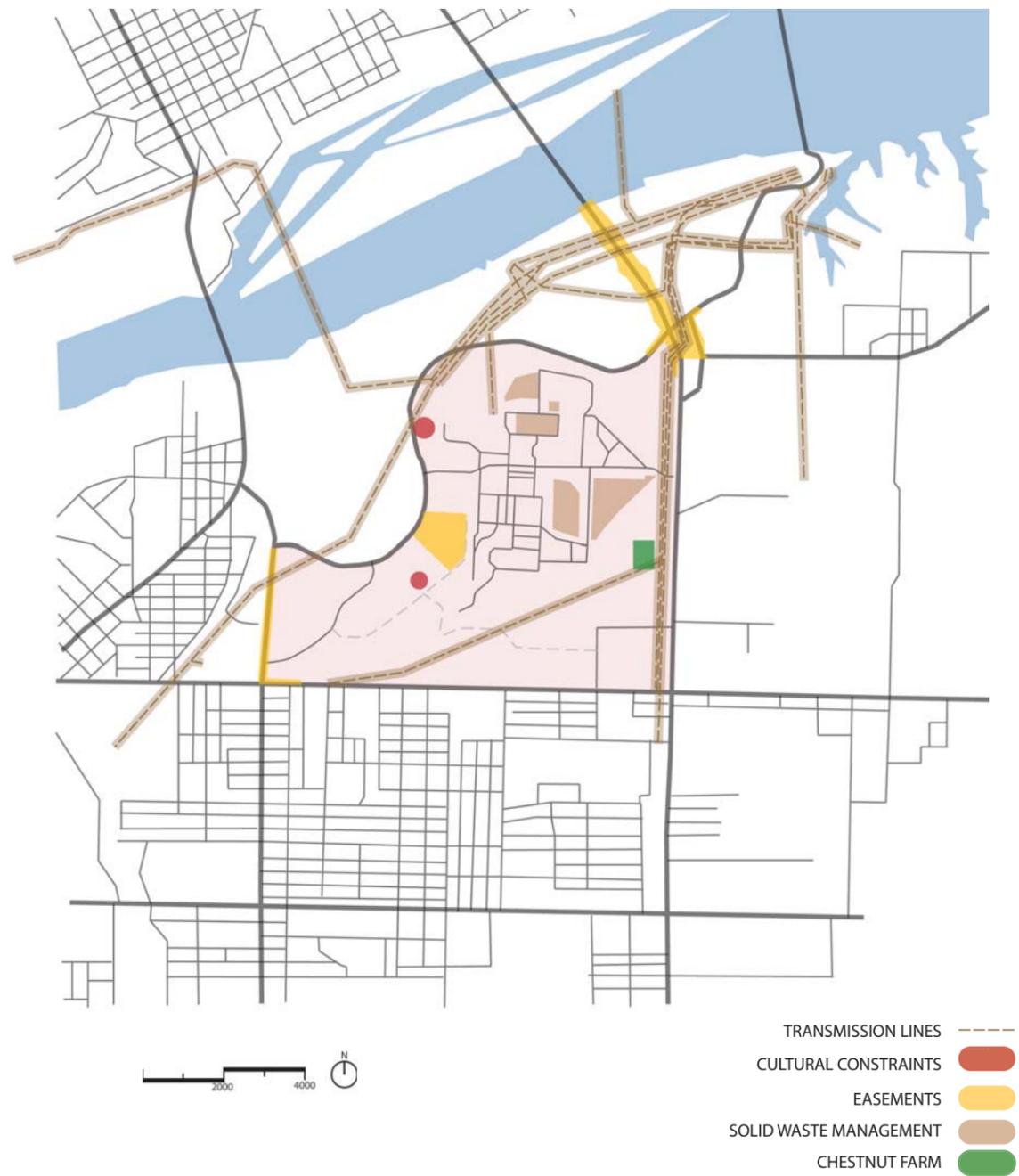
**02.2.6 Major Corridors**  
(source: ALDOT Transportation Planning Bureau)

This diagram illustrates the character of the major corridors that bound the site and provides annual traffic counts on the corridors from 2008 - 2010. Note that the traffic counts are trending upward on North Wilson Dam Road.



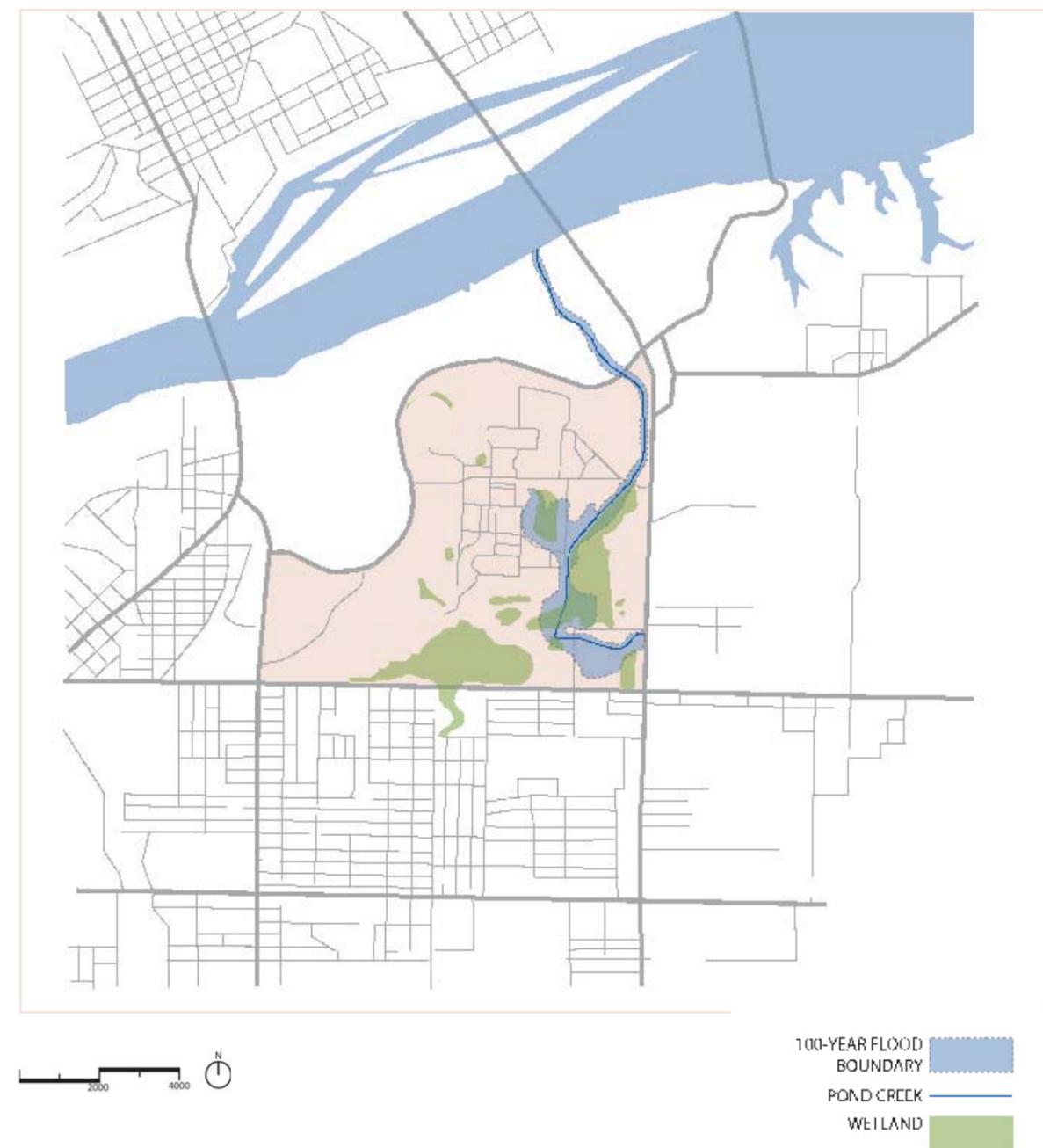
**02.2.7 Rail Diagram**

The reservation has always had good access to rail traffic. There are some remnants of the original extensive rail network still remaining on the site (not indicated on this plan). There is an opportunity to connect to the rail spurs to the East of the study area, but the strongest rail connection is to the West. Re-routing of the connection may be preferred in order to best accommodate future development on the site.



### 02.2.8 Easement Diagram

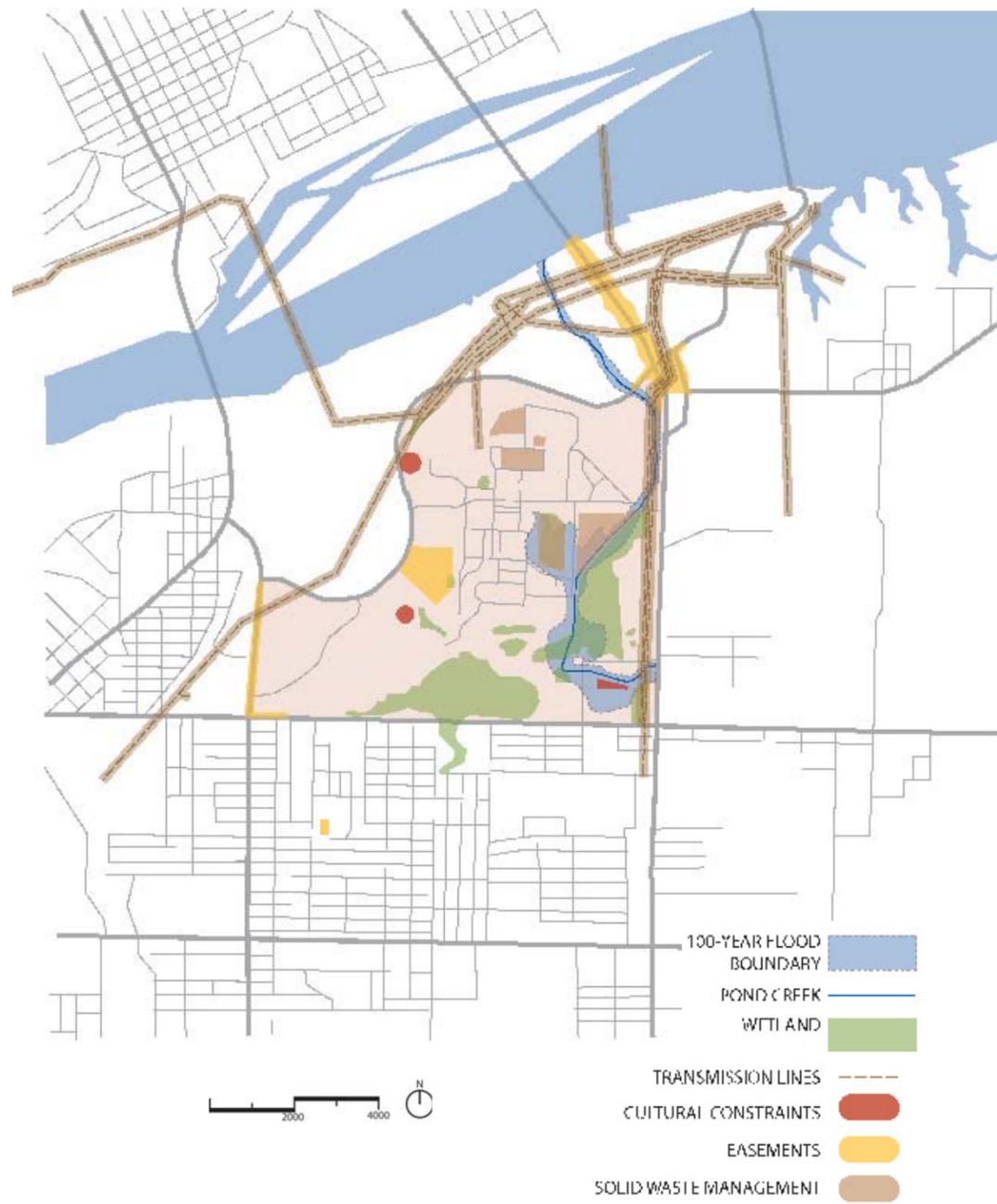
This diagram indicates areas on the site that must remain undisturbed and protected due to environmental and cultural constraints, as well as the location of overhead power transmission lines from Wilson Dam that cross the site to serve the surrounding areas.



### 02.2.9 Flood Boundary and Wetlands

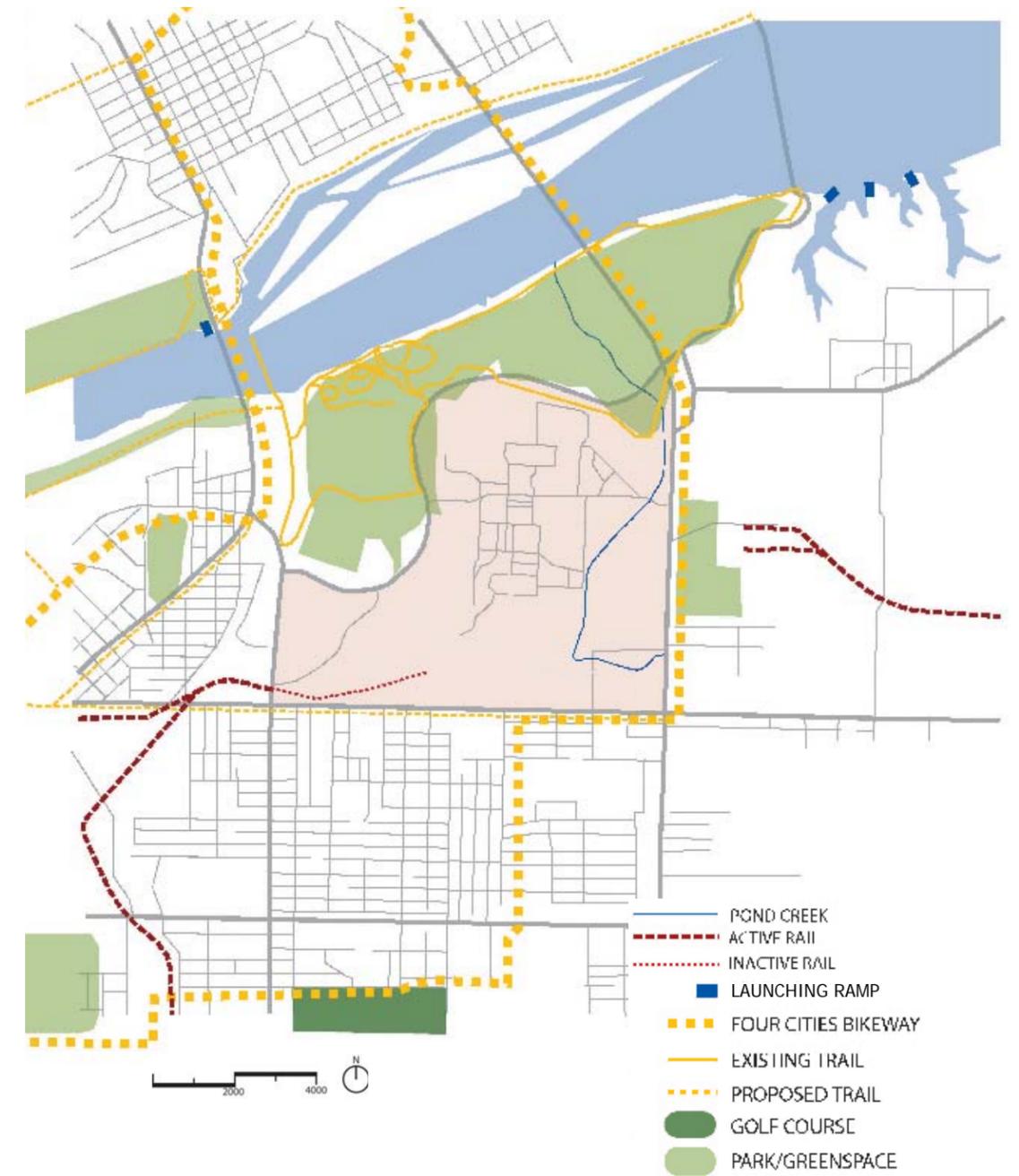
(source: FEMA Map Service Center)

Pond Creek bisects the Eastern portion of the site as it flows into the site from pipes under Wilson Dam Highway and runs north to the Tennessee River. The floodplain and the currently designated wetlands areas on the reservation are also indicated on this plan. Wetlands designation source is US Fish and Wildlife Services National Wetlands Inventory. More detailed Flood Boundary and Wetlands surveys and studies have been commissioned recently, and updated boundaries will be provided when available.



### 02.2.10 Site Constraints

The Planning team superimposed all of the site constraints onto this single diagram of the study area and the surrounding districts in order to better understand the remaining developable area on the site. Some mitigation of wetlands and transfer of existing flood plain area may be required in order to increase the functionality of some of the prime developable area on the site. The team did not feel that any of these constraints, even when analyzed together, were excessive for an infill site of this size.



### 02.2.11 Site Amenities

The Planning team superimposed all of the items perceived as site amenities onto this single diagram of the study area and the surrounding districts in order to better inform conceptual planning efforts. Note that some elements such as Pond Creek are treated as both constraints and amenities.



### 02.3 Market Summary

#### Report Preparation

Todd LaRue, Principal  
Ian Dietrich, Senior Associate

#### Critical Assumptions and General Limiting Conditions

Our conclusions are based on our analysis of the information available from our own sources and from the client as of the date of this report. We assume that the information is correct, complete, and reliable.

We made certain assumptions about the future performance of the global, national, and local economy and real estate market, and on other factors similarly outside either our control or that of the client.

Please see the final three slides of this presentation for the full version of the critical assumptions and general limiting conditions.

#### 02.3.1 Background and Objectives

##### Background:

RCLCO was retained by Lord Aeck Sargent as part of a multidisciplinary team to conduct a preliminary test of the development opportunity for a variety of candidate land uses at the Muscle Shoals site. This report is an update to the original report.

##### Objectives:

Update the prior report based on socioeconomic changes, development trends, and economic development efforts in the local area and region over the past two and a half years;

Discuss any changes to the development conclusions described in the previous report. regarding the likely market success for each land use.

## 02.3.2 Methodology

### Site Analysis

Identify levels of opportunity and potential positioning through attributes of site and relationship to market.

Local and regional access and visibility  
Character and type of surrounding developments  
Proximity of regional attractions/destinations, services, and employment  
Planned and proposed improvements to surrounding areas

### Market Depth

Understand target markets and supportable units and/or square feet based on current and future market growth and demonstrated demand.

Evaluate existing and projected local and regional economic and demographic composition and growth to understand key target markets that will fuel demand for candidate land uses at the site

Determine the magnitude of demand for each of the land uses based on the existing size and projected growth of the key target markets

### Competitive Market Analysis

Understand opportunities in the market in relationship to competitive supply.

Evaluate a sample of competitive and comparable new and existing product and/ or projects of each candidate land use

Determine the potential supportable types of product and the correlating estimated number of units or square footage of each land use at the site

### Recommendations/Market Position

Advise on critical success factors for the development, creating a set of recommendations that responds to the analysis undertaken

### 02.3.3 Overview of Scenarios

THE OPPORTUNITY FOR TVA RESERVATION REDEVELOPMENT HAS BEEN INVESTIGATED UNDER THREE DIFFERENT SCENARIOS

**Steady-State Moderate Growth (Scenario 1):** Growth in the Shoals area will continue at the same demonstrated pace as posted over the past few decades

- Through 2030, only the railcar facility will add a volume of new jobs that surpasses employment growth in the Shoals over the past 40 years.
- Our new projection remains similar to the original one, though shifted out three years to reflect the lack of substantial growth from 2009 to present. Aside from the Navistar deal, very little has changed on the job horizon.

**Aggressive Steady-State Growth (Scenario 2):** The impact of the rail car facility will be more dramatic, bringing a greater employment and household growth than demonstrated in the past

- This scenario is now much more likely than before, with a distinct incentive plan in place to offer \$22 million in tax incentives should hiring goals be met. While Navistar has not made it clear how the plant will be used or what their employment projections are, it is possible that up to 1,800 direct jobs and 5,400 indirect jobs are added through 2030. This is in line with the past aggressive projection, though the timing has also shifted by about three years.

**TVA Reservation Redevelopment is a Catalyst for Economic Growth (Scenario 3):** The Reservation is converted into a research and development campus that focuses on promoting energy innovation and attracts other industries, as well. This scenario is independent of indirect jobs driven by success at the railcar plant.

- McCallum Sweeney Consulting's January 2012 report indicated the target markets of skilled manufacturing and professional services. Additionally targeting white collar energy-related jobs could be significant because they have a higher likelihood of spurring other professional support and specialized manufacturing jobs.
- We still believe that this scenario can still be achieved if the timing is right and the appropriate and strategic partnerships and funding are pursued.

#### SLOW 2009, BUT MANUFACTURERS BEGAN EXPANSION PLANS IN 2010-2011 WHICH WILL CAUSE JOB GROWTH

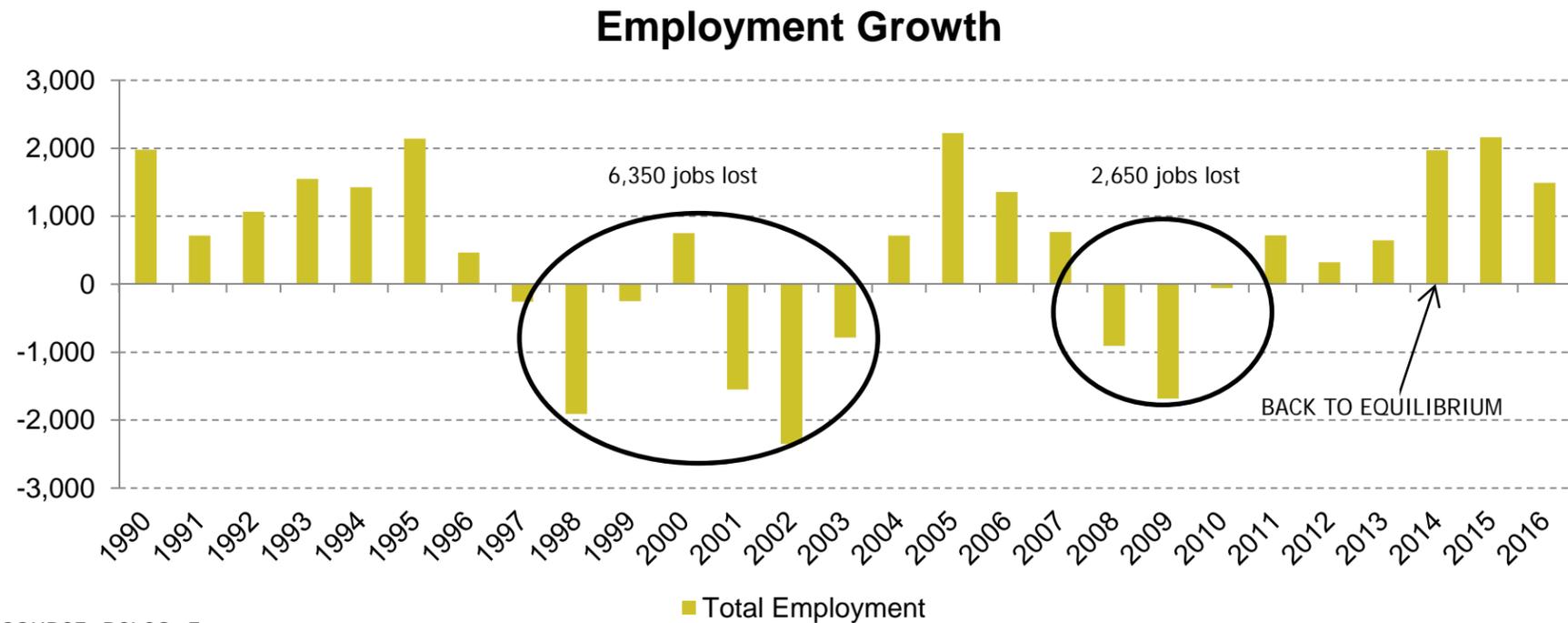
- North American Lighting, Inc., which currently employs 350 workers, added jobs in 2010, and will begin a \$35 million plant expansion that will allow them to produce 1.2 million headlamps per year by 2014. The company expects to hire 250 new jobs over the next three years in order to meet production goals.
- ES Robbins is completing a \$2.2 million expansion to its Muscle Shoals facility, including a 53,640-square-foot warehousing and distribution building. Approximately 25 new employees will be added over a three-year period as a result of this expansion.
- Wise Alloys LLC, the nation's second-leading producer of aluminum can stock for the beverage and food industries, is moving their headquarters from Baltimore, MA to Muscle Shoals. Additionally they are planning a \$24.9 million expansion and expect to add 43 new positions to their already 1000-person workforce.
- Caraustar Industries opened a 25,000 square-foot facility in Rogersville and will employ 15 – 20 people.
- SCA Tissue is planning to add \$15 million in additional equipment that will enhance its napkin and paper processing capabilities.
- Delta Steel & Tube is planning to hire 16 workers over the next three years as a result of additional sales from new machines that will be added for laser cutting and bending of tubes.
- Thicker Casket, Inc. currently employs 160 workers and will add an additional 40 employees over the next three years.

#### NAVISTAR WILL LEASE THE RAILCAR PLANT AND POTENTIALLY HIRE UP TO 2,200 WORKERS

- On September 27, 2011 Navistar International intentions to sign a lease agreement of a minimum period of ten years from the Retirement System of Alabama for the Railcar manufacturing facility, making it Navistar's third manufacturing facility in the state.
- The Chicago-based company makes International brand trucks as well as military vehicles, buses, recreational vehicles and diesel engines, and intends to retain the existing workforce at the facility and hire additional workers
- Though Navistar declined to say how many jobs would be added, Governor Robert Bentley indicated projections of up to 2,200 employees hired by the plant over the next four years. The company would need to employ up to 1,800 workers by 2015 in order to qualify from \$22 million in incentives from the Shoals industrial Development Committee.
- The industries with the largest employment multipliers in the entire economy are automobiles, aerospace, and primary metals. Employment in the automobile parts and assembly industry supports more than three times as many indirect jobs as employment in personal and business services and more than five times as many jobs as retail trade. This is due both because of the large number of supplier jobs supported in the automobile trade and because high wages in this sector generate more re-spending employment and government job. Assuming the plant will be used for auto manufacturing and that 1,800 employees are hired, it is estimated that the Navistar plant could catalyze additional indirect job growth of 5,400 indirect jobs.

UNDER STEADY STATE SCENARIO, ADDITIONAL EMPLOYMENT ACTIVITY SHOULD BRING JOB EQUILIBRIUM BY 2015

- After 15 years of solid growth, the MSA lost 6,350 jobs from 1997 to 2003, gaining back 5,067 from 2004 to 2007.
- After losing 2,650 more jobs from 2008 to 2011, the Muscle Shoals Metro can get back to equilibrium by 2015 at the pace of 1,160 jobs gained each year through 2015.

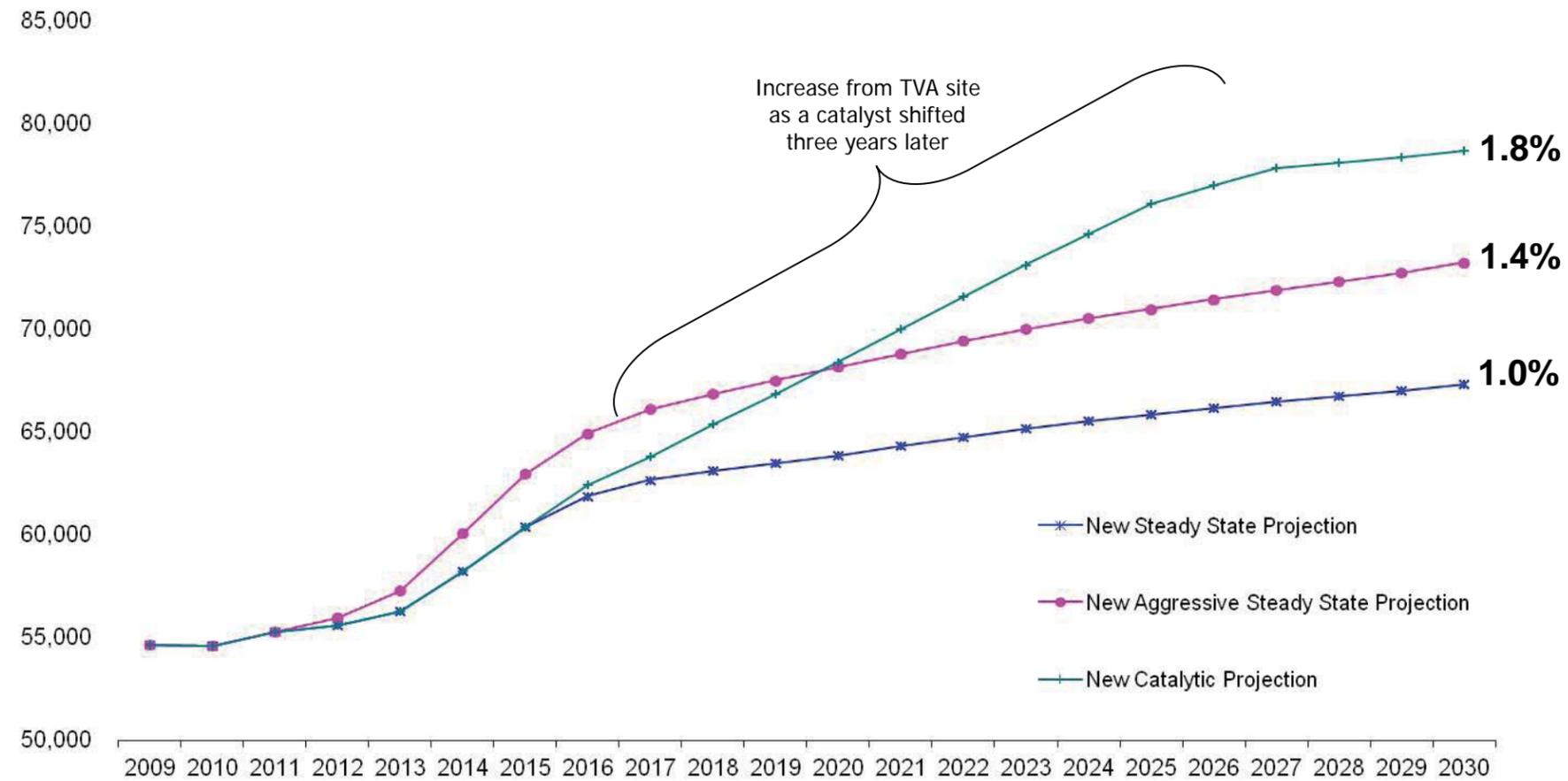


SOURCE: RCLCO; Economy.com

RAILCAR DIRECT AND INDIRECT EMPLOYMENT GROWTH WOULD LEAD THE EARLIEST GROWTH, BUT TVA REDEVELOPMENT WOULD ULTIMATELY YIELD MORE JOBS

TOTAL EMPLOYMENT  
FLORENCE-MUSCLE SHOALS MSA 2011 - 2030

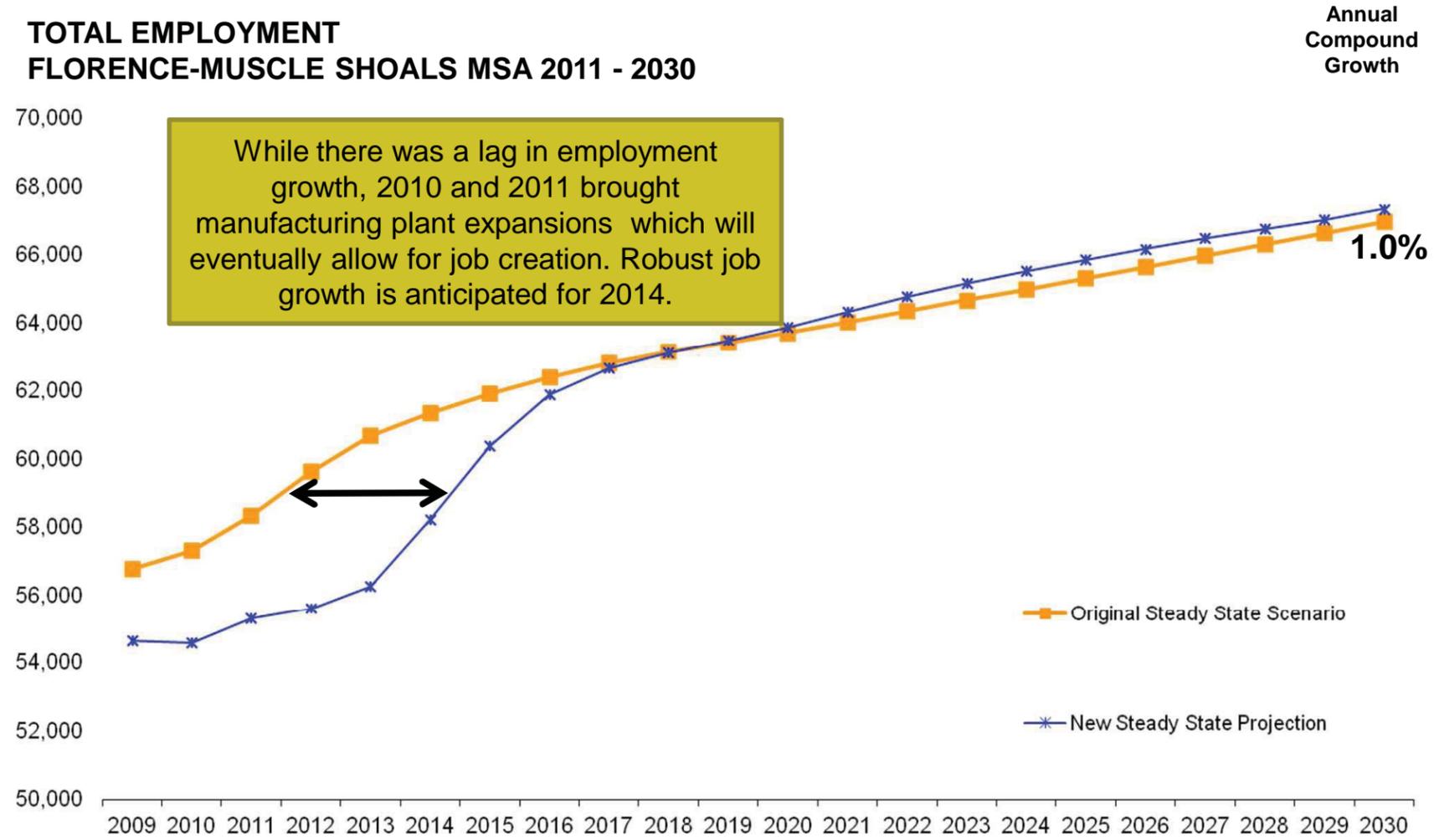
Annual Compound Growth



SOURCE: RCLCO; Economy.com

# IN THE STEADY STATE SCENARIO, WE EXPECT A SIMILAR JOB OUTLOOK, THOUGH DELAYED THREE YEARS

TOTAL EMPLOYMENT  
FLORENCE-MUSCLE SHOALS MSA 2011 - 2030

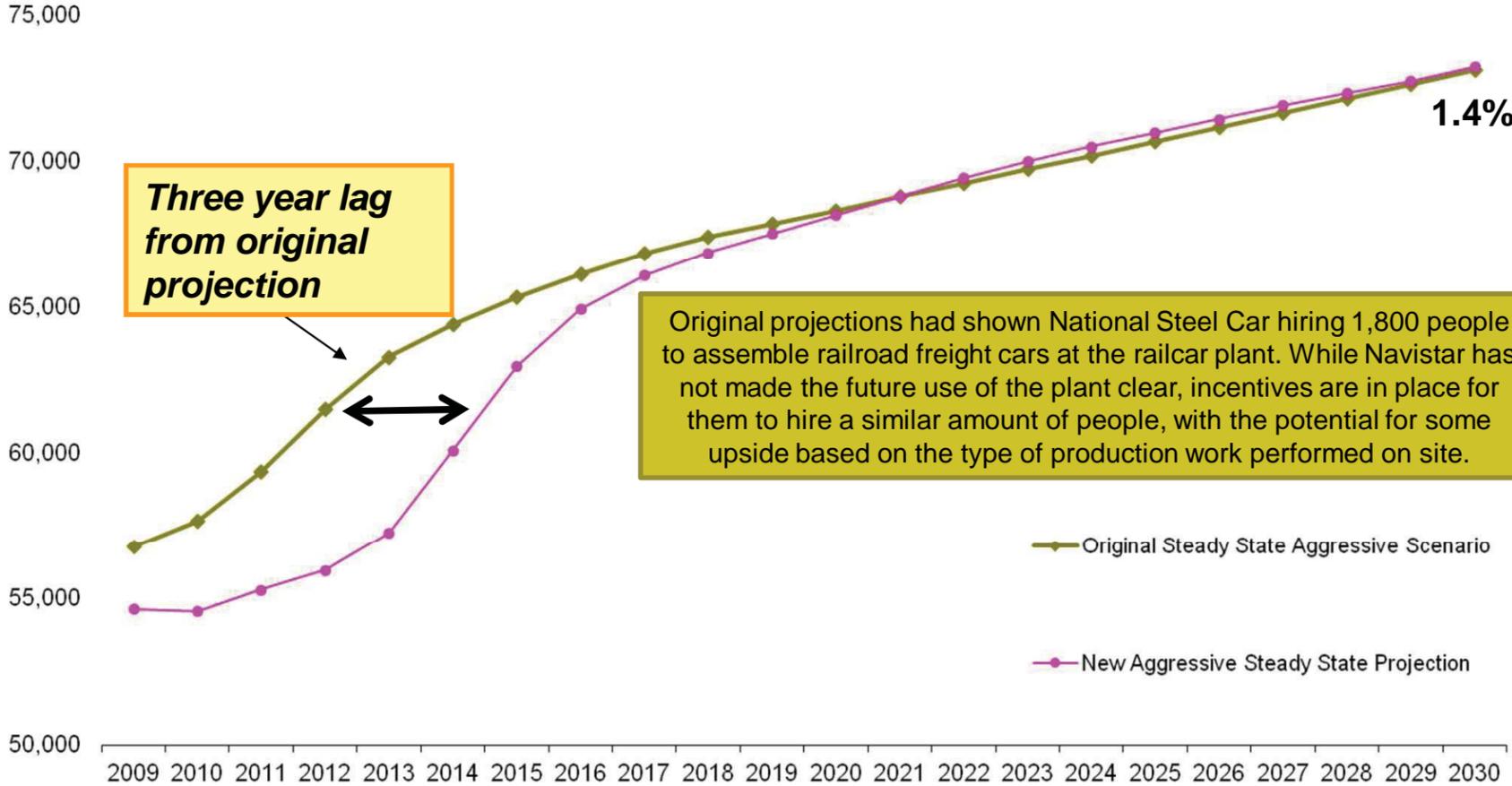


SOURCE: RCLCO; Economy.com

# IN THE AGGRESSIVE STEADY STATE SCENARIO, EXPECT THE SAME 3-YEAR DELAY, THOUGH A LARGE BUMP FROM RAIL CAR FACILITY INCLUDING INDIRECT JOB GROWTH

TOTAL EMPLOYMENT  
FLORENCE-MUSCLE SHOALS MSA 2011 - 2030

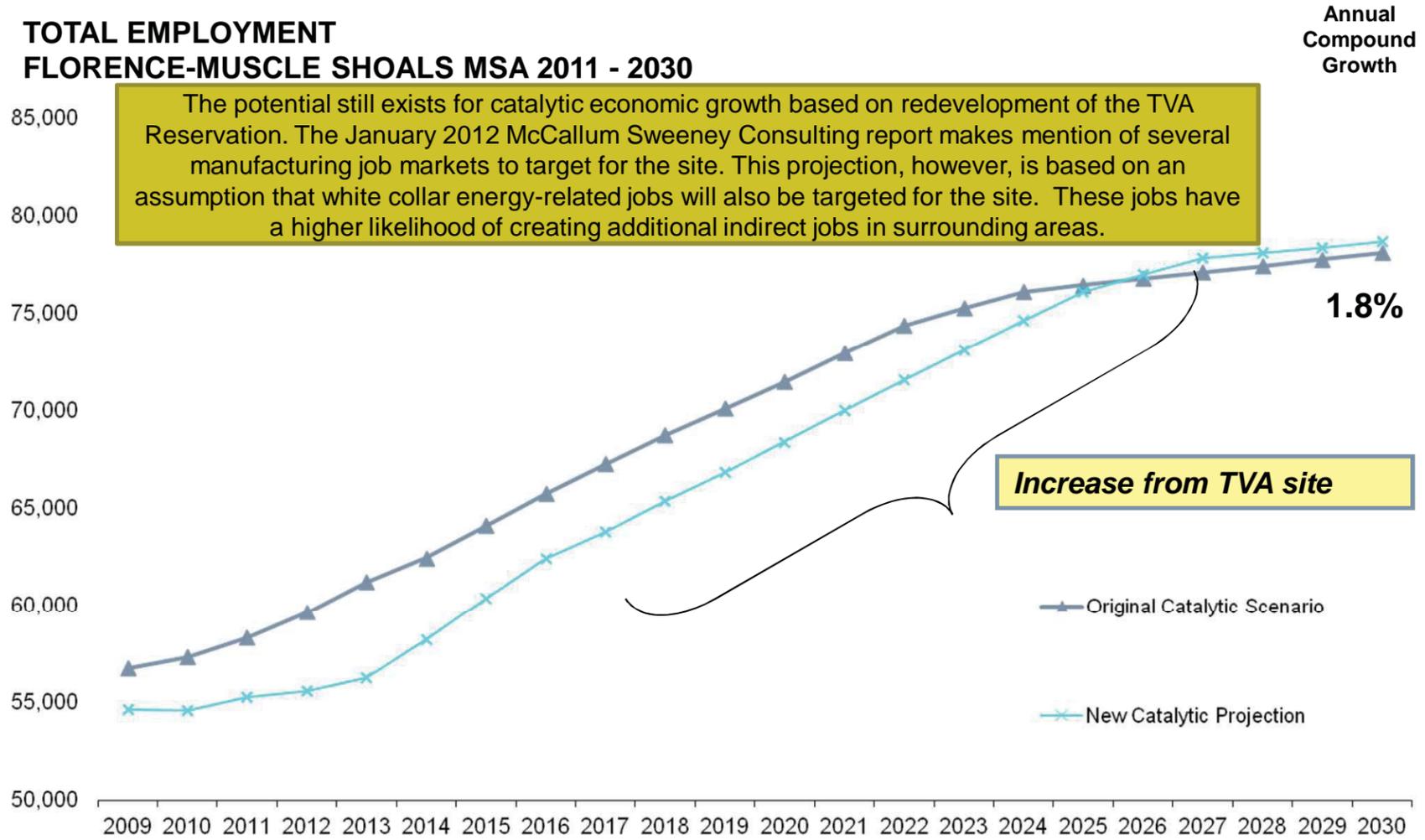
Annual  
Compound  
Growth



SOURCE: RCLCO; Economy.com

# CATALYTIC GROWTH TRIGGERED BY THE TVA WILL ALSO SHIFT THREE YEARS

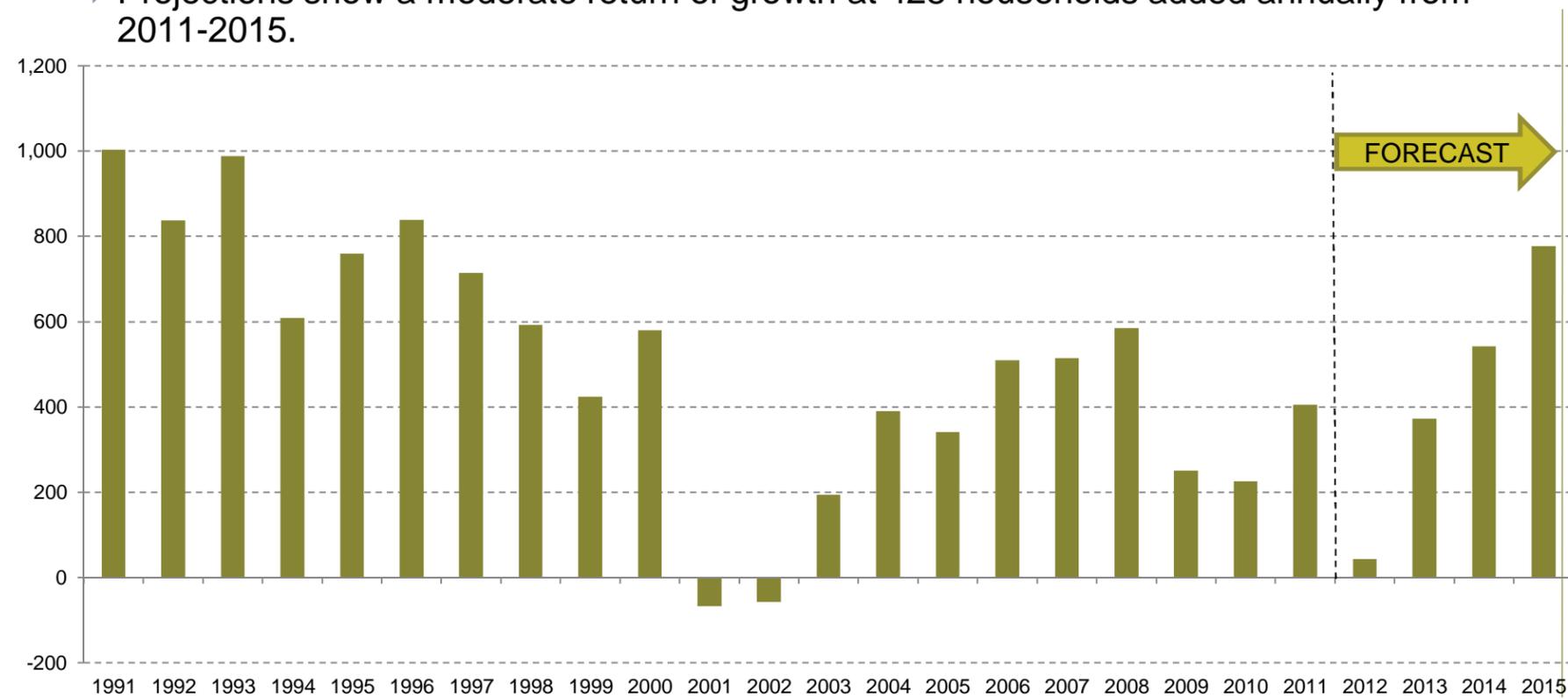
**TOTAL EMPLOYMENT  
FLORENCE-MUSCLE SHOALS MSA 2011 - 2030**



SOURCE: RCLCO; Economy.com

# HOUSEHOLD GROWTH WILL RETURN IN MODERATION

- ▶ Household growth in the MSA was strong in the 90's with 735 new households added per year, but dropped to 289 per year from 2001-2010.
- ▶ Projections show a moderate return of growth at 428 households added annually from 2011-2015.

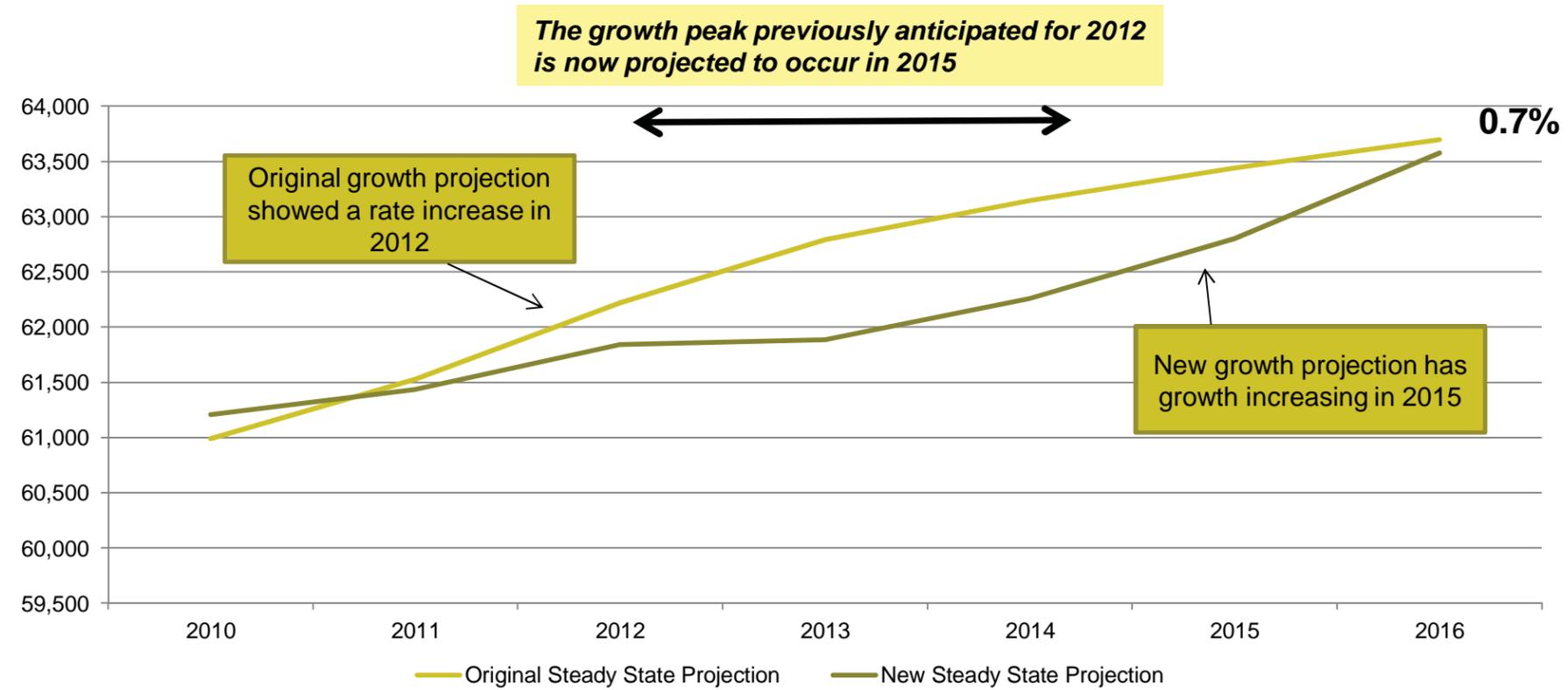


SOURCE: Economy.com

# LIKE WITH JOBS, HOUSEHOLD GROWTH IS FORECAST TO LAG THREE YEARS, BUT EVENTUALLY HIT THE SAME PACE

## HOUSEHOLD GROWTH FLORENCE-MUSCLE SHOALS MSA 2010 - 2030

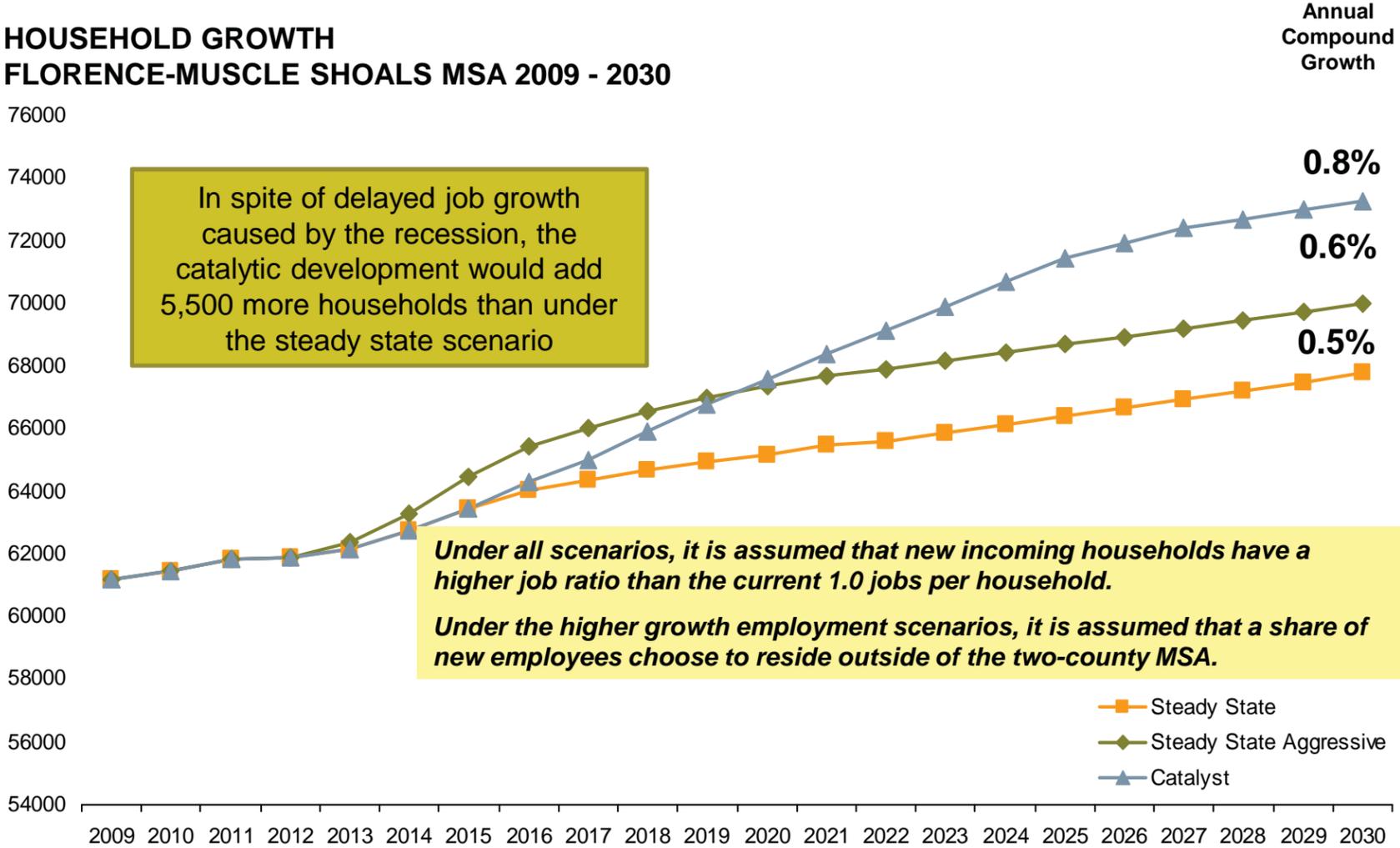
Annual  
Compound  
Growth



SOURCE: RCLCO; Economy.com

# THE CATALYTIC SCENARIO WOULD DRIVE THE GROWTH OF 5,500 MORE HOUSEHOLDS THAN THE STEADY STATE SCENARIO

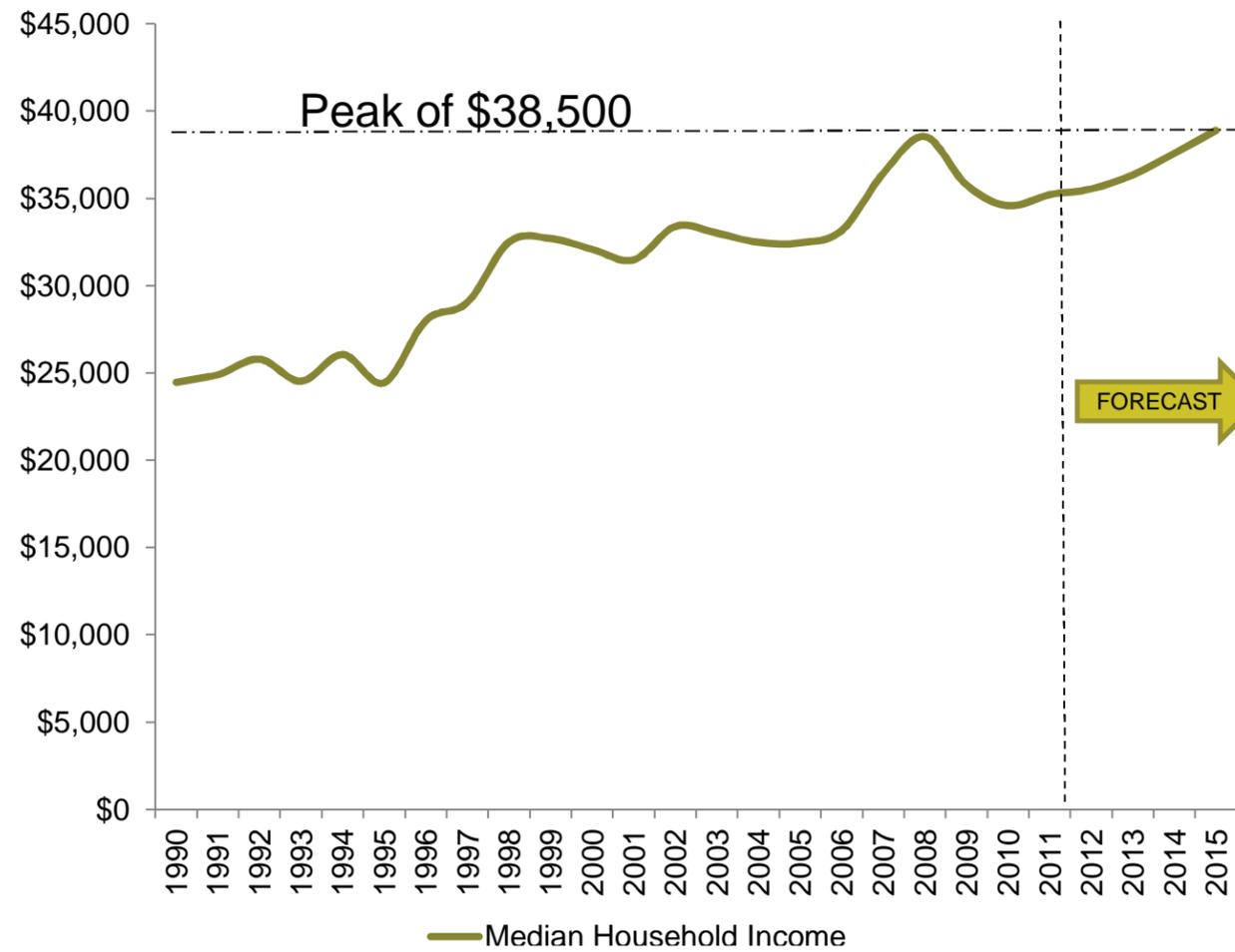
**HOUSEHOLD GROWTH  
FLORENCE-MUSCLE SHOALS MSA 2009 - 2030**



SOURCE: RCLCO; Economy.com

### CURRENT MEDIAN HOUSEHOLD INCOME OF \$35,000 WILL TAKE ANOTHER FOUR YEARS TO REACH 2008 PEAK

- ▶ Median household income for the MSA, which peaked in 2008 at \$38,500, is projected to be reached again in 2015.



SOURCE: Economy.com

## MUSCLE SHOALS INCOMES HAVE DROPPED 10%, MORE THAN BIRMINGHAM AND HUNTSVILLE

Median Household Income 2011

METROS	2008	2011	2008-2011 CHANGE
Muscle Shoals	\$39,000	\$35,000	-10%
Huntsville	\$54,000	\$53,000	-2%
Birmingham	\$49,000	\$47,000	-4%

SOURCE: ESRI

Due to greater diversity, the economies of Huntsville and Birmingham were more insulated from the downturn than Muscle Shoals, whose economy is more tightly linked to the heavily-hit manufacturing industry.

### 02.3.4 Critical Assumptions

Our conclusions are based on our analysis of the information available from our own sources and from the client as of the date of this report. We assume that the information is correct, complete, and reliable.

We made certain assumptions about the future performance of the global, national, and local economy and real estate market, and on other factors similarly outside either our control or that of the client. We analyzed trends and the information available to us in drawing these conclusions. However, given the fluid and dynamic nature of the economy and real estate markets, as well as the uncertainty surrounding particularly the near-term future, it is critical to monitor the economy and markets continuously and to revisit the aforementioned conclusions periodically to ensure that they stand the test of time.

We assume that the economy and real estate markets are close to bottoming out for the current cycle, and that they will grow at a stable and moderate rate starting in 2010, more or less in a straight line on average for the duration of the analysis period (to 2020 and beyond). However, history tells us that stable and moderate growth patterns are not sustainable over extended periods of time, and that the economy is cyclical and that the real estate markets are typically highly sensitive to business cycles. Further, it is very difficult to predict when the current economic and real estate downturns will end, and what will be the shape and pace of growth once they are recovered.

With the above in mind, we assume that the long term average absorption rates and price changes will be as projected, realizing that most of the time performance will be either above or below said average rates.

Our analysis does not take into account the potential impact of future economic shocks on the national and/or local economy, and does not necessarily account for the potential benefits from major “booms,” if and when they occur. Similarly, the analysis does not necessarily reflect the residual impact on the real estate market and the competitive environment of such a shock or boom. Also, it is important to note that it is difficult to predict changing consumer and market psychology.

For all the reasons outlined, we recommend the close monitoring of the economy and the marketplace, and updating this analysis as appropriate.

Further, the project and investment economics should be “stress tested” to ensure that potential fluctuations in revenue and cost assumptions resulting from alternative scenarios regarding the economy and real estate market conditions will not cause failure.

In addition, we assume that once the current cycle is over, the following will occur in accordance with current expectations:

- Economic, employment, and household growth
- Other forecasts of trends and demographic and economic patterns, including consumer confidence levels
- The cost of development and construction
- Tax laws (i.e., property and income tax rates, deductibility of mortgage interest, and so forth)
- The availability and cost of capital and mortgage financing for real estate developers, owners and buyers, at levels present in the market before the most recent run up (i.e., early 2000s levels)
- Competitive projects will be developed as planned (active and future) and that a reasonable stream of supply offerings will satisfy real estate demand
- Major public works projects occur and are completed as planned

Should any of the above change, this analysis should probably be updated, with the conclusions reviewed accordingly (and possibly revised).

### **General Limiting Conditions**

Reasonable efforts have been made to ensure that the data contained in this study reflect accurate and timely information and are believed to be reliable. This study is based on estimates, assumptions, and other information developed by RCLCO from its independent research effort, general knowledge of the industry, and consultations with the client and its representatives. No responsibility is assumed for inaccuracies in reporting by the client, its agent, and representatives or in any other data source used in preparing or presenting this study. This report is based on information that to our knowledge was current as of the date of this report, and RCLCO has not undertaken any update of its research effort since such date.

Our report may contain prospective financial information, estimates, or opinions that represent our view of reasonable expectations at a particular time, but such information, estimates, or opinions are not offered as predictions or assurances that a particular level of income or profit will be achieved, that particular events will occur, or that a particular price will be offered or accepted. Actual results achieved during the period covered by our prospective financial analysis may vary from those described in our report, and the variations may be material. Therefore, no warranty or representation is made by RCLCO that any of the projected values or results contained in this study will be achieved.

Possession of this study does not carry with it the right of publication thereof or to use the name of "Robert Charles Lesser & Co." or "RCLCO" in any manner without first obtaining the prior written consent of RCLCO. No abstracting, excerpting, or summarization of this study may be made without first obtaining the prior written consent of RCLCO. This report is not to be used in conjunction with any public or private offering of securities or other similar purpose where it may be relied upon to any degree by any person other than the client without first obtaining the prior written consent of RCLCO. This study may not be used for any purpose other than that for which it is prepared or for which prior written consent has first been obtained from RCLCO.

### 03.1 Public Input Summary

Based on the input from the two Public Workshops - 14/15 November 2011 – the following Premises and Framework were generated. It should be understood that the following points represent the opinions of those participating in the Workshops, and are not necessarily those of TVA or NACD.

#### OVERALL PREMISES:

1. It is important to recognize that the primary driver for disposal of the site is economic development.
2. It is also important to recognize the incredibly important history of this site (physical, cultural and social) and the corresponding passion and emotion of the local citizenry. Preserving select portions of the site should be a guiding factor. That includes some level of conservation south of Reservation Road (in addition to the entirety of north) and around the periphery of the site.
3. Following from the above points and the feedback garnered from stakeholders to date (interviews, leadership group, public workshops) the Framework plan will be based on a hybrid of Scenario 2 and Scenario 3 (with a slight weighting toward #2).

#### FRAMEWORK FOR CONSERVATION & REDEVELOPMENT:

1. Maintain an area of “conservation” that is environmentally-sensitive and preserved. Conservation areas to include natural habitats/sanctuaries with public access (walking trails). Ideally, conservation areas should be contiguous with no “islands” created (e.g., the “donut”).
2. Walking trails should be extended beyond the site into surrounding communities, with consideration of responsible entities.
3. Maintain the existing cultural designations/features including the stops on the birding trail and the overall “stop” on the National Music Heritage Trail.
4. Some meeting attendees suggested the creation of TVA Museum and Visitors Center to commemorate/memorialize TVA’s history on the site. The artifacts might be provided by TVA, but there are some cost implications that may make implementation difficult without significant outside development.
5. Some workshop participants expressed interest in the existing chestnut farm. TVA may require additional study with regard to the future of this particular programmatic element.
6. Preserve the existing historic buildings/district on-site. Create a central historic district (may include the broader conservation areas if we want to create a “historic site). The Central Historic District (“inside the fence”) can be densified to the extent feasible from physical, compatibility and market perspectives.
7. Create/Institute 3 “primary redevelopment focus areas” as follows (and to be illustrated)
  - a. Historic District (area in an around the “fence” area)
  - b. NE District (area just to the north and east of “fence” area along the south side of reservation road – but not quite all the way out to Wilson Dam Road)
  - c. SW District (area along Woodward)

8. Create/Institute one "secondary redevelopment area" at the SE corner of the site. Based on current market conditions, and a stated desire that new uses not "cannibalize" existing uses in other areas, redevelopment of this corner would not be actively pursued in the short term. In the longer term, it may eventually be considered for redevelopment but only for "unique opportunities" that are not present elsewhere in the broader Muscle Shoals market and only after the primary the redevelopment focus areas are exhausted and/or proximate corners/neighborhoods are developed.
9. Redevelopment Focus Areas may have the following land use and programmatic focus points:
  - a. Research and Development (energy, ecology, bioscience, etc.)
  - b. Education
  - c. Civic / Cultural / Institutional
  - d. Industry / Economic Development (with high employment opportunities)
  - e. Overall focus on "sustainability"
10. Redevelopment Focus Areas may have the following design focus points:
  - a. Connectivity – connection to other development and conservation areas (walking trails, multiple roadway connections to disperse traffic)
  - b. Internal Walkability – centralized parking, pedestrian amenities
  - c. Green Building Standards
  - d. Minimize clear cutting, etc. – emphasize natural surroundings
11. Redevelopment Focus Areas will discourage the following:
  - a. Residential Uses
  - b. "Strip" Commercial Development
  - c. Small-scale/Small-site/Out-parcel development (e.g., where there are other opportunities in the surrounding community, avoid cannibalism, etc.)
  - d. Development directly abutting Wilson Dam Road (not contextually appropriate and not a great market opportunity)



### 03.2 Discussion Points

NOTE: These discussion points are based on the Planning Team's understanding of the Reservation Site combined with local input. This understanding is based on several factors, including but not limited to an investigation of the physical constraints of the site; the national, regional and local economic conditions, but current and projected; and, multiple interviews and discussions with local community leaders and interested organizations and individuals. These principles have been outlined solely to help guide discussion of the future of the site, and should by no means be interpreted as "hard and fast" guidelines for redevelopment.

#### 03.2.1 General Consensus Points

- The entire area of the reservation north of Reservation Road will be conserved.
- Economic development is the primary driver for the remainder of the site.
- A plan is needed to guide redevelopment.
- The plan should take into account the best interests of all of the surrounding communities, not just those that border the site.
- The rail and water access are assets, but the lack of highway access is problematic to larger-scaled development.
- The location relative to the region is very valuable.
- This project should be used as a unifying element among the communities.
- It will be difficult to attract/recruit a single-user/developer for a site this large. It may be more feasible to focus on multiple uses for the site, and to potentially subdivide it based on a master plan.
- While the site can be a catalyst for economic development and job creation, more detail needs to be considered with regard to timeline and desired targets.
- Whatever is developed on the site must be sensitive to its surroundings; that is, the existing neighborhoods and the commercial corridors.
- Some sort of design standards should be used to guide redevelopment, regardless of who or what oversees the process.
- Commercial/retail uses for the site should be considered strategically, and should not "cannibalize" existing commercial.
- Look for opportunities to add public amenities on the site. There may be potential for added tourism, especially in the recreational and musical genres.
- The historic buildings add value, but can make redevelopment more challenging.
- Be careful of potential traffic issues generated by new development.

### 03.2.2 Points for Debate

- Who or what entity should oversee the redevelopment of the site?
- How would future revenues be distributed among the communities?
- Does there need to be a consistent “theme” for the Reservation, or can it consist of multiple, discrete “parts”?

### 03.2.3 Ideas for Potential Program

- “Town Center”. Recognizing that Muscle Shoals in particular lacks a “downtown”, there is potential to develop one here, particularly around the historic buildings.
- Office/Office Park. Decent market and potential to create a white-collar job center.
- Research Park. Similar to office park, with a more targeted client.
- Industrial. Most likely light industrial, a smaller-scale, potentially multi-tenant clientele.
- Institutional. There is potential for an educational, hospital or other government tenant, and the location is a plus. These uses tend to support ancillary development.
- Hospitality. A secondary development piece, would work in concert with tourism and office/research uses.
- Municipal. A central location for government/public service functions.
- Commercial. Limited market currently, but may improve if other program is realized. Likely more localized or “nodal”.
- Recreation. Look at trails or additional greenspace or open space sites.
- Wildlife/Riparian Areas. Are there other natural preservation areas that should be targeted south of Reservation Road?
- Single-family housing. Soft market, but would be attracted to potential amenities. Public input discouraged this use.
- Multi-family housing. Stronger market, and would also like the added trails, parks and any potential cultural amenities. Currently, the amount of residential housing may be at capacity, more focused analysis would be needed to determine whether this would be a viable use.
- Senior Housing/Assisted Living. Good market, focus on accessibility.

### 03.3 Guiding Principles

1. The primary strategy should consist of a strong focus on economic development and job creation. The benefits should be felt by all of the Shoals communities.
2. Recognize and celebrate the incredibly important history of the site (physical, cultural and social) and the corresponding passion and emotion of the local citizenry by conserving/preserving portions of the site. The entire area north of Reservation Road is slated for conservation, and some may extent south of the road, and around most of the periphery of the site.

#### 03.3.1 Natural Areas

One of the most notable existing conditions is the prevalence of forested areas and grasslands. It is possible for sensitive redevelopment to maintain much of that sense, even when implementing extensive redevelopment. What follows are some strategies to help achieve that balance between the man-made and natural environments.

- a. Maintain "conservation" areas that are environmentally sensitive and preserved. Natural areas are to include natural habitats/sanctuaries with public access. In order to preserve habitats and eco-systems, conservation areas should ideally be contiguous and interconnected across the site with no small "conservation islands" created.
- b. Existing public greenway trails should be preserved and maintained, and should allow for relocation north of Reservation Road, as required.
- c. New public greenway trails should be extended south of Reservation Road - both within conservation areas and within redevelopment areas - to create a fully integrated and connected system across the site.
- d. New public greenway trails should be extended beyond the site into surrounding communities at key locations. (Responsibility/funding TBD)
- e. Investigate future status for the Chestnut Research Area. (Ownership/disposition process TBD)
- f. Preserve the natural character of the Reservation Road corridor by restricting new development and/or clear-cutting of existing trees in a zone that extends a minimum of 150 feet on the south side of Reservation Road.
- g. Existing Solid Waste Management areas to be maintained within the overall Natural Area

## Green Space Map



### Conservation Areas

All areas north of Reservation Road are designated for conservation. Conservation areas to include natural habitats/sanctuaries with public access.

### Existing Trails

Existing public trails should be preserved / maintained, and should allow for trail relocation to the north side of Reservation Road as needed

### Habitat Loop

In order to preserve habitats and eco-systems, conservation areas should ideally be contiguous and interconnected across the site with no small "conservation islands" created.

### New Trails

New public trails should be extended south of Reservation Road - through conservation areas and redevelopment areas - to create a fully integrated and connected system across the site

### Chestnut Research Area

Study options for future

### Solid Waste Management

Existing areas to be maintained within the overall "Natural Conservation Area"

### Reservation Road

Preserve the natural character of this corridor by restricting new development within a zone that extends a minimum of 100 feet on the south side of Reservation Road

### External Connections

New public greenways should extend into the surrounding communities at key locations

### 03.3.2 Cultural Conservation

A prevalent theme during public outreach phase was strength and depth of the cultural, social and historical ties that exist between the Reservation and the community. These ties can be respected within the framework of new development, and indeed they may improve the reception to and affinity for the development among the surrounding citizenry. Below are some approaches to help blend new growth in with the historic fabric of the site.

- a. Maintain the existing cultural designations/features including the stops on the birding trail and the overall “stop” on the National Music Heritage Trail.
- b. Consider the conservation and maintenance of two existing historic cemeteries and whether to coordinate public access for cultural tourism.
- c. Preserve the existing historic buildings/district on-site commensurate with the completed Adaptive Reuse Study.
- d. Create an officially designated central historic district (“inside the fence”).

Cultural Conservation Map



**Existing Features**

Maintain the existing cultural designations/features including the stops on the birding trail and the overall "stop" on the National Music Heritage Trail

**Historic Cemeteries**

Consider the conservation and maintenance of two existing historic cemeteries and whether to coordinate public access for cultural tourism.

**Historic Buildings**

Preserve the existing historic buildings/district on-site commensurate with the completed Adaptive Reuse Study

**Central District**

Create an officially designated central historic district ("inside the fence")



### 03.4 Draft Plan Framework

#### 03.4.1 Redevelopment Focus Areas

Based on input from the community and an assessment of the physical and economic conditions particular to the site and the region, several redevelopment areas have been identified. Each has particular strengths and challenges, but as shown they are all independently viable. Within this framework are shown two distinct areas: Primary and Secondary.

##### PRIMARY REDEVELOPMENT AREAS

- a. Dedicate short term resources and energy to marketing “Primary Redevelopment Areas” that would be individually or collectively sold to interested parties.
- b. Develop a professional marketing and branding plan (including collaterals) to effectively market the site to a wide audience and ensure adequate economic return.
- c. Primary Redevelopment Areas:
  - i. Central District: Generally defined as the area south of already developed “inside the fence.” Multiple access points possible from Reservation Road and potential new connection points. Redevelopment in this area would have a focus on adaptive reuse of existing historic resources but could also include additional infill development to the extent feasible from physical, market and compatibility perspectives.
  - ii. NE District: Generally defined as the area to the north and east of the Central District. Has access from Reservation Road and perhaps from Wilson Dam Road (depending upon intensity of development) but does not have direct frontage on either. Focus on new development.
  - iii. SW District: Generally defined as the area on the southwest corner of the site with direct access and visibility possible from Woodward Avenue and 2nd Street. Focus on new development but adaptive reuse opportunities may also exist.

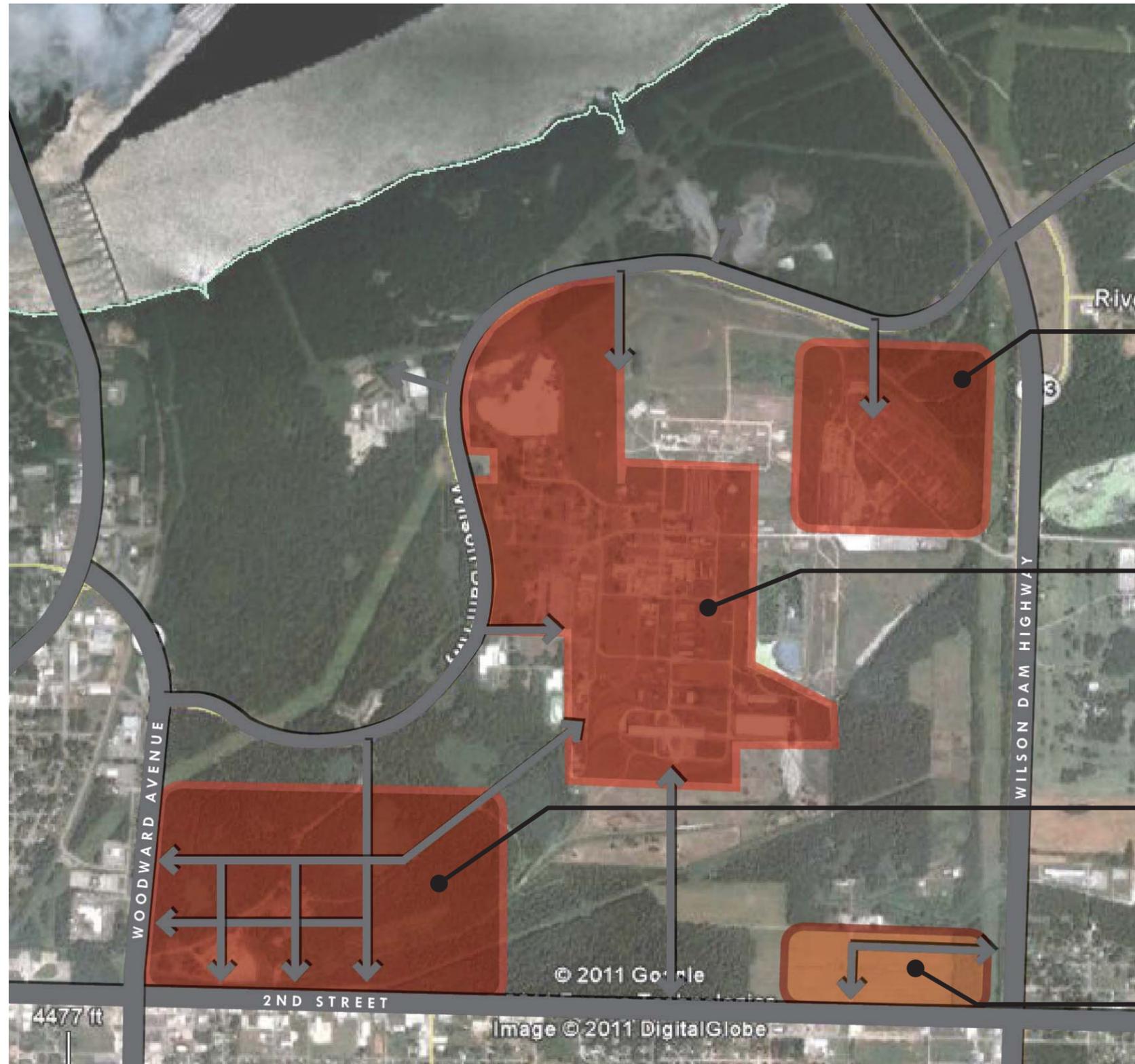
##### SECONDARY REDEVELOPMENT AREA

- a. Given current market conditions and the desire to not “cannibalize” existing land uses external to the reservation, this site would NOT be the focus of short term marketing for redevelopment.
- b. However, given its prime location and high visibility, in the longer term this area could eventually be considered for redevelopment but only for “unique opportunities” that are not present elsewhere in the broader Shoals region.
- c. Avoid marketing this site for redevelopment until all primary redevelopment focus areas are exhausted and/or proximate off-site corners/neighborhoods are developed.
- d. Secondary Redevelopment Area:
  - i. SE District: Generally defined as the area on the southeast corner of the site with direct access and visibility from Wilson Dam Road and 2nd Street.

**Redevelopment Focus Areas Map**

**PRIMARY FOCUS AREAS**  
 Dedicate short term resources and energy to marketing three "Primary Redevelopment Areas" that would be individually or collectively sold to interested parties

**SECONDARY FOCUS AREA**  
 Given current market conditions, this site would NOT be the focus of short term marketing for redevelopment



**Marketing/Branding**  
 Develop a professional marketing and branding plan (including collaterals) to effectively market the site to a wide audience and ensure adequate economic

**Northeast District - +/-150 acres**  
 Generally defined as the area to the north and east of the Historic District. Has access from Reservation Road and perhaps from Wilson Dam Highway (depending upon intensity of development) but does not have direct frontage on either. Focus on new development

**Central District - +/-270 acres**  
 Generally defined as the area south of already developed "inside the fence." Multiple access points possible from Reservation Road and potential new connection points. Redevelopment in this area would have a focus on adaptive reuse of existing historic resources but could also include additional infill development to the extent feasible from physical, market and compatibility perspectives.

**Southwest District - +/-250 acres**  
 Generally defined as the area on the southwest corner of the site with direct access and visibility possible from Woodward Avenue and 2nd Street. Focus on new development but adaptive reuse opportunities may also exist.

**Southeast District - +/-50 acres**  
 Generally defined as the area on the southeast corner of the site with direct access and visibility from Wilson Dam Highway and 2nd Street. Focus on new development

### 03.4.2 Development & Design Criteria

Regardless of which part of the site develops first, and regardless of the particular program, there are some essential criteria that can be applied universally to ensure quality growth that meshes well with the surrounding community fabric.

- a. Land Use: New development and adaptive reuse efforts should focus on specific land uses/sectors that maximize the economic value of the site, create/incent employment and take advantage of the unique attributes and history of the site. This may include:

- i. Research & Development (particularly in the areas of energy and ecology)
- ii. Tourism (particularly energy related and eco-tourism)
- iii. Education
- iv. Civic/Cultural/Institutional
- v. Industry/Economic Development (particularly with a focus on employment and green industries)

Development and adaptive reuse efforts should not focus on uses that do not yield a high economic, cultural or social value, particularly where they detract from other existing opportunities in the Shoals region. Examples may include: residential uses, "strip" or "outparcel" style development or any small-scale/small-site development in general. Such sensitivity will help avoid "cannibalizing" the market within the broader community.

- b. Vehicular Connectivity: New development should seek to provide multiple vehicular connections between redevelopment focus areas on site. This will help to provide multiple choices, disperse traffic and reduce congestion – both on-site and on adjacent roadways.
- c. Pedestrian Connectivity: New development should seek to be fully walkable and compact so as to limit internal vehicular trips. In addition, separated development sites should be connected externally through sidewalks and a trail system.
- d. Parking: Within development sites, parking should be shared among uses to the extent feasible in order to reduce the need for vast seas of surface parking. In addition, where economically feasible, centralized parking structures/decks should be utilized to reduce the footprint required for parking and to encourage walkability.
- e. Sustainability Features: New development and adaptive reuse efforts should focus on green building standards. In addition, new development should avoid "clear cutting" to the greatest extent feasible and seek to preserve the natural landscape.

## Development/Design Criteria



### Land Use

New development and adaptive reuse efforts should focus on specific land uses/sectors that maximize the economic value of the site, create/incent employment and take advantage of the unique attributes and history of the site. This may include:

- i. Research & Development (particularly in the areas of energy and ecology)
- ii. Tourism (particularly energy-related and eco-tourism)
- iii. Education
- iv. Civic/Cultural/Institutional
- v. Industry/Economic Development (particularly with a focus on employment and green industries)

Development and adaptive reuse efforts should not focus on uses that do not yield a high economic, cultural or social value, particularly where they detract from other existing opportunities in the Shoals region. Examples may include: residential uses, “strip” or “outparcel” style development or any small-scale/small-site development in general. Such sensitivity will help avoid “cannibalizing” the market within the broader community.



### Vehicular Connectivity

New development should seek to provide multiple vehicular connections between redevelopment focus areas on site. This will help to provide multiple choices, disperse traffic and reduce congestion – both on-site and on adjacent roadways



### Pedestrian Connectivity

New development should seek to be fully walkable and compact so as to limit internal vehicular trips. In addition, separated development sites should be connected externally through sidewalks and a trail system



### Parking

Within development sites, parking should be shared among uses to the extent feasible in order to reduce the need for vast seas of surface parking. In addition, where economically feasible, centralized parking structures/decks should be utilized to reduce the footprint required for parking and to encourage walkability



### Sustainability

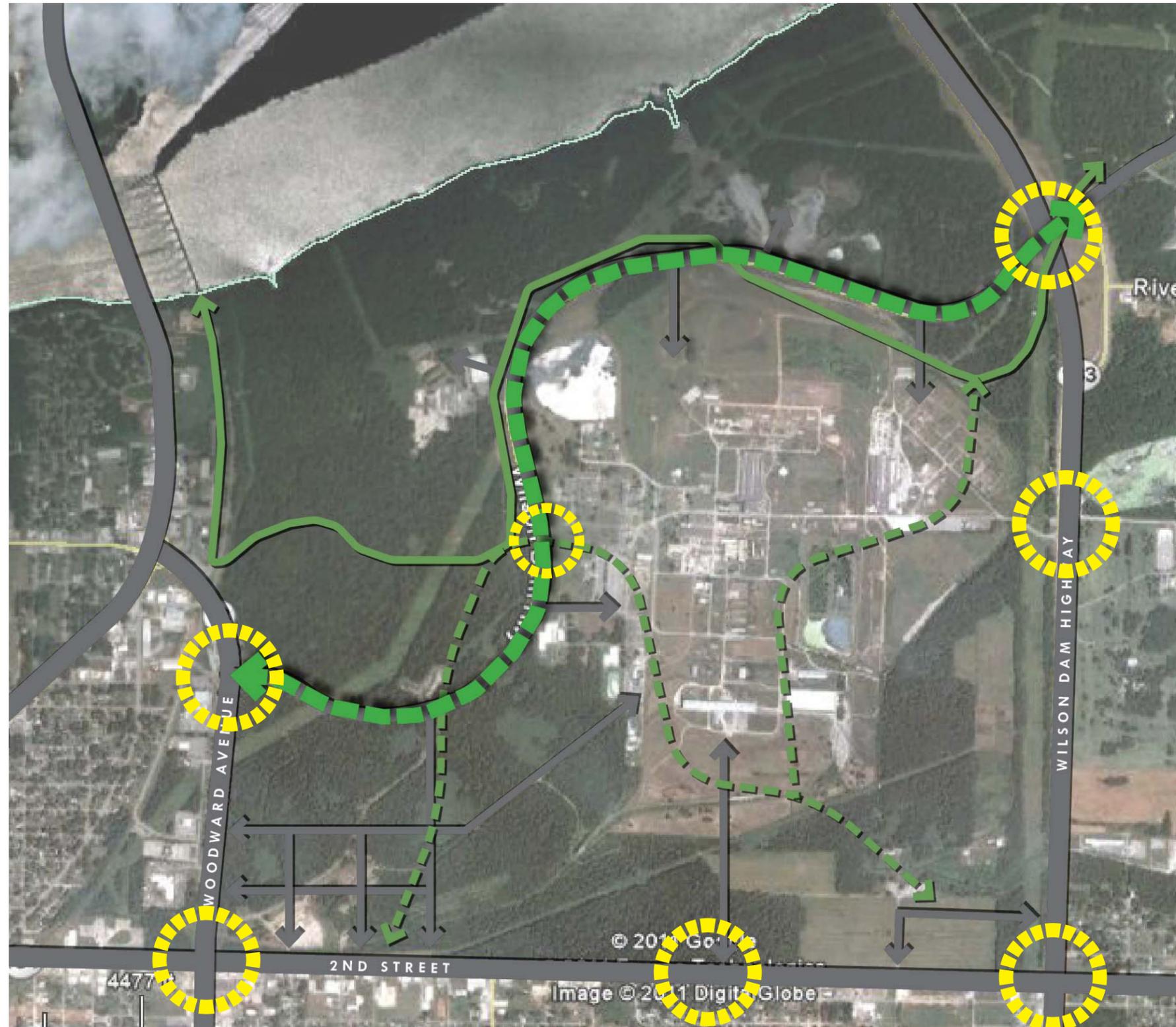
New development and adaptive reuse efforts should focus on green building standards. In addition, new development should avoid “clear cutting” to the greatest extent feasible and seek to preserve the natural landscape

### 03.4.3 Transportation Enhancements

Recognizing that with growth comes traffic, it is advisable to “get in front of” any issues by identifying and planning for potential hot spots. This may involve some more detailed analysis of projects as they’re presented, but it would also suggest improvements to key intersections before the demand is in place.

- a. Transportation Analysis: Conduct an assessment of area traffic patterns both on-site and on adjacent roads to determine a “base-line” of existing conditions.
- b. Using the base-line condition, evaluate future development proposals on a case-by-case basis to fully assess the potential impact on the overall system. Use the resulting information to plan for needed improvements to support development including, but not limited to intersection enhancements, turning/deceleration lanes, new roadways (internal to the TVA site), etc.
- c. Potential Transportation Enhancements could include:
  - i. Intersection improvements at 2nd Street and Wilson Dam Highway (pedestrian and operational)
  - ii. Intersection improvements at Wilson Dam Highway and Reservation Road (significant reconfiguration possible).
  - iii. Intersection improvements at Woodward Avenue and 2nd Street (pedestrian and operational).
  - iv. Intersection improvements at Woodward Avenue and Reservation Road.
  - v. New Signalized intersection at Firestone Avenue and 2nd Street.
  - vi. New Entry road at Firestone Avenue and 2nd Street (i.e., extending Firestone Avenue to the north – will require environmental sensitivity).

## Transportation Enhancements Map



### Transportation Analysis

Conduct an assessment of area traffic patterns both on-site and on adjacent roads to determine a "base-line" of existing conditions

### Future Development Analysis

Using the base-line condition, evaluate future development proposals on a case-by-case basis to fully assess the potential impact on the overall system. Use the resulting information to plan for needed improvements to support development including, but not limited to intersection enhancements, turning/deceleration lanes, new roadways (internal to the TVA site), etc

### Potential Projects

Future Transportation Enhancements could include:

- i. Intersection improvements at 2nd Street and Wilson Dam Highway (pedestrian and operational)
- ii. Intersection improvements at Wilson Dam Highway and Reservation Road (significant reconfiguration possible).
- iii. Intersection improvements at Woodward Avenue and 2nd Street (pedestrian and operational).
- iv. Intersection improvements at Woodward Avenue and Reservation Road.
- v. New Signalized intersection at Firestone Avenue and 2nd Street.
- vi. New Entry road at Firestone Avenue and 2nd Street (i.e., extending Firestone Avenue to the north – will require environmental sensitivity).

### 03.4.4 Framework Plan

The design team synthesized the information gathered during the Conceptual Planning Analysis, and developed a Planning Strategy for the reservation. Our initial concept was to create a flexible framework for the study area, based on historic patterns, as well as guiding principles for Smart Growth and Sustainability. The intent for this framework was to synthesize the input from the community and the stakeholders, as well as accommodate the uses identified in the Market Assessment as well as the expected level of change in a plan that would be executed over the course of 15-20 years.

**Framework Plan**



**CULTURAL CONSERVATION**  
Acknowledge and commemorate the history and connections to the surrounding communities



**NATURAL CONSERVATION**  
Create a "development preserve" that maximizes conservation areas, and creates a consistent and interconnected natural environment



**PRIMARY REDEVELOPMENT FOCUS AREAS**  
Catalyze new growth in these areas first, balancing economic development and contextual growth



**SECONDARY REDEVELOPMENT FOCUS AREAS**  
May redevelop over the long term as market pressure increases, but should not be a short-term focus of redevelopment efforts



**TRANSPORTATION ENHANCEMENTS**  
Ensure that new development is accommodated by improving street, sidewalk and trail networks to suit



**DESIGN CRITERIA**  
Create a framework that guides the future development in terms of use, aesthetic, connectivity and sustainability



### 04.1 Future Development Guidelines

The Initial Market Assessment suggested that sustainability should be a cornerstone for the reservation redevelopment, and that some of the likely new users for the site may be new businesses in the sustainability field. The planning team felt that this type of user would likely be attracted to a location in a walk-able, vibrant, environmentally sustainable district, planned for a mixture of uses. There is considerable opportunity for this type of development to take place on the reservation.

Infrastructure that supports walkable communities can increase their economic competitiveness. Reducing automobile dependence by providing close proximities between job centers, housing and community function will make the community stronger in the future. Due to the prior industrial nature of the site, the character of the existing green spaces and the necessity for entirely new infrastructure on the site, it is ideally suited to showcase sustainable planning practices and increase its regional draw for new development. The long-term cost savings provided by energy efficient development can make new business more financially viable and supports the mission of TVA.

The guidelines do not require any specific standards be met, but encourage use of a rating system to provide third-party verification that measures have been employed successfully. The guidelines can be separated into neighborhood standards and building standards. The neighborhood standards apply to the planning and development of new infrastructure on the site. The building standards address the preservation of the historic structures on the site as well as new construction in the districts. The standards offer guidelines for the density of new construction, maintenance of open space, and character of new construction in each district.

#### 04.1.1 Guiding Principles

The Market Assessment suggests that sustainability should be a cornerstone for the reservation redevelopment, and that some of the likely new users for the site may be new businesses in the sustainability field.

*“As a major R&D campus, the reservation will draw the employment and households needed to support the development of residential, retail, hospitality, and other uses at the site. In order to transform the site into a major research and development campus with national draw, the campus should have a primary focus on innovation in the energy industry, leveraging the history of the site and legacy of the TVA”*

The planning team felt that this type of user would likely be attracted to a location in a walk-able, vibrant, environmentally sustainable district, planned for a mixture of uses. There is considerable opportunity for this type of development to take place on the reservation.

#### 04.1.1.1 Smart Growth Principles

Smart Growth is a concept that is being promoted nationally as an alternative to current development patterns, or “sprawl” to enhance resident health and quality of life in our communities. Smart Growth developments accomplish these objectives by creating more pedestrian oriented environments with a mixture of uses that are designed to preserve open space. The following is a list of the basic principles of Smart Growth, most of which are easily applicable to the Muscle Shoals Reservation:

- Mix land uses, to create better places to live and work.
- Take advantage of Compact Building Design and utilize higher densities to minimize impact on the land and preserve open space.
- Create a range of housing opportunities and choices to accommodate multiple income levels.
- Create walk-able communities in order to create better places and promote a healthy lifestyle.
- Foster distinctive, attractive communities with a “sense of place”, with standards for development and construction that respond to community values.
- Preserve open space (farmland, natural beauty, and critical environmental areas) and improve quality of life in our communities.
- Strengthen and direct development toward existing communities already served by infrastructure to better utilize existing neighborhood resources.
- Provide a variety of transportation choices.
- Make Development decisions predictable, fair and cost effective in order to engage the private sector in development.
- Encourage community and stakeholder collaboration to respond to community needs.

*from “Getting to Smart Growth II: 100 More Policies for Implementation”  
by the Smart Growth Network and the International City/County  
Management Organization at [www.smartgrowth.org](http://www.smartgrowth.org)*

#### 04.1.1.2 Planning Approach

The Planning team applied the principles of Smart Growth and developed the following set of overarching planning strategies for the reservation.

- Develop a set of interconnected walk-able districts on the site, including an Incubator district that encompasses the center of the historic nitrate plant and the majority of the existing structures on the reservation. The new districts would be centered on the incubator district and based on the potential uses identified in the Market Analysis and sized based on a 10 to 15 minute cross-district walk.
- Re-imagine the street framework in the Incubator District with new pedestrian-oriented street designs and usable public open space in order to take the most advantage of the existing structures and develop a sense of “place” at the heart of the reservation.
- Connect the district street network to the original historic street grids to the south, east and west of the site, and generate a new flexible, walkable block structure on the reservation. The proposed blocks are appropriately sized to create a safe pedestrian environment within in the districts, accommodate a variety of uses and parking on the blocks, as well as align with the existing historic block patterns to the South, East and West of the site.
- Integrate the new “edge districts” within the surrounding neighborhoods in order to reduce the traffic burden on the surrounding neighborhoods by creating numerous ways in and out of the reservation, placing cross-district connection streets inside the site, and developing direct connections to surrounding features, such as the center of Muscle Shoals. This would physically reinforce the importance of the continued development and improvement of the surrounding areas as the site is developed.
- Encourage density within in the connected Districts, and preserve the wooded, natural character of the site by growing “up” instead of “out”. The plan for the reservation promotes low rise and mid-rise vertically integrated mixed-use structures and multi-level single use structures within the districts. This level of density, combined with efficient shared-parking areas in order to meet or exceed the development program proposed in the market analysis while preserving open space both within the districts and in designated areas between the districts.
- Create public access to the River, and connect to the districts to the river with a network of multi-use trails as well as new streets designed with pedestrians in mind.



### 04.1.1.3 The LEED-ND Neighborhood Development Program

The Leadership in Energy and Environmental Design Rating System Program was developed by the US Green Building Council in collaboration with the Congress for New Urbanism and the Natural Resources Defense Council. The Program, in its pilot phase as of this writing, is intended to create a national rating system for neighborhood design to certify that the design and location of a development meets demonstrably high levels of environmental responsibility and sustainability. The program emphasizes compact, walk-able, vibrant, mixed-use design with strong connectivity in order to reduce urban sprawl and create more livable communities. Many of the objectives are similar to Smart Growth, and the rating system includes the following points:

- Smart Location and Linkage - encourage development in the most suitable locations from a sustainable standpoint, and encourage alternate transit
  - Wetland and Water Body Conservation
  - Brownfield Redevelopment
  - Create a Bicycle Network
- Neighborhood Pattern and Design - promote more vibrant, livable communities and encourage alternate transit and pedestrian-friendly development
  - Compact Development
  - Diversity of Uses
  - Walk-able Streets
- Green Construction and Technology – reduce the environmental impacts of new construction, conserve natural resources and reduce waste.
  - Reduced Water Use
  - Reuse of Historic Buildings
  - Infrastructure Energy Efficiency
  - Recycled Content in Infrastructure
- Innovation and Design Process – encourage innovative solutions to sustainable challenges and exceptional performance above the requirements of the rating system and

*From the Leadership in Energy and Environmental Design Rating System Pilot Program by the Congress for New Urbanism, Natural Resources Defense Council and the US Green Building Council*

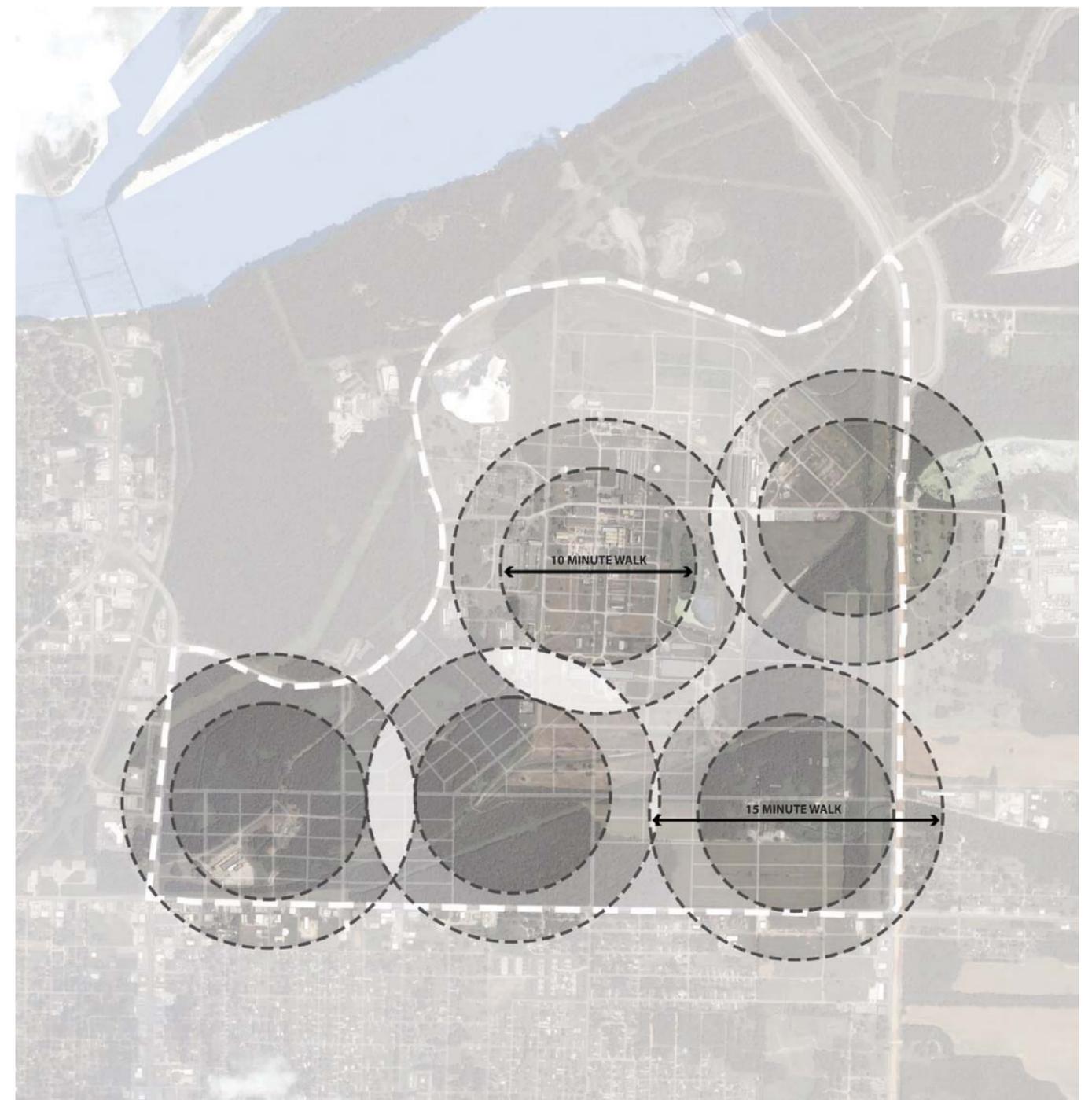
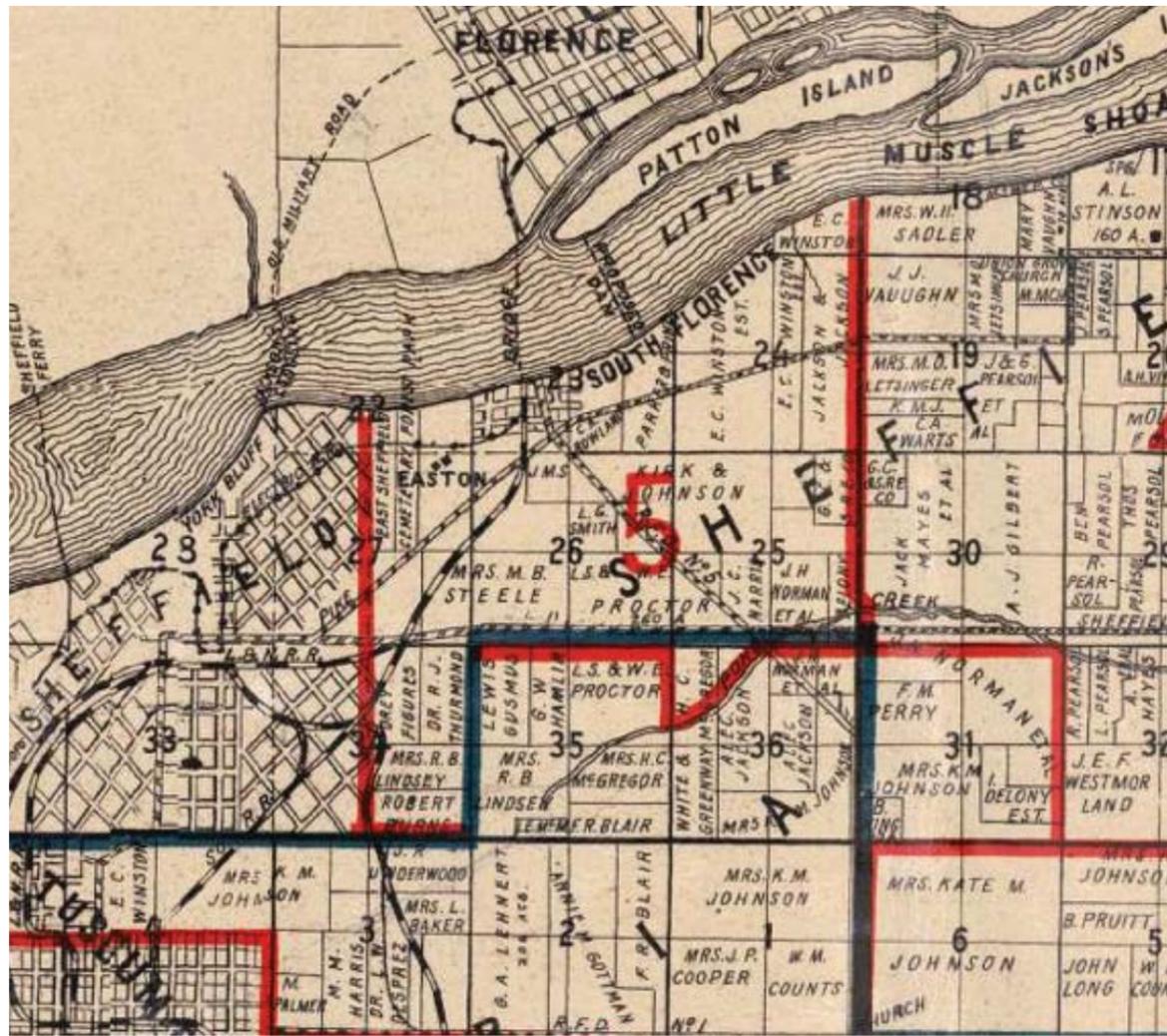
#### 04.1.1.4 Sustainable Planning Principles

These are some achievable ideas for developing the site in a sustainable manner. The planning team realized the opportunity on the reservation to develop a new model for sustainable development in the region. The following development and planning strategies are from the LEED-ND program, or from other recent sustainable development case studies.

- Remediation and re-use of the current Brownfield (former industrial) areas on the reservation to the extent possible is considered a far more sustainable approach than new development on Greenfield sites (currently vacant land formerly used for farming, natural areas or recreation).
- Adaptive re-use of the existing historic structures is considered more sustainable due to the decrease in waste from demolition and the reduction in new construction, thereby reducing energy consumption, material use as well as waste generation from construction activities.
- Plan for Mixed-uses in the district, Encourage Alternative Transit. This strategy will reduce some of the negative impacts of growth as well as relieve the traffic burden from new development both within the site and from the site to the surrounding areas.
- Use compact planning principles to preserve open space on the reservation for Farming, Wetlands, and Recreational uses. This can be accomplished by promoting low rise and mid-rise vertically integrated mixed-use structures and multi-level single use structures within the districts.
- Develop High-Performance new construction and rehabilitation standards for the design of new structures and adaptive use of the existing structures on the site, such as the USGBC LEED rating system, or the EarthCraft House program. This will encourage energy efficient design, water use reduction, and the use of sustainable or recycled materials
- Develop high performance standards for new or replacement infrastructure (Sustainable Streetscape Designs, Pervious Paving, Recycled Materials, Local Materials, Energy Efficient Infrastructure)
- Use planning and design to encourage pedestrian activity on the site in order to restore and develop a new walk-able street grid network, as well as develop a recreational network of walking paths and trails.
- Develop on-site facilities for both Recycling and Environmental Education
- Utilize innovative storm water management techniques, such as bio-swales, to improve water quality and reduce the speed of run-off from the site, and reduce the quantity and size of underground storm water piping.
- Develop a rainwater harvesting network on the site in order to collect rainwater on the site for irrigation use, and reduce the storm water outflow from new development.

### 04.1.1.7 **Street Network**

The planning team approached the study area with the concept that the “public realm” improvements, including the streetscapes and open spaces would help support the existing structures to define a distinct character for new development on the site. A new block structure, created by these new and re-imagined streets and open spaces could be established in order to serve as a framework for a variety of potential uses on the site. This proposed block structure would respond to the historic patterns located within and at the edges of the study area, address the various opportunities and constraints on the site, as well as adapt to the inevitable changes in planned and actual land uses over time.



### Walkability Diagram

The circles superimposed on this aerial view of the reservation represent 10-15 minute walking travel distances, a common unit of measure established by urban planners. These areas also represent the size of a typical urban district, and suggest that the study area is best subdivided into five interconnected districts, including the central historic portion of the site.



### 04.2 District Guidelines

#### 04.2.1 Central District

Located on approximately 20 acres in the center of the Reservation, the Central District is made up primarily of the historic structures that are part of this study, indicated on the following maps, as well as a few others in the general area. It can be generally defined as the area south of already developed "inside the fence". Multiple access points are possible from Reservation Road with the opportunity for potential new connection points. Redevelopment in this area would have a focus on adaptive reuse of existing historic resources, but could also include additional infill development to the extent feasible from physical, market and compatibility perspectives.



#### Central District

Total Area:	238 Acres
Proposed Uses:	Office, Light-Industrial, Education, Incubator, Sustainable Industries
Existing Structures:	265,650 SF
New Construction:	471,400 SF
Open Space:	68 Acres

#### Northwest District (Adjacent to Central District)

Total Area:	80 Acres
Proposed Uses:	Office, Light-Industrial, Educational
New Construction:	435,500 SF
Open Space:	20 Acres





NEW PARK SPACE

NEW STREETScape

COLLECTOR

COLLECTOR

SERVICE DRIVE

SERVICE DRIVE

COLLECTOR

LOCAL ROAD

LOCAL ROAD

LOCAL ROAD

GREENSPACE

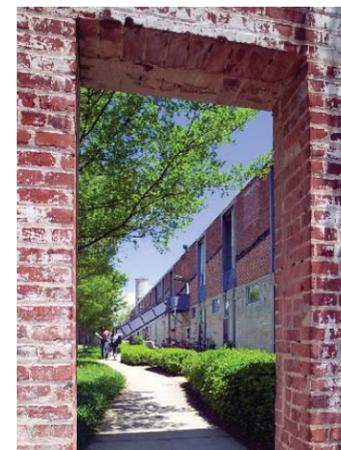
PARKING

RENOVATED ADAPTED EXISTING STRUCTURES

NEW STRUCTURE

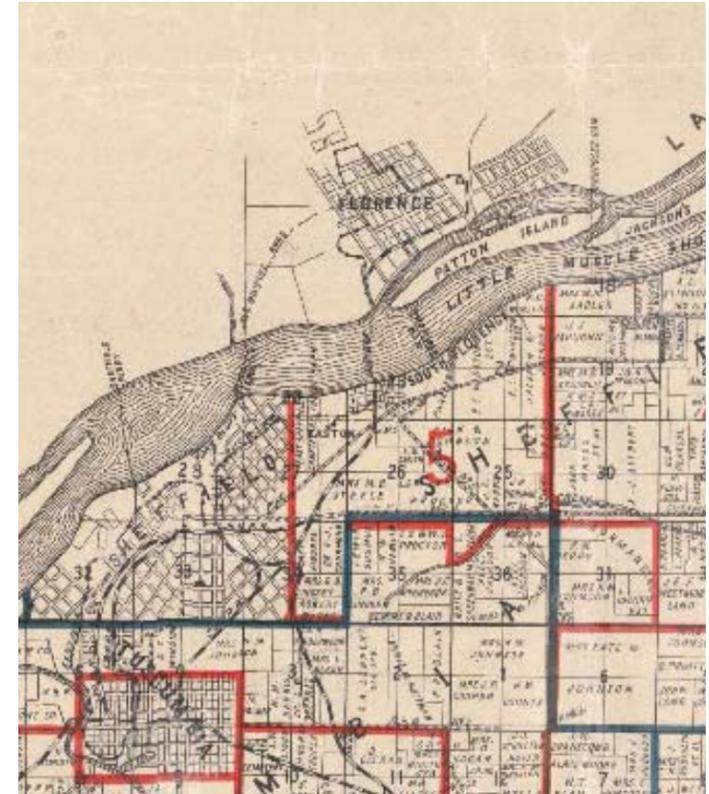
NEW STREETScape

Central District Enlarged Concept Plan



### 04.2.1.1 Central District Guidelines

The existing structures are unique historic resources that stand as testament to an important phase of national history. Their long term preservation is an important goal that will require them to be renewed and repurposed to serve new functions that are economically viable in today's Shoals community. The adaptation of the buildings to serve these uses will require some modification to these structures. This work will require striking a careful balance between making the necessary modifications and retaining the important character-defining qualities of each resource. To achieve this goal, a rehabilitation approach as defined by the Secretary of the Interior's Standards for the Treatment of Historic Properties should be utilized. In the Standards, rehabilitation is defined as "the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values".



These design guidelines are based on preserving and adaptively re-using the historic structures at the center of the reservation with a focus on sustainability. The guidelines are intended to accommodate future expansion in this district and incorporate new structures, services and parking into the district at a scale that would complement the existing structures. The district would serve as the center of the development on the reservation. The plan for the district re-imagines the original network of streets and rail lines in the district, and creates meaningful open space to define the district as the center of the Reservation. The streets and sidewalk areas would be designed with street trees, street furniture, lighting and crosswalk identification details to help reinforce the area's identity. Existing structures are promoted through urban design techniques that bring focus to the history and character of the buildings as they are integrated into the new street network.

Utilizing the concentration of existing structures and taking advantage of their historic nature can establish an area that provides a unique sense of place. The distinctive character of these buildings and their ability to be adapted to a number of uses, make for an opportunity to create flexible and creative spaces that typically draw high-tech and design related professionals, among other potential users. Along with the creative office uses, support activities such as coffee shops, restaurants, dry cleaners and other support services could be created within the building structures.

Design guidelines are widely used around the country by Historic Preservation Commissions in order to promote appropriate rehabilitation and new construction in historic districts. The connection to sustainability is a more recent development, as the National Trust for Historic Preservation, the National Park Service, state and local governments have focused more attention on the logical connection between historic preservation and sustainability. Both are based on the ethic of long-term stewardship of the built and natural environment through the practice of reusing, recycling and retaining as much of the built and natural environment as possible. Communities around the country are increasingly making the connection that preservation and maintenance of historic buildings is an essential part of a sustainable community. Cities and regions are also taking an increasingly proactive and innovative approach to promoting more sustainable development patterns that encourage higher densities, mixed-use development and increased walkability.

Sustainable development should go beyond environmental sustainability and take into account social and economic sustainability. Historic Structures are an important part of our nation's heritage.



### 04.2.1.1.1 Creating the Historic District

The creation of an historic district provides the opportunity for additional protection for historic structures. District design guidelines can maintain a sense of place and support the character, community and visual appeal of the district. Protected historic districts around the nation tend to draw economic activity, as they are good places to live or work and can be great places to visit. Creation of the historic district makes projects in the district potentially eligible for Historic Tax Credit financing, using the 20% federal tax credit for rehabilitating historic buildings. More information about this program is available through the National Park Service Website, [www.nps.gov](http://www.nps.gov) see Incentives: A Guide to the Federal Historic Preservation Tax Incentives Program for Income-Producing Properties.

Design guidelines are qualitative statements that address the desired character of development in the historic district. Their qualitative nature is intended to provide flexibility for developers and designers of new projects in the district. These guidelines were developed in order to ensure objectivity as well as consistency in the decision-making process, and to encourage creative and compatible new development within the district. They are intended to guide exterior alterations and preservation of existing buildings, horizontal and vertical additions to existing structures and new construction.

It is important to establish an entity, either new or existing, to perform design review, enforce specific design requirements, and follow a clear design review process. The Historic Sheffield Commission is an existing entity in the area that could serve in this role.

The Central District Design Guidelines are based on the Secretary of the Interior's Standards for The Rehabilitation of Historic Properties, published by the National Park Service.

These Design Guidelines apply to all project types. They are intended to lead and guide the developer and designer, and are not meant to require specific solutions or to address rare instances. The advice of qualified historic preservation professionals should be obtained early in the planning stage of a project in the district, including new construction. Such professionals may include architects, architectural historians, engineers, archeologists, and others who have experience working with historic buildings.

#### District Boundary

Refer to the map on page 41 for the boundary of the historic district, and the map on page 61 for eligibility of the existing structures.

**National Register Eligibility**  
 The following list and map documents NRHP eligibility for each resource included in this study.

**Buildings Assessed**

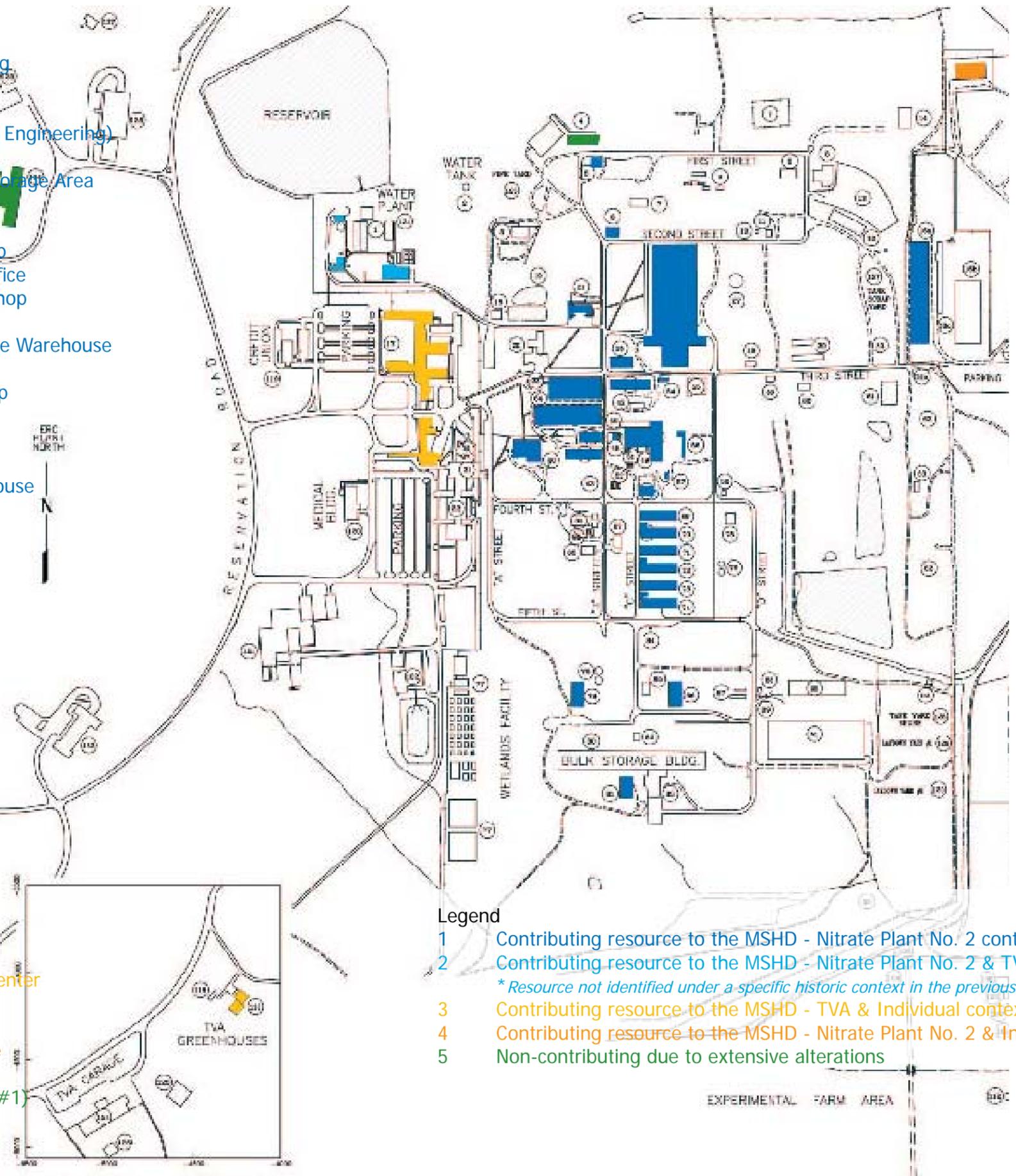
- 5 Drum Storage Area Building
- 6 R/M Lab
- 16 Power Service Shop No. 2
- 21 Old Medical Building (Field Engineering)
- 22 L/N Building
- 23 L/N Power Service Shop Storage Area
- 24 L/N Warehouse No. 4
- 25 Warehouse 2
- 26 Grounds Maintenance Shop
- 33 Shipping and Receiving Office
- 34 Instrumentation/Electric Shop
- 35 Chemical Plant Warehouse
- 36 Projects Operations Storage Warehouse
- 37 Machine Shop
- 38 Gas and Diesel Repair Shop
- 39 Engineering Lab
- 41 Sheetmetal Shop
- 42 Pipe Shop
- 44 Project Operations Bath House
- 47 Pilot Plant Building
- 48 Paint Storage Building
- 50 Autoclave Building
- 53 Tin Shop
- 54 Grinding Building
- 56 Boiler House
- 57 Substation No. 2
- 68 Substation No. 4 & 5
- 69 Catalyzer Building No. 1
- 70 Catalyzer Building No. 2
- 71 Catalyzer Building No. 3
- 72 Catalyzer Building No. 4
- 73 Catalyzer Building No. 5
- 74 Catalyzer Building No. 6
- 79 3A Building
- 81 5A Building
- 86 2A Building

1 Water Plant (4 Buildings)

17 Environmental Research Center  
 118 Green House

15 PDW Receiving Warehouse

4 Switch House (Substation #1)  
 134 Office Service Warehouse



- Legend**
- 1 Contributing resource to the MSHD - Nitrate Plant No. 2 context
  - 2 Contributing resource to the MSHD - Nitrate Plant No. 2 & TVA context\*  
 \* Resource not identified under a specific historic context in the previous studies
  - 3 Contributing resource to the MSHD - TVA & Individual context
  - 4 Contributing resource to the MSHD - Nitrate Plant No. 2 & Individual context
  - 5 Non-contributing due to extensive alterations

Summary of Findings

EXPERIMENTAL FARM AREA

## Architectural Building Condition Summary

The following list and map documents the overall building condition rating for each resource included in this study.

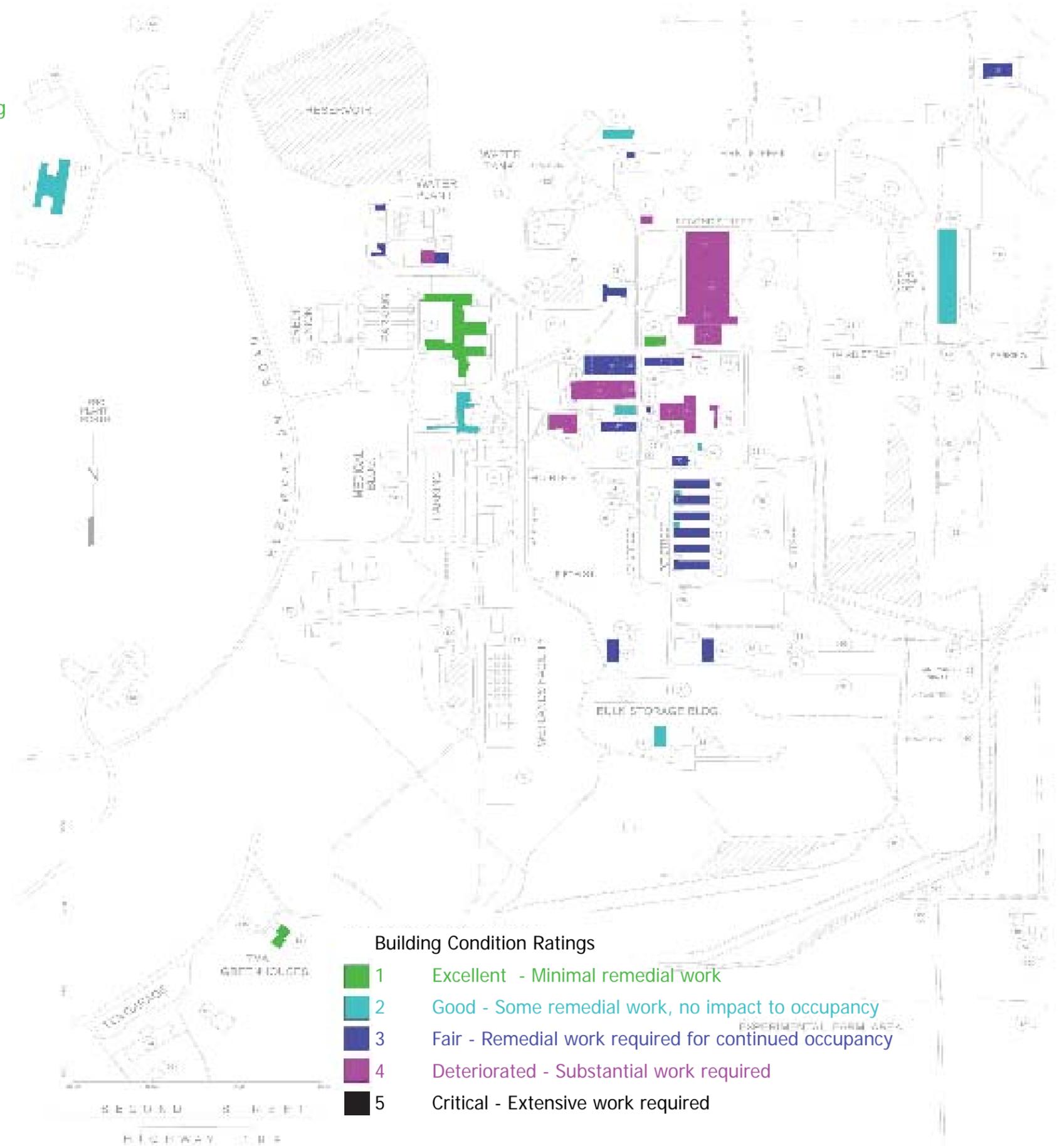
### Buildings Assessed

- 17a Environmental Research Center/Service Building
- 25 Project Operations Office Building
- 118 Greenhouse

- 4 Switch House (Substation #1)
- 16 Power Service Shop No. 2
- 17b Environmental Research Center
- 41 Sheetmetal Shop
- 57 Substation No. 2
- 68 Substation No. 4 & 5
- 81 5A Building
- 134 Office Service Warehouse

- 1 Water Plant (3 Buildings – 01a, 01b and 01c)
- 5 Drum Storage Area Building
- 6 R/M Lab
- 15 PDW Receiving Warehouse
- 21 Old Medical Building (Field Engineering)
- 33 Shipping and Receiving Office
- 34 Instrumentation/Electric Shop
- 35 Chemical Plant Warehouse
- 36 Projects Operations Storage Warehouse
- 42 Pipe Shop
- 44 Project Operations Bath House
- 48 Paint Storage Building
- 53 Tin Shop
- 69 Catalyzer Building No. 1
- 70 Catalyzer Building No. 2
- 71 Catalyzer Building No. 3
- 72 Catalyzer Building No. 4
- 73 Catalyzer Building No. 5
- 74 Catalyzer Building No. 6
- 79 3A Building
- 86 2A Shop

- 1d Water Plant (1 Buildings – 01d)
- 22 L/N Building
- 23 L/N Power Service Shop Storage Area
- 24 L/N Warehouse No. 4
- 26 Grounds Maintenance Shop
- 37 Machine Shop
- 38 Gas and Diesel Repair Shop
- 39 Engineering Lab
- 47 Pilot Plant Building
- 50 Autoclave Building
- 54 Grinding Building
- 56 Boiler House



04

# Adaptability Summary

The following list and map documents relative adaptability/flexibility for each resource included in this study.

## Buildings Assessed

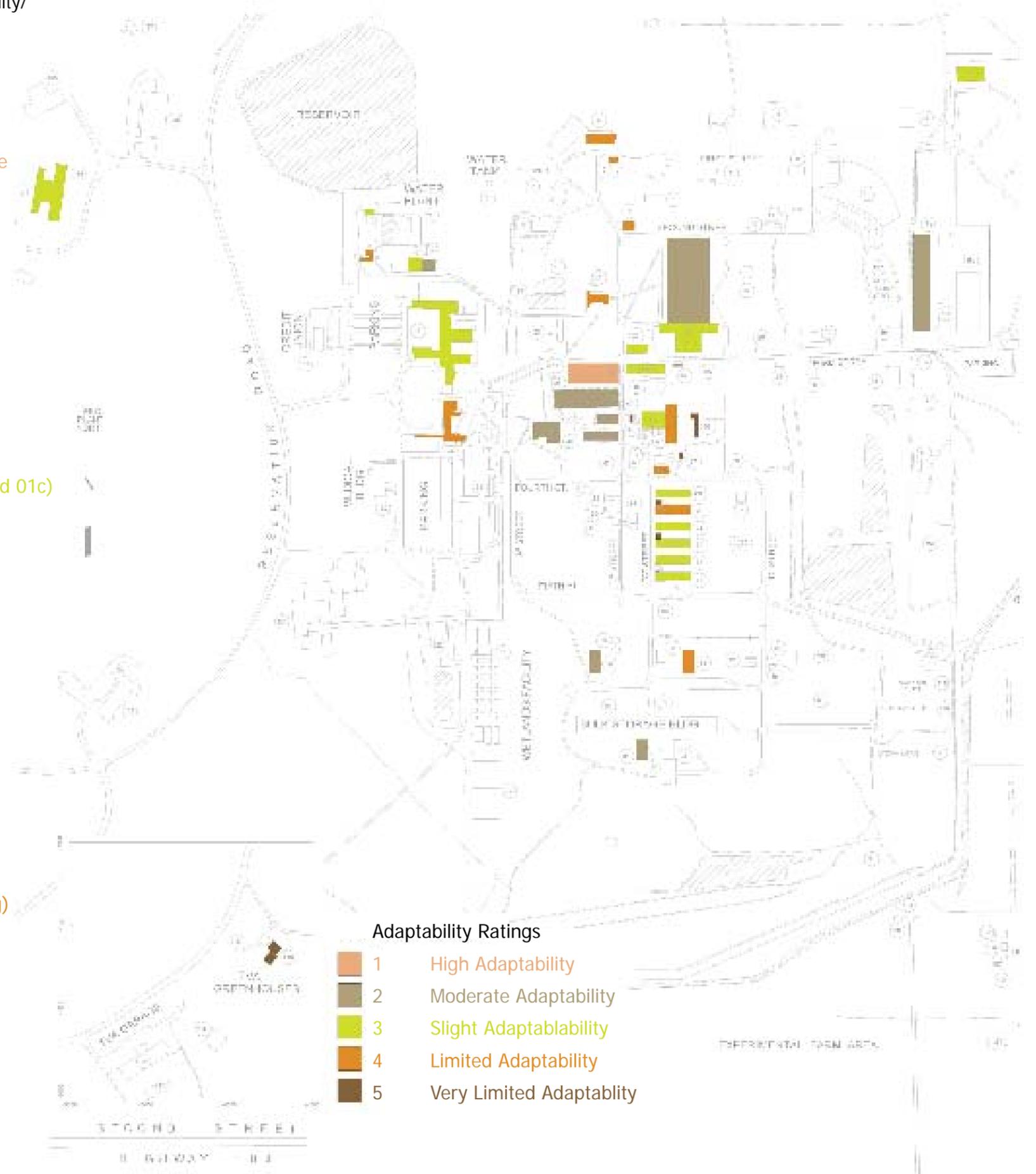
- 33 Shipping and Receiving Office
- 34 Instrumentation/Electric Shop
- 35 Chemical Plant Warehouse
- 36 Projects Operations Storage Warehouse

- 1d Water Plant (1 Buildings – 01d)
- 15 PDW Receiving Warehouse
- 16 Power Service Shop No. 2
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- 23 L/N Power Service Shop Storage Area
- 37 Machine Shop
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- 81 5A Building
- 134 Office Service Warehouse

- 17b Environmental Research Center
- 21 Old Medical Building (Field Engineering)
- 53 Tin Shop
- 50 Autoclave Building
- 54 Grinding Building
- 70 Catalyzer Building No. 2
- 86 2A Shop

- 4 Switch House (Substation #1)
- 48 Paint Storage Building
- 56 Boiler House
- 57 Substation No. 2
- 68 Substation No. 4 & 5
- 118 Green House



### 04.2.1.1.2 Historic Context

The buildings on the Muscle Shoals Reservation stand as the most tangible reminder of an important segment of our nation's history. Collectively they represent a succession of engineering and research related activities and accomplishments that contributed to the knowledge base and continued development of defense, agriculture and energy.

The buildings in the historic district generally fall within two groups: those built in the early twentieth century as a part of Nitrate Plant No. 2, later becoming the National Fertilizer Development Center (NFDC), and those built by the Tennessee Valley Authority in the mid-twentieth century. Nitrate Plant No. 2, was constructed between February and October 1918 by the U.S. War Department to produce nitrates for World War I munitions. History indicates that the Nitrate Plant was being tested at 20 percent capacity when the armistice was signed in November 1918 ending World War I, placing the plant on standby due to the reduction in need for large quantities of munitions-grade nitrate. In 1933, TVA was created and as a part of the TVA Act, acquired the facilities (including the Nitrate Plant) at Muscle Shoals. Work began immediately to modify the nitrate facilities to produce fertilizers. During WWII the plant supplied more than 60% of the elemental phosphorus needed for munitions and the facilities produced more than 200,000 tons of calcium carbide for the manufacture of synthetic rubber. Following the war the TVA expanded the research and development activities at the NFDC complex. In 1990, the NFDC was renamed the National Fertilizer and Environmental Research Center. In 1994, the National Fertilizer and Environmental Research Center was renamed the TVA Environmental Research Center. During this era of TVA ownership, TVA added buildings to support the evolving use of the site, including the TVA Environmental Research Center (c. 1947, two buildings), the TVA Greenhouse Research Complex (c. 1945), and the Environmental Research Center/ Service Building (c. 1940s), all designed to support fertilizer research programs. Two buildings were added to the water treatment facility during this period, the Chemical Feed House (c. 1941) and the Filter Building (c. 1941-1942). Also constructed during this period was the Phosphate Development Works Warehouse (1950s), the only remaining building from the Phosphate Development Works (PDW) Complex. The PDW complex was built to serve the U.S. nerve gas program and produced elemental phosphorous, a principal agent in the manufacture of nerve gas. Nitrate Plant No. 2 and TVA operated this complex under U.S. Army oversight.



Properties associated with the TVA context are recognized as significant under Criteria A and C for listing on the National Register of Historic Places.

Criteria A emphasizes association with events that have made a significant contribution to the broad patterns of our history. TVA is recognized for its pioneering research and developments in the area of fertilizers, which also had significant contribution to war efforts in the form of munitions. The international role that TVA played in the research and development of fertilizers lasted throughout the mid-to-late twentieth century.

Criteria C applies to properties that embody the distinctive characteristics of a type, period or method of construction. The buildings associated with the early development of Nitrate Plant No.2, built between 1918 and 1933 and referred to hereafter as the First Architectural Period, are generally of the industrial vernacular style and are generally characterized by the following features: hollow clay tile masonry with brick quoins; exposed structural steel framing; low slope roofs with monitors and clerestories; steel hopper windows; precast concrete sills and lintels. Buildings constructed after 1933, and associated with the scaled-back fertilizer development and production operations and the new focus on research and development activities, will hereafter be referred to as the Second Architectural Period. These buildings are generally of the international style and have the following character defining features: linear rectangular massing; flat roofs; asymmetrical facades; windows set flush with the exterior face of the walls; pre-cast window surrounds.

### 04.2.1.1.3 Architectural Controls for Historic Buildings

Preservation of the character defining features of the historic buildings of the Central District is essential to retaining the significance of the district and to maintaining the unique quality and sense of place that can make the redeveloped district a true destination in the Shoals community. To preserve these features it is important to first identify them and to then develop guidelines for their repair, replacement or alteration in the context of future rehabilitation efforts. Because of the wide variation of architectural styles and materials between the First and Second Architectural Periods, these guidelines are set forth independently for each period.

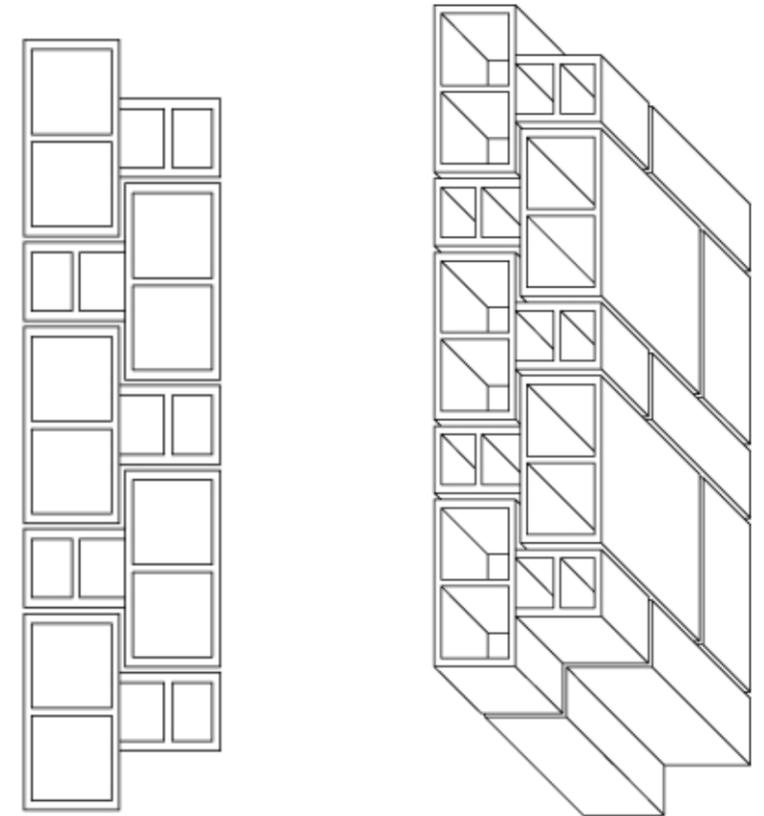
#### First Architectural Period

These buildings share a common design, material and construction vocabulary, clearly expressed on both the exterior and interior. This consistency of design is in and of itself a character-defining feature of the entire complex, making a comprehensive approach to the rehabilitation of these buildings paramount. The following are the most prevalent character-defining features common to the First Period buildings accompanied with general guidelines for treatment.

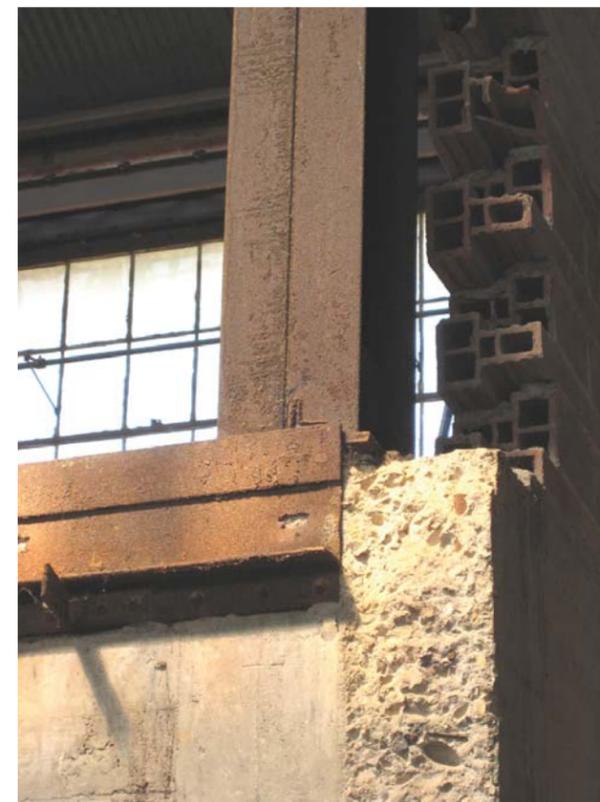
## Exterior Wall Construction

One of the most striking features of the NFDC complex is the unique hollow clay tile wall construction. Two wythes of "T-shaped" tiles are interlaced to form the walls, expressing both dimensions of the "T" in alternating bands on the exterior and interior wall surfaces (see illustration). This hollow clay tile construction forms the field of most exterior walls in the complex. The hollow clay tile terminates in brick quoins at the building corners and at junctures with windows and doors. This wall construction currently exhibits many of the conditions common in solid masonry walls: cracking due to settlement or impact, weathering of mortar joints and localized deterioration of masonry units. Cracks and other areas of deteriorated mortar have often been filled with sealants or non-matching mortars. In limited locations corrugated metal sheets are used as the exterior wall cladding. Metal cladding typically exhibits rust and peeling paint. To address these conditions the following guidelines should be followed:

- Address the cause of significant structural settlement prior to making masonry repairs.
- After settlement has been addressed and in areas of inactive settlement, repair cracks by removal of sealants and incompatible mortars. Repoint cracks in mortar joints using repair mortar formulated to match historic mortar in both properties and appearance.
- Where mortar joints have deteriorated, repoint joints using repair mortar formulated to match historic mortar in both properties and appearance.
- Where masonry units are cracked repair where possible by filling cracks with repair mortar formulated to be compatible with masonry properties and matching masonry color.
- Where masonry units must be replaced, replace in kind. This may require casting of custom units which may be practical considering the scale of the project. If demolition of any structure must occur, deconstruct the building to allow salvaging of materials for use in repair of other structures. Salvage of brick may be more feasible than salvage of hollow clay tile, however depending upon the tenacity of the mortar, clay tile salvaging may be possible and should be attempted to the extent possible.
- Clean all surfaces to remove staining and biological growth.
- At metal wall panels that can be retained, clean surfaces, repair rusted areas where possible. Where severely rusted, replace panels in-kind.



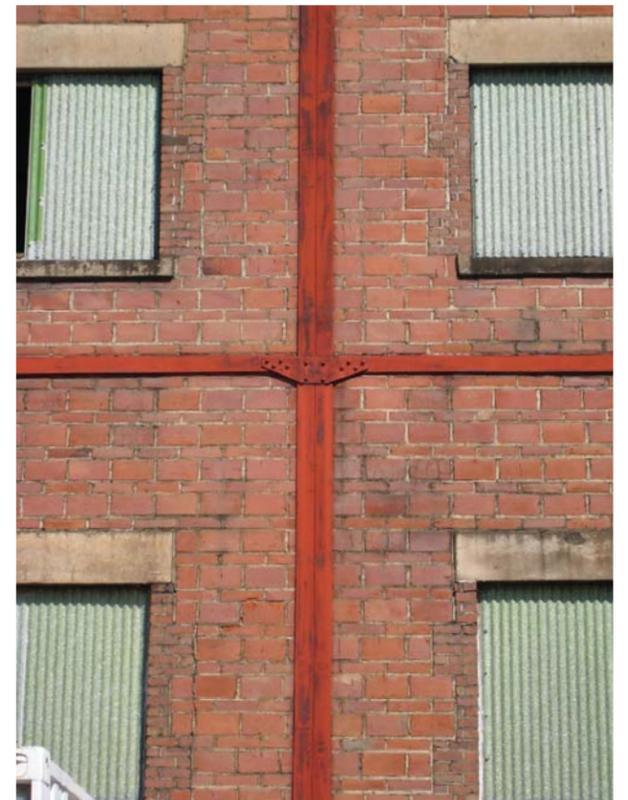
section and axonometric view of hollow clay tile construction



### Exposed Structure

Most of the buildings in the NFDC complex utilize a primary structural system of structural steel columns, beam and roof trusses. In many of these buildings, the structural steel columns are expressed on the exterior walls, with the hollow clay tile forming an infill panel between columns. In almost all of the buildings, the structural steel members are exposed on the interior of the spaces with the columns, beams and trusses being primary form-givers within these spaces. Exposed concrete columns and beams and exposed heavy timber wood construction are used in a few buildings and, similarly to the structural steel, are important character-defining elements. Depending upon the future use of these buildings, the exposure of the structural elements may create a challenge for code compliance. Since code issues are use-dependent and since it is also necessary to evaluate code issues holistically during a project design phase, the following guidelines are very general in nature:

- At the time of project design carefully evaluate the options for addressing the exposed structural steel, with a goal of achieving safe conditions for building occupancy while retaining the character of the exposed structure to the greatest extent possible.
- Consider painting exposed steel with protective coatings instead of covering with other materials. Choose paint colors carefully to approximate the color of the exposed steel.
- Exposure of the heavy timber structure will be permissible for certain uses. Try to find uses for the buildings with heavy timber structure that will allow for the continued exposure of these structural elements.

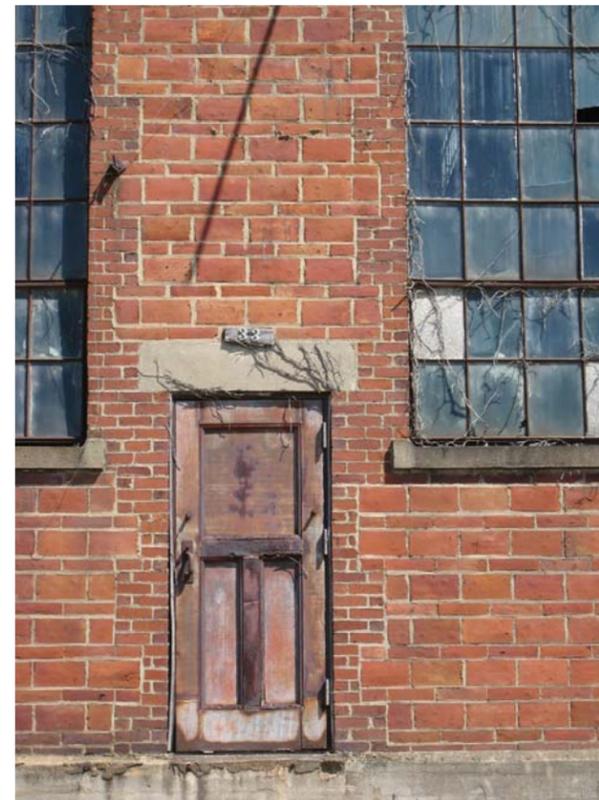




### Doors, Entrance Canopies and Loading Docks

Throughout the NFDC complex, there are a variety of historic exterior and interior doors. Many of the buildings had heavy wood stile and rail doors, with panels of wood boards and frequently reinforced with wood cross bracing. At the exterior, these doors were often protected with canopies with a heavy wood structure consisting of curved brackets supported on brick corbelled from the adjacent walls. Colorful but worn and possibly historic paint finishes remain on many exterior doors and canopies. This paint treatment would have enhanced the visual impact of these elements. There are also a number of metal-clad doors, ranging from metal clad stile and rail doors to metal-clad sliding industrial doors and metal canopies at loading docks. Each of these doors and canopies represents an important character-defining detail of the individual buildings and the overall complex. While the conditions of these doors vary, most are significantly deteriorated. Loading docks are typically constructed of concrete and create important, "porch-like" features on many buildings. The following guidelines should be followed:

- Retain and repair historic doors and canopies or their parts to the greatest extent possible.
- Wood doors of this period are typically made from old-growth lumber which is a highly durable material. Despite the advanced deterioration, most of these doors and canopies could still be wholly or partially restored.
- Where historic doors cannot be retained, base the design of new doors on the historic precedent.
- Conduct paint analysis to determine the historic paint colors and use these colors on rehabilitated or reconstructed doors and canopies.
- Retain and repair loading docks wherever possible. For new building uses where the loading function is no longer needed, these areas can become outdoor gathering spaces.



### Lintels and Sills

Both the windows and doors of the NFDC complex typically have precast concrete lintels and sills. The lintels are typically flat and flush with the face of the masonry. The sills project from the masonry and have a molded end detail. Both lintels and sills are typically in good condition with only minor cracks and staining. However in a few locations, the sills have become weathered, exposing the steel reinforcement within. When this condition occurs, the steel corrodes and expands further deteriorating the sills. In the case of the most severely deteriorated sills, replacement will likely be required. The following guidelines should be followed:

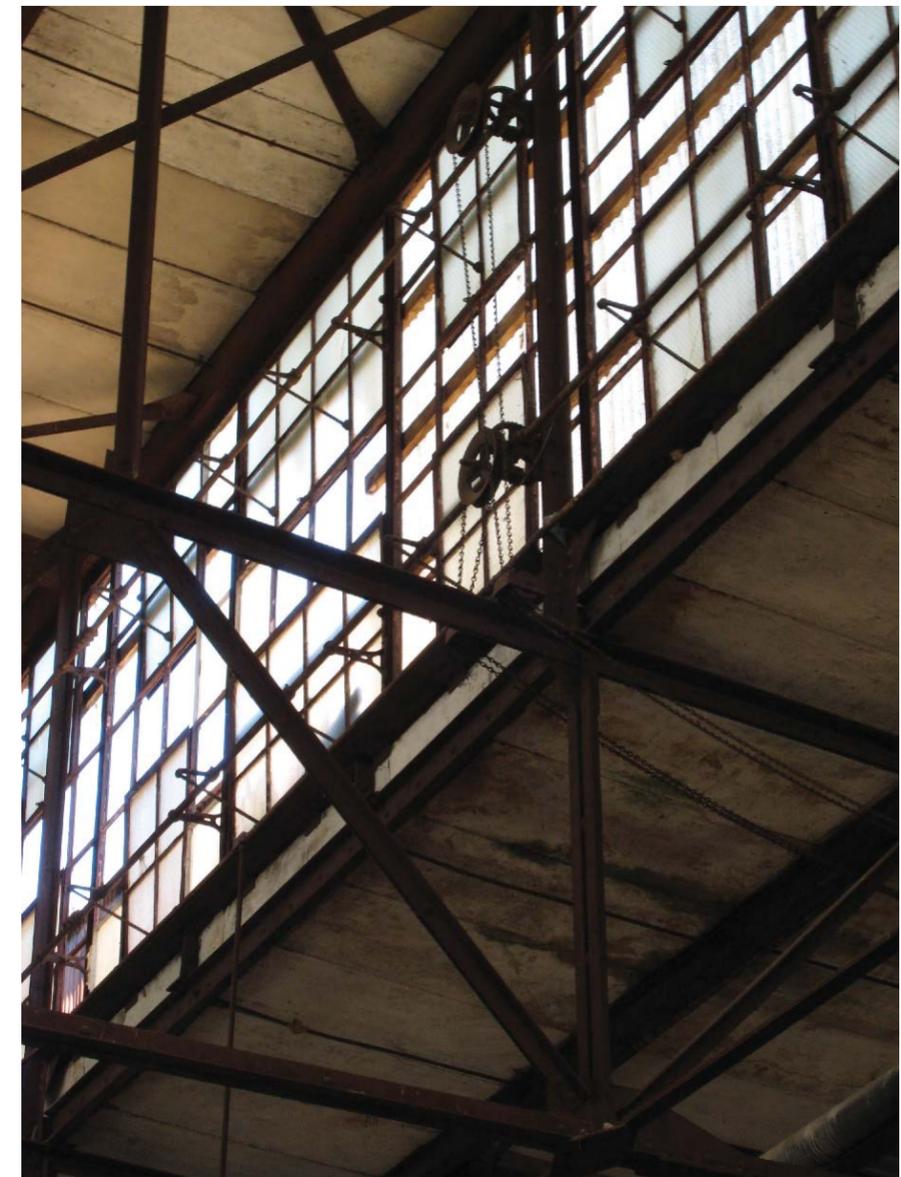
- Repair small cracks and spalls using cementitious grout formulated to be compatible with existing concrete.
- Clean all surfaces to remove staining and biological growth.
- Cast new sills where deterioration has caused exposure of the reinforcing steel. New sills should match the historic in material and appearance.



## Windows

The industrial steel windows are primary character-defining features of the NFDC complex. These windows create ribbons of light in the clerestories as well as punched openings in the building facades. Most sashes had a section or sections of operable hopper windows. In many cases these steel windows still exist and in some cases the steel operating hardware remains as well. Most windows have been covered with a green corrugated translucent plastic sheet material. While most windows exhibit the corrosion that is typical for steel windows that have been unpainted for some time, many of these windows are still in repairable condition. The following guidelines should be followed:

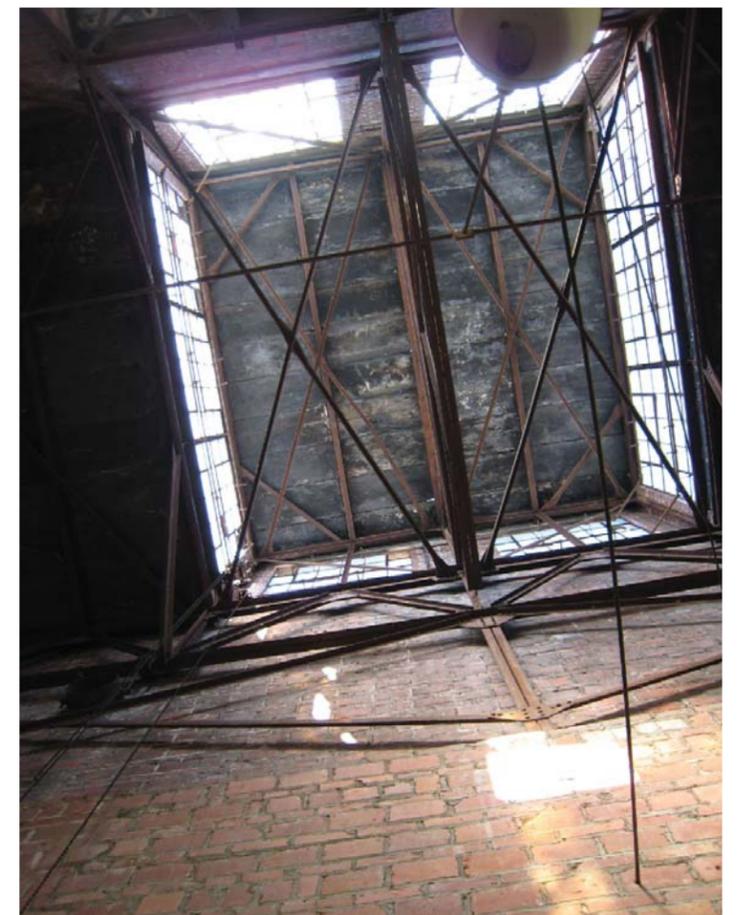
- Determination for repair versus replacement of windows should be made on a case by case basis. Where repair is possible, retain the historic sash and frame and make the necessary repairs. Remove surface corrosion. Where corrosion has compromised the member, replace only damaged members. Reglaze, prime and repaint.
- Where replacement is necessary or where windows are no longer existing, use steel replacement units that match the historic condition as closely as possible. If replacement with steel units is not possible, select replacement units to match the width, depth and profile of the historic frames and muntins. Match historic muntin and mullion patterns.
- Address energy efficiency of the windows during repair and replacement. Explore the opportunities for reglazing with thin insulating units if the historic muntins can support the increased thickness. Consider the use of light Low E coatings to reduce the thermal transmittance of the glass. Consider the installation of interior applied secondary glazing (interior storms) if reglazing with insulating units is not feasible. Ensure that through the restoration process all cracks are filled and windows fit tightly within openings. It should be possible to achieve significantly increased energy efficiency without compromising the essential characteristics of the historic windows.
- To the extent possible, consider restoring windows to an operable condition. These large expanses of operable windows, both at floor level and as high clerestories, promoted cross ventilation within the historic structure. This feature has the potential to be used advantageously to achieve sustainable design goals (see sustainability goals page).
- Historic windows commonly contain hazardous materials in their glazing compounds or lead-based paint coatings. There is a growing number of contractors who specialize in the restoration of historic windows and are well-equipped to work with these materials and perform hazardous material abatement or remediation as a component of the window restoration. It is preferable to structure projects to allow these skilled trade contractors to perform this work rather than using abatement contractors, who are more likely to damage historic materials.



### Precast Roof Panels

One of the most widely deteriorated elements in the NFDC complex are the roof decks. The roof decking of most buildings consists of precast concrete panels. These panels are typically exposed on the interior of the buildings. The majority of precast concrete decking panels are covered with various built-up bituminous appearing roofing materials, some with stone ballast. Standing water on the roof surfaces has caused water to penetrate the joints between panels and eventually to erode the concrete exposing the reinforcement steel. The reinforcement steel has corroded, further deteriorating the concrete. Today the concrete panels exhibit cracking, spalling, breakage and corroded reinforcement. Extensive replacement of roof panels will be required. The following guidelines should be followed:

- Retain and repair existing concrete panels where repair is possible.
- Where repair is not possible replace with new precast concrete panels. Considering the scale of the project it should be feasible to cast on site or precast new panels for replacement.
- In the event that replacement with new concrete panels is not feasible, explore replacement alternative that will be consistent with the appearance of the historic materials.
- Strive to maintain the concrete panels at least within the clerestories (see issues following regarding Open Interior Space and Expression of Exterior Wall Construction on Interiors)



## Open Interior Space

One of the most essential character-defining features on the interiors of the buildings of the NFDC complex is the volume of large and open spaces within these buildings. This may also prove to be very challenging to retain while adapting these buildings for new use. While it will not be possible to retain every space, an effort should be made to creatively consider ways to use the large spatial volumes to enhance the quality of the new spaces within these buildings. The following general guidelines should be followed:

- Try to find uses that will allow maintaining the open spaces to the greatest extent possible.
- Prioritize the spaces within each building and organize new arrangements to retain the most important spaces.
- Try to preserve the openness of the clerestories both for their spatial quality and for the natural light and ventilation that they can contribute.
- Consider the use of interior walls with glazing and openings to maximize views from space to space.
- Try to maximize the spatial volumes exposed in public spaces such as lobbies and corridors.



## Expression of Exterior Wall Construction on Interiors

Another aspect of adapting the interior of the NFDC buildings will be retaining the quality of the expression of the exterior wall construction on the interior. This is most notably the expression of the hollow clay tile wall material. Reuse of these buildings will most likely require climate control which did not exist historically in the buildings. The exterior walls have little insulating value. The introduction of insulated and weathertight wall and ceiling constructions within the exterior walls could be needed to serve many new functions. As with the maintaining of open space (discussed above) this will require a creative approach to maximize retention of character defining features while creating functional new space. The following general guidelines should be followed:

- Once building use has been determined, carefully analyze the building envelope to understand its thermal and moisture vulnerabilities.
- Consider new uses that can utilize natural ventilation or do not have stringent interior environmental demands.
- Utilize energy modeling to design solutions that maximize the efficiency of systems to reduce the impact on the building envelope to the greatest extent possible.
- Prioritize the spaces within each building and try to expose materials in key locations.
- Knowing that the interiors of these building may be altered by rehabilitation to function for new uses, consider retaining a building that is well representative of the complex to use for a purpose that will not require extensive modification and retain its open spaces and expression of materials. The building could serve as an open air community space, recreation use, events venue, farmer's market etc. that could be used by occupants of the surrounding rehabilitated buildings and new development.



### Equipment and Signage

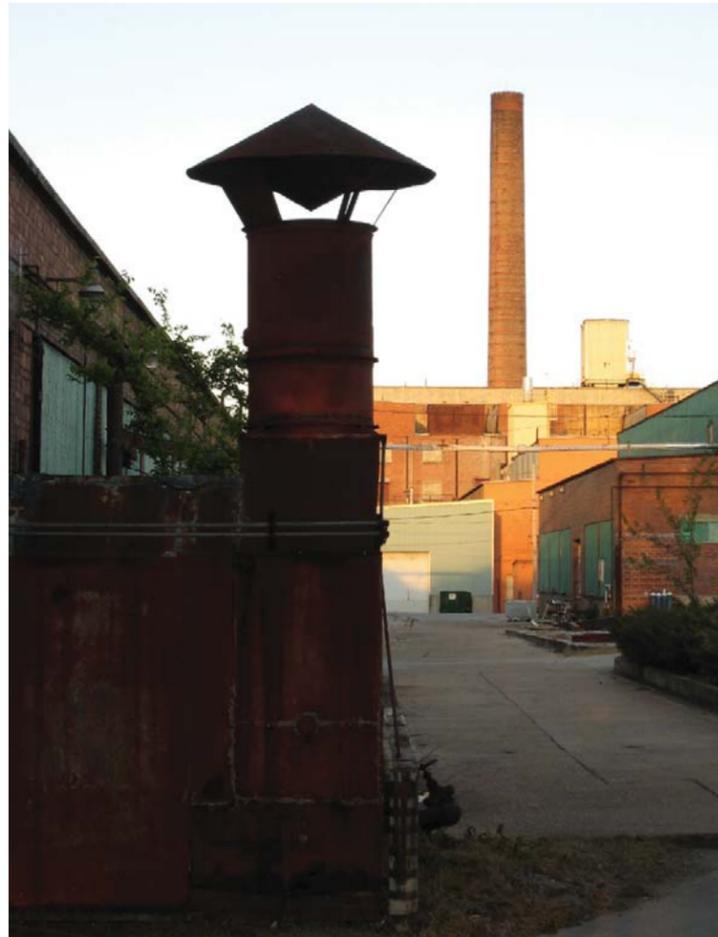
One very unique feature of the buildings in the NFDC complex is the remains of manufacturing and research equipment and related signage both within the buildings and on the grounds. These features present an opportunity to add texture and a layer of meaning to the rehabilitated spaces within these buildings. Consider retaining and incorporating some of these features into the rehabilitated spaces.

### Archeological Resources

Preservation and protection of archeological resources on the reservation is critical. An archeological resource survey has been performed on the site. All known resources have been identified, and mitigated if necessary. The best preservation method is leaving these resources in the ground, undisturbed. Both rehabilitation of existing buildings and new construction can require significant ground disturbance, including excavation for utilities, foundations, and landscaping, as well as grading for driveways and parking areas.

If cultural materials are discovered during ground-disturbing activities, all work should cease immediately and appropriate authorities should be contacted. Applicable state and federal laws should be followed.

Steps should be taken to avoid disturbing any important resources. Appropriate measures should be taken to ensure that equipment does not damage any remains that are being left in the ground. If it is not possible to design the project to avoid archeological resources, archeology and recording should be done according to best practices prior to construction.



## **Second Architectural Period**

The buildings constructed by the TVA after 1933 are a more diverse group of historic resources than those of the First Architectural Period. Included in this group of resources are two buildings constructed between 1941 and 1942 in the water treatment plant area, the 1943 Old Medical Building, constructed within the Nitrate Plant No. 2 area, and two buildings constructed 1947 that comprise the Environmental Research Center. While each of these buildings is architecturally unique and in some cases constructed of different materials, they share a general design vocabulary and are all examples of the international style.

Because of the unique characteristics of each building, the guidelines below are generalized, but will provide guidance on a general approach to the major character-defining features of this group of buildings.

### **Exterior Wall Construction**

The predominant exterior wall assembly for the buildings of the Second Architectural Period is brick veneer within a cast-in-place structural concrete frame. The concrete frame is typically exposed as an architectural element but this feature is more prominent in some buildings than in others. The exterior wall of Old Medical Building is exposed concrete block and at the Filter Building in the water treatment plant the exterior walls are cast-in-place concrete. Although conditions vary, cracking of masonry due to structural movement is typical. Fairly significant cracking at the Environmental Research Center is likely the result of differential movement between the brick and the concrete frame. To address these conditions the following guidelines should be followed:

- Address the cause of significant structural settlement prior to making masonry repairs.
- Where differential movement is the cause of cracking, expansion joints may need to be introduced. This issue should be carefully evaluated on a case by case basis by a structural engineer and architect familiar with historic structures.
- After settlement has been addressed and in areas of inactive settlement, repair cracks by removal of sealants and incompatible mortars. Repoint cracks in mortar joints using repair mortar formulated to match historic mortar in both properties and appearance.
- Where mortar joints have deteriorated, repoint joints using repair mortar formulated to match historic mortar in both properties and appearance.
- Where masonry units are cracked repair where possible by filling cracks with repair mortar formulated to be compatible with masonry properties and matching masonry color.
- Where masonry units must be replaced, replace in kind with masonry that matches the historic to the greatest extent possible.
- Clean all surfaces to remove staining and biological growth.

### Concrete Overhangs, Sunshades and Canopies

Deep concrete roof overhangs and window sunshades are an important feature of these buildings that emphasize the horizontal lines of the building form. At one of the Environmental Research Center Buildings, a concrete sunshade extends out to become the canopy of a covered walkway. At some roof overhangs and at the canopy, moisture from failed roofing is damaging the concrete. Minor to moderate cracking is also prevalent, especially at the inside corners of overhangs and sunshades. To address these conditions the following guidelines should be followed:

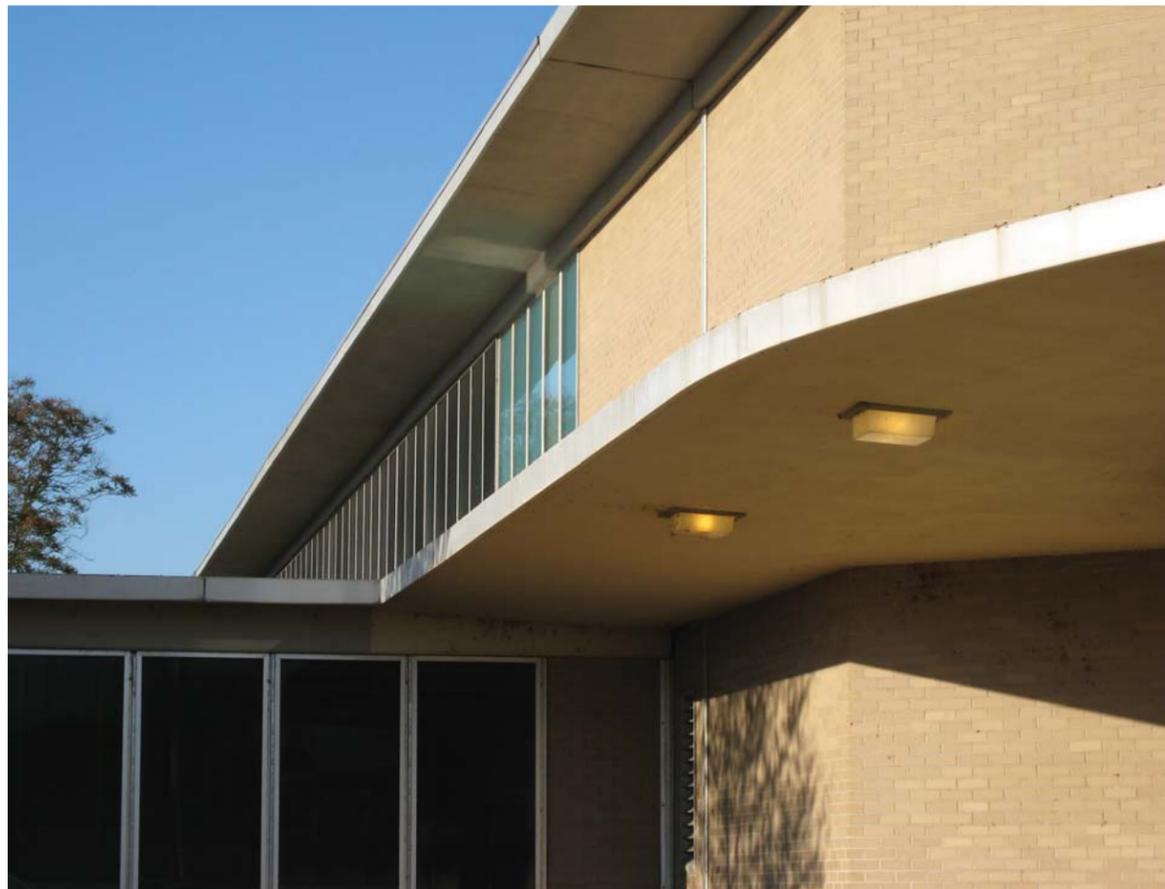
- Address the cause of moisture infiltration prior to concrete repair. In most conditions this will require replacing the roofing.
- Clean all surfaces to remove staining and biological growth.
- Repair small cracks and spalls using cementitious grout formulated to be compatible with existing concrete.
- Where deterioration is severe or has caused reinforcing steel to be exposed, remove damage section of concrete and replace using new concrete that matches the historic in material and appearance.



## Windows

These buildings are characterized both by long horizontal bands of windows and by smaller punched openings. Window materials vary by building and include steel, aluminum and wood. Window types include awnings, fixed and double-hung. Despite the many window types, the following general guidelines apply to treatment of windows:

- Determination for repair versus replacement of windows should be made on a case by case basis. Where repair is possible, retain the historic sash and frame and make the necessary repairs.
- Where replacement is necessary or where windows are no longer existing, use replacement units that match the historic condition as closely as possible. Replacement with like materials is preferable to replacement with substitute materials. Always select replacement units to match the width, depth and profile of the historic frames, mullions and muntins. Match historic muntin and mullion patterns.
- Address energy efficiency of the windows during repair and replacement. Explore the opportunities for reglazing with thin insulating units if the historic members can support the increased thickness. Consider the use of light Low E coatings to reduce the thermal transmittance of the glass. Consider the installation of interior applied secondary glazing (interior storms) if reglazing with insulating units is not feasible. Ensure that through the restoration process all cracks are filled and windows fit tightly within openings. It should be possible to achieve significantly increased energy efficiency without compromising the essential characteristics of the historic windows.
- To the extent possible, consider restoring windows to an operable condition.
- Historic windows commonly contain hazardous materials in their glazing compounds or lead-based paint coatings. There is a growing number of contractors who specialize in the restoration of historic windows and are well-equipped to work with these materials and perform hazardous material abatement or remediation as a component of the window restoration. It is preferable to structure projects to allow these skilled trade contractors to perform this work rather than using abatement contractors, who are more likely to damage historic materials.



### Concrete Window Sills and Surrounds

Concrete window sills and surrounds are a common character-defining feature of these buildings. The most common condition is that these elements project out from the face of the masonry wall surface. Sills and surrounds are typically in good condition with only minor cracks and staining. However in a few locations, the sills have become weathered and water damaged, exposing the steel reinforcement within. When this condition occurs, the steel corrodes and expands further deteriorating the concrete. In the case of the most severely deteriorated members, replacement will likely be required. To address these conditions the following guidelines should be followed:

- Repair small cracks and spalls using cementitious grout formulated to be compatible with existing concrete.
- Clean all surfaces to remove staining and biological growth.
- Cast new sills or surround components where deterioration has caused exposure of the reinforcing steel. New members should match the historic in material and appearance.

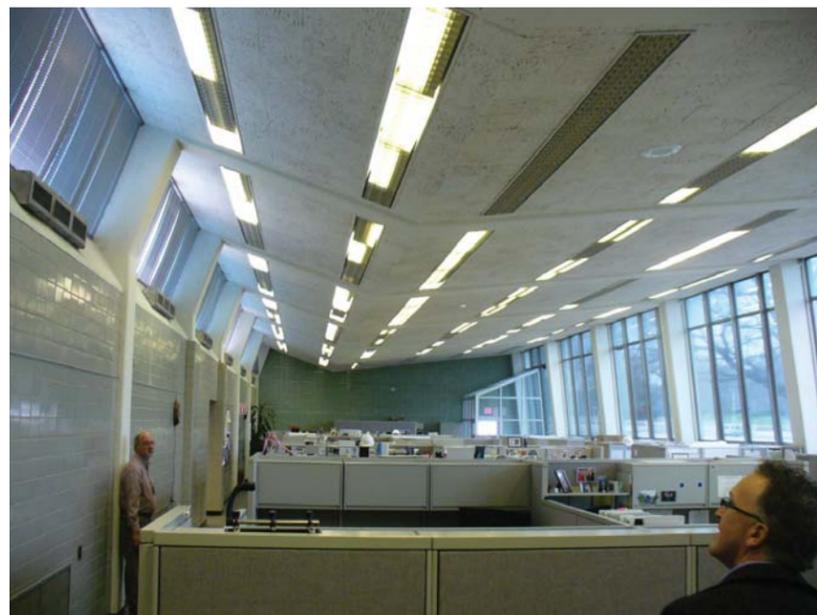
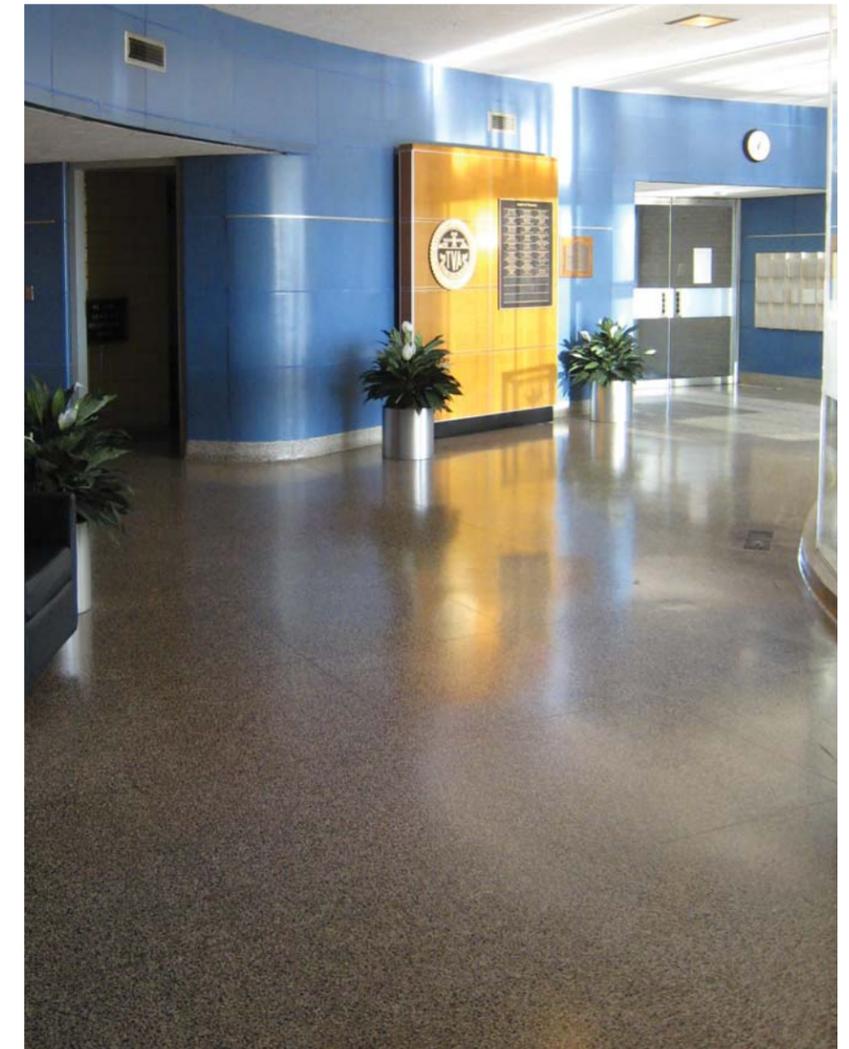


## Interior Character

These buildings vary greatly in the character of their interior spaces, although they do share many features and materials common to international style buildings. The predominant wall construction is glazed concrete masonry units and these units are also the exposed finish. Terrazzo flooring is used in the primary public spaces of one Environmental Research Center Building, but exposed concrete or concrete covered with composite flooring or carpet is more common throughout the buildings. Ceilings are plaster, exposed concrete and acoustical ceiling tiles. Interior doors are predominantly wood. The interiors of the buildings are generally unaltered and remain a strong reflection of the historic character of these buildings.

The adaptation of these buildings for different functions has a very different set of challenges than the adaptation of the large open spaces of the First Architectural Period Buildings. The plan configurations of the Second Architectural Period buildings and the concrete block interior wall construction present limits to the ability to reconfigure spaces without damaging the physical integrity and historic character of these buildings. The reuse of these buildings is likely to be more successful if new functions are found that can operate well with minimal reconfiguration. To successfully adapt these buildings while maintain their historic character the following guidelines should be followed:

- Seek new uses that can function with the current building configuration to minimize the need for reconfiguration.
- Prioritize the spaces within each building to identify those areas of primary importance that should be preserved and those of lesser importance that may be changed more significantly. The following levels of hierarchy are suggested:
  - o Zone 1: Areas of primary importance to defining the character of the historic building. This zone is likely to include spaces such as lobbies, atriums, primary stairways, primary corridors and public spaces of primary importance such as the auditorium in the Engineering Research Building.
  - o Zone 2: Areas of secondary importance to defining the character of the historic building. This zone is likely to include secondary corridors, secondary stairways, and public spaces of secondary importance such as a conference room.
  - o Zone 3: Areas of tertiary importance to defining the character of the historic building. This zone is likely to include typical office spaces, laboratory spaces and support spaces.
- Restore or very sensitively rehabilitate Zone 1 spaces with a focus on maximizing retention of materials and features.
- Rehabilitate Zone 2 areas also with a focus on maximizing retention of historic materials and features but with more latitude to make adaptations and reconfigurations in a manner that is respectful of and compatible with those historic materials and features.
- Rehabilitate Zone 3 areas to adapt or reconfigure them for new uses, always striving to do so in a manner that is respectful of and compatible with the historic materials and features.



### 04.2.1.1.4 Historic District General Guidelines

The intent of these guidelines is to assist the long-term preservation of the listed structures through the preservation of historic materials and features of the exterior and interior of the buildings. They also encompass related landscape features and the building's site and environment, as well as attached, adjacent, or related new construction. The goals for new construction, additions to and rehabilitation of the existing structures are:

- Integrate new buildings with the character of the existing adjacent buildings in the district.
- Reinforce the scale and massing of the existing structures in the district, and introduce new construction of a similar scale and massing to that established by the historic structures.
- Maintain setbacks and massing compatible with adjacent historic structures
- Use exterior materials and colors that are visually compatible with the existing structures
- Differentiate new structures from the original buildings while maintaining compatibility and deference
- Support a quality pedestrian experience in the district
- Encourage sustainable design principals
- Encourage Smart Growth Principles

#### 04.2.1.1.5 Guidelines for Infrastructure Improvements

##### (Streetscapes and the Public Realm)

Historic District means a geographically definable area, urban or rural, that possesses a significant concentration, linkage or continuity of sites, buildings, structures or objects united historically or aesthetically by plan or physical development. A district may also comprise individual elements separated geographically during the period of significance but linked by association or function. District-wide Infrastructure improvements are critical to achieving the intent of these general guidelines.

- Install new lighting, street furniture and way-finding program to strengthen the character of the district, and develop a sense of district identity. Dark-sky friendly and energy efficient street, landscape and pedestrian lighting should be utilized in the district.
- Integrate covered walkways, awnings and canopies with the character of the original structures they are adjacent to or serve.
- Develop a Building Signage program for the district that preserves, to the extent possible, any remaining and usable original signage, while using new signage to reflect the character of the original structure., and reflect the industrial nature of the district.
- Screen any new Loading and Service areas from the original structure. Utilize historic loading areas to the greatest extent possible. Preserve the original structure to the extent possible while accommodating these and any critical functions to accommodate new uses.
- Landscaping and Site Features –Use landscaping to reinforce the unique district character. Develop a district wide furniture program for light standards, bollards, seating, etc. to reinforce the sense of district identity. To the greatest extent possible, retain historic site features, such as railroad tracks, that are a physical reminder of the history of the site.
- Develop a Rainwater Harvesting system to provide water for irrigation of non-drought tolerant planting or landscape areas.
- Plant Selection - use, to the greatest extent possible, drought tolerant and / or native species for all new landscaping in the district.
- Infrastructure improvements should, to the greatest extent possible, incorporate re-used, recycled, or local materials, address storm water management and water quality in creative ways. This site has the opportunity to showcase sustainable infrastructure techniques for the region.

### 04.2.1.1.6 Guidelines for Additions and Alterations

#### Alterations:

The rehabilitation of the historic structures to accommodate new uses can be expected to require some alteration to these buildings. The Guidelines exist to provide a framework for creating alterations that respect the essential qualities of these historic buildings. These Guidelines are not intended to limit creativity but rather to formulate goals for alterations that can successfully blend new uses and new design elements into the historic environment in a meaningful and respectful manner.

The historic buildings of the First and Second Architectural Periods are different in terms of both architectural style and materials. The following guidelines are general in nature and intended to be applicable to both groups of buildings. Please refer to Architectural Controls for Historic Buildings for a more detailed set of guidelines for the specific materials and features common to each building period.

As a general goal alterations shall not harm the historic materials and features that characterize each building or group of buildings. All new elements shall be compatible with the massing, size, scale and architectural features to protect the historic integrity of the property and its environment. The following guidelines for altering historic buildings within the district should be followed:

- Respect the style, character materials and details of the historic structure.
- Preserve and repair, rather than replace, historic materials and character defining features. Avoid damage to historic materials during all alteration activities. Utilize repair techniques and materials that are compositionally and visually compatible with the historic materials.
- Replicate missing historic elements when adequate documentation exists to accurately guide the replication. Match historic materials when replicating elements to the greatest extent possible. If replication is necessary and adequate documentation does not exist, replace the missing element in a manner that is compatible with the historic architecture yet identifiable as new.
- Design new elements to be compatible yet differentiated from the historic building.
- Seek to find new uses compatible with the essential characteristics of the historic building, such as plan configuration, size of spaces, ceiling heights, structural bays and capacity, and size and location of fenestration.
- Respect the size, placement and rhythm of historic openings. Retain use of historic entrances to the greatest extent possible.

#### Additions:

Additions, both vertical and horizontal, may be required to accommodate new uses. The Guidelines exist to provide a framework for creating additions that respect the essential qualities of these historic buildings. These Guidelines are not intended to limit creativity but rather to formulate goals for additions that can successfully blend new uses and new design elements into the historic environment in a meaningful and respectful manner.

The historic buildings of the First and Second Architectural Periods are different in terms of both architectural style and materials. The following guidelines are general in nature and intended to be applicable to both groups of buildings.

As a general goal additions shall not harm the historic materials and features that characterize each building or group of buildings. All new elements shall be compatible with the massing, size, scale and architectural features to protect the historic integrity of the property and its environment. The following guidelines for additions to historic buildings within the district should be followed:

- Respect the style, character materials and details of the historic structure.
- Minimize the visual impact of additions.
- Respect the scale, proportions, setbacks and height of the historic building.
- Differentiate additions from the historic building while maintaining compatibility and deference.
- Select complementary materials and colors for building additions.
- Locate additions as to not damage historic materials. Construct additions in a manner that if removed in the future, the essential form and integrity of the historic building will be unimpaired.

#### 04.2.1.1.7 Guidelines for New Construction

Within the Central District a significant amount of undeveloped land exists for new construction. If fully developed there could possibly be as many new buildings as historic buildings within the district. For this reason, establishing a framework for new construction that will promote development that is compatible with the important character-defining features of the historic environment is essential to retaining the significance of the district and to maintaining the unique quality and sense of place that can make the redeveloped district a special place in the Shoals community.

The Guidelines exist to provide a framework for designing new buildings within the district that respect the essential qualities of the historic environment. These Guidelines are not intended to limit creativity but rather to formulate goals for new construction that can successfully blend new uses and new design elements into the historic environment in a meaningful and respectful manner.

The historic buildings of the First and Second Architectural Periods are different in terms of both architectural style and materials. The following guidelines are general in nature and intended to be applicable to new buildings constructed in the vicinity of both groups of buildings.

As a general goal all new construction shall be differentiated from the historic buildings and be a statement of its own time. New construction shall be compatible with the massing, size, scale and architectural features of the historic environment. The following guidelines for new construction within the district should be followed:

- Integrate new buildings with the character of the existing adjacent buildings in the district.
- Reinforce the scale and massing of the historic structures in the district. New construction shall be of a similar scale and massing to that established by the adjacent historic structures. Length and height of building facades that front public right-of-ways shall be similar to that of adjacent historic structures to establish a consistent rhythm along public ways.
- Maintain setbacks compatible with adjacent historic structures.
- Maintain a density or building footprint to open land ratio similar to that of the historic development.
- Use exterior materials and colors that are visually compatible with the existing structures.
- Differentiate new structures from the original buildings while maintaining compatibility and deference.
- Locate new construction in a manner as to not damage historic materials, including site features.
- Incorporate a high level of detail and craftsmanship commensurate with the historic structures of the district.

#### 04.2.1.1.8 Demolition and Building Relocation

Demolition and or building relocation of the designated structures in the district is strongly discouraged. In the event that these methods should be employed in the district, coordinate with the Alabama State Historic Preservation office for specific requirements. During any demolition activities ensure that historic resources to remain are fully protected from impact of demolition activities.

### 04.2.1.1.9 Sustainability Guidelines

#### Sustainability in the Historic District

The most sustainable building is often the one that already exists, and good preservation practice is often synonymous with sustainability. Historic building construction materials and methods often directly responded to the local climate as well as took advantage of natural sources to provide heating, lighting, and ventilation.

Before implementing methods to enhance the sustainability of an existing building, the existing sustainable characteristics should be assessed. It is important to utilize the inherently sustainable qualities of a building as they were intended, and it is important that they function effectively in combination with any new measures taken to improve energy efficiency. Repairs and alterations to improve sustainability should not damage or destroy materials, features or finishes that are important in defining the building's character.

Where new technologies are added to historic structures, they should be added in a manner that follows the principal of reversibility. Due to the constantly evolving nature of technologies, such as mechanical systems, controls and site generated power including solar and wind, the physical components of these technologies have a very short life span compared to that of the historic structure. Therefore, care should be taken when installing these technologies, to allow for their eventual removal and replacement without damaging historic materials. Permanent alterations to historic materials to accomplish the integration of short-lived technologies should be avoided.

It is recommended that all rehabilitation in the historic district follow the Secretary of the Interior's Illustrated Guidelines on Sustainability for Rehabilitating Historic Buildings, by Anne E. Grimmer with Jo Ellen Hensley, published in 2011.

These are the specific sustainable strategies recommended for new construction in the district, as well as the existing structures.

1. Sustainable Sites
  - a. Heat Island Reduction
  - b. Water Efficiency
2. Energy and Atmosphere
  - a. Energy performance standards, Building Energy Modeling
  - b. Site and building lighting requirements
  - c. Alternative Energy production and use
  - d. Awnings
  - e. Operable Windows and Louvers
  - f. High Ceilings
  - g. Reuse of Historic Windows
3. Materials and Resources
  - a. Retain historic and existing materials to the greatest extent possible
  - b. Recycling Program
  - c. Waste Management
4. Indoor Air Quality
  - a. Low VOC Finishes
  - b. Outside Air Introduction and Exhaust Systems
  - c. Controllability of Systems
  - d. Day-lighting and Views



### 04.2.1.2 NE District

Consisting of 104 acres, the northeast portion of the property has a few existing industrial type structures along with 2 considered historic. This area can be generally defined as the area to the north and east of the Central District. This area has access from Reservation Road and perhaps from Wilson Dam Road (depending upon intensity of development) but does not have direct frontage on either. Focus on new greenfield development.

#### Northeast District

Total Area:	110 Acres
Proposed Uses:	Industrial, Institutional, Power-intensive
New Construction:	600,000 SF
Open Space:	28 Acres





**04.2.1.3 SE District**

Generally defined as the area on the southeast corner of the site with direct access and visibility from Wilson Dam Road and 2nd Street.



**Southeast District**

Total Area:	71 Acres
Proposed Uses:	Retail, Light-Industrial, Office, Hospitality, Institutional Multi-use Development
New Construction:	350,000 SF
Open Space:	22 Acres (wetlands, flood plain, farm land)

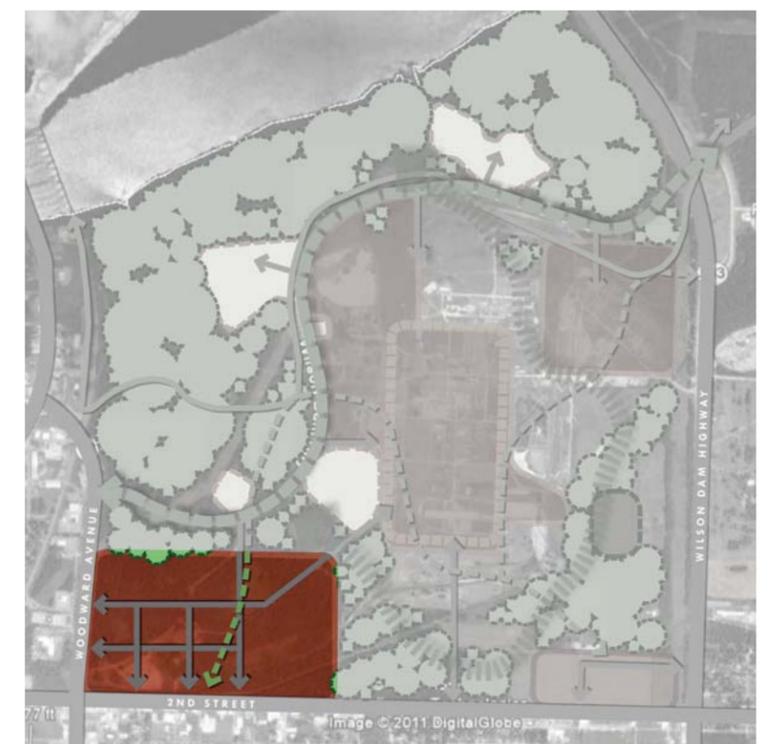


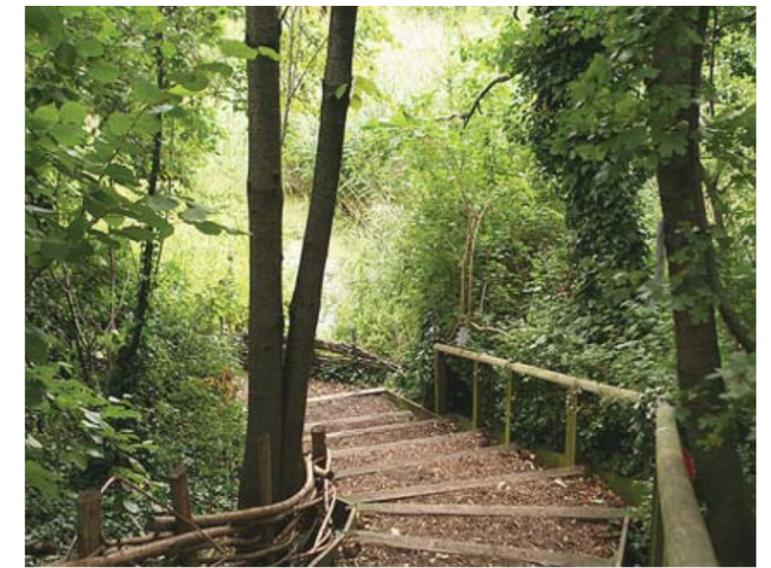
### 04.2.1.4 SW District

This District is comprised of 61 acres in the southwest portion of the Reservation. It is located at the prime commercial corner of Woodward Avenue and 2nd Street and at the connection of Muscle Shoals and Sheffield. It has direct access and visibility possible from Woodward Avenue and 2nd Street. Focus on new development but adaptive reuse opportunities may also exist.

#### Southwest District

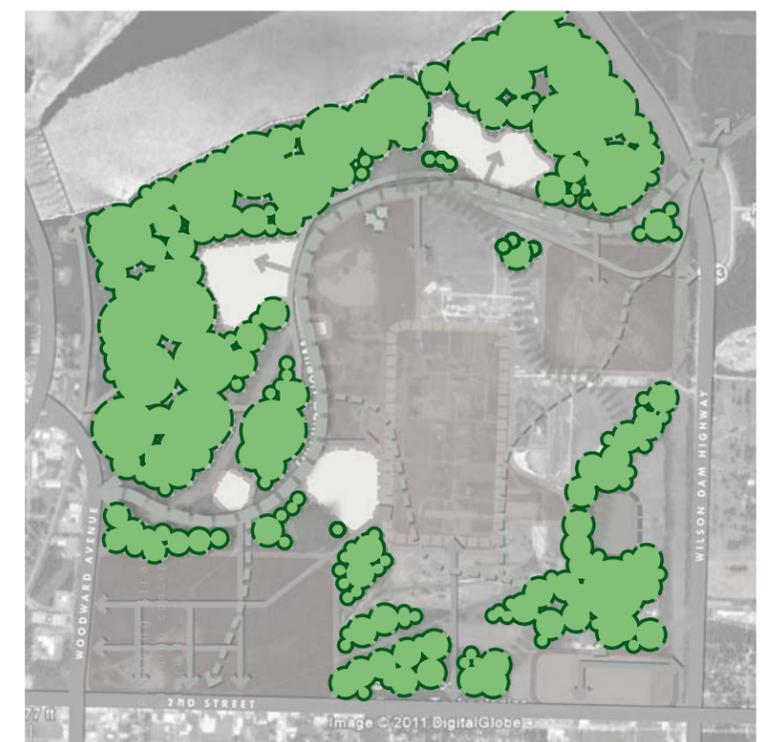
Total Area:	61 Acres
Proposed Uses:	Retail, Commercial, Office, Hospitality, Mixed-use Development
New Construction:	350,000 SF
Open Space:	18 Acres





**04.2.1.5 Natural Area**

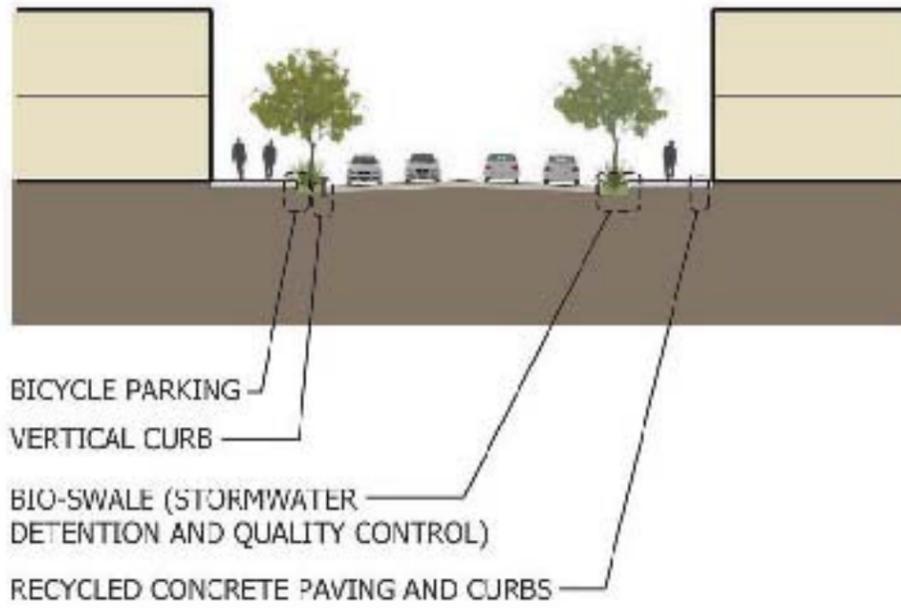
The most dominant land use on the Reservation in this concept plan is park and open space. Of the 1340 acres, approximately 865 acres (64%) of the property are proposed to remain as open space. Furthermore, another 142 acres within the various developed districts are proposed as parks and open space space, resulting in 30% of the land in each district being green space. The net acreage of open space is approximately 1000 of the total 1340 acres. This design approach, using compact design techniques, will preserve the existing character of the site, bring a unique aspect to the redevelopment of the Reservation, while improving the marketability of the site.



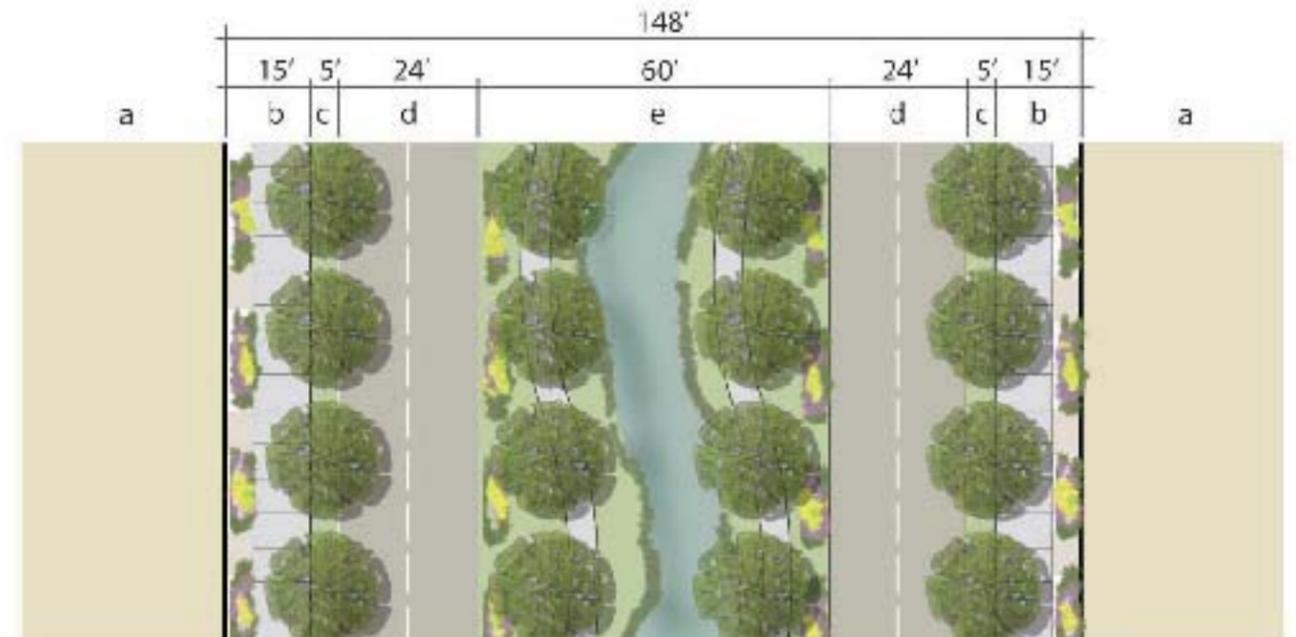
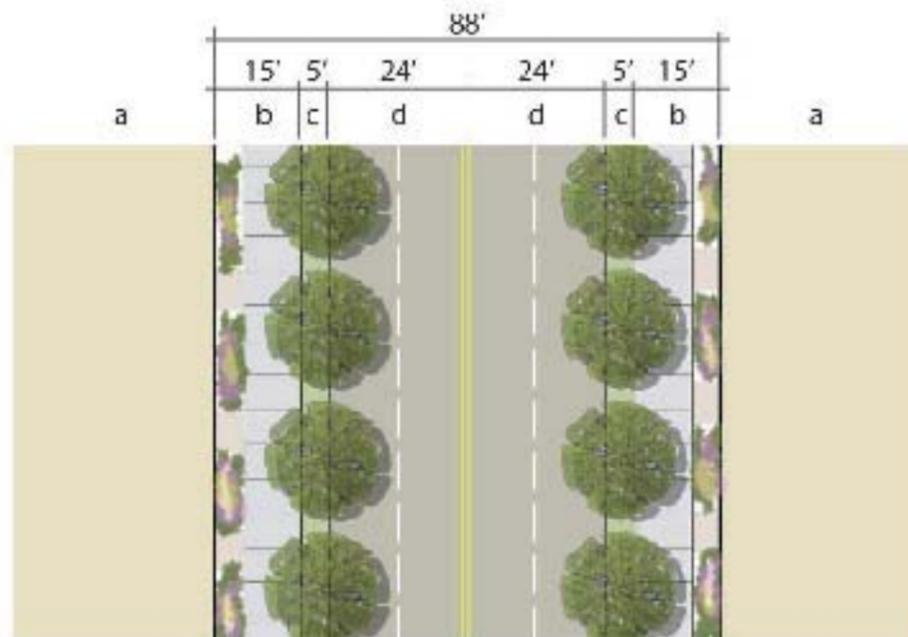
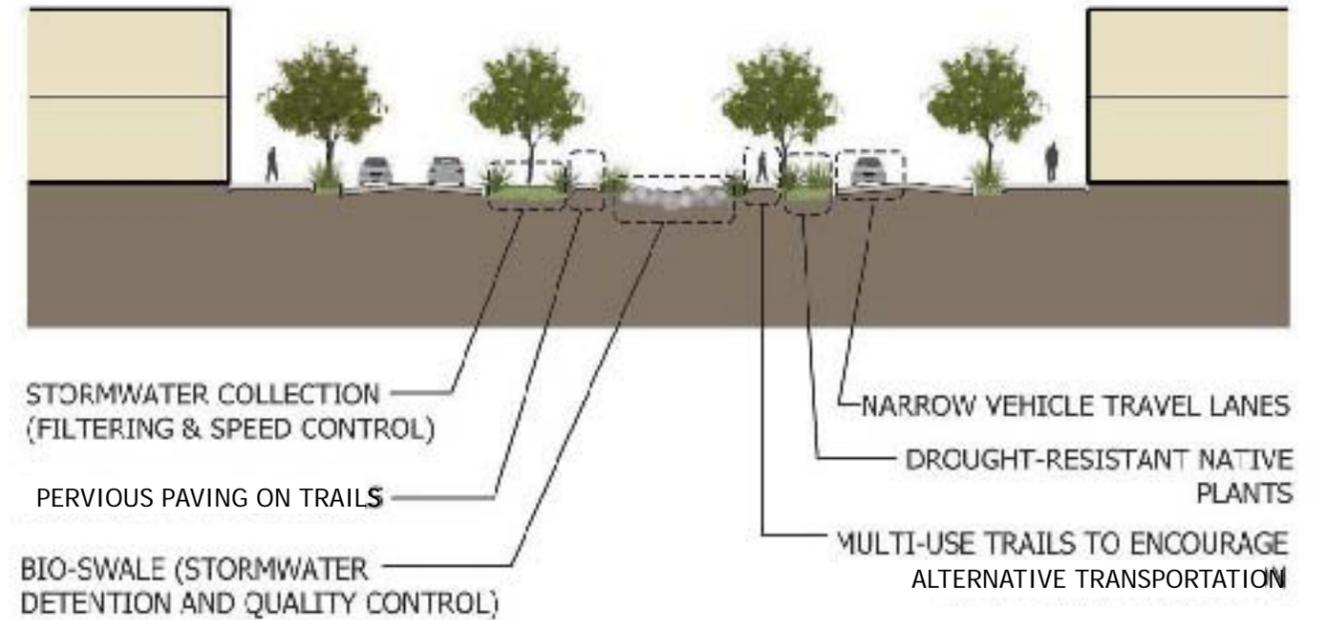
04.2.1.6 Infrastructure: **Streetscapes**

These streetscape diagrams illustrate some examples of the sustainable and pedestrian-friendly features that can be incorporated into the street framework. The framework is intended to support a wide variety of potential uses. The significant features include pedestrian-oriented site furnishings, pedestrian-scaled energy-efficient street lighting, generous sidewalk zones that are protected from vehicle traffic by parallel parking and planting zones, bio-swale storm water collection and detention areas, as well as pervious paving on multi-use trails. Refer to the previous pages for proposed locations of the different street configurations on the reservation.

**COLLECTOR**  
4-lanes



**PARKWAY COLLECTOR**  
4-lanes - vegetation/bioswale between



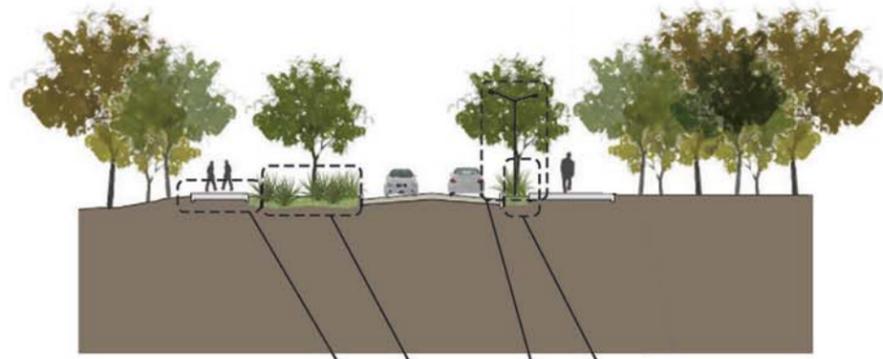


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04

Planning Strategy  
phasing concept

## CONSERVATION AREA ROAD



POROUS PAVING ON  
MULTI-USE TRAILS

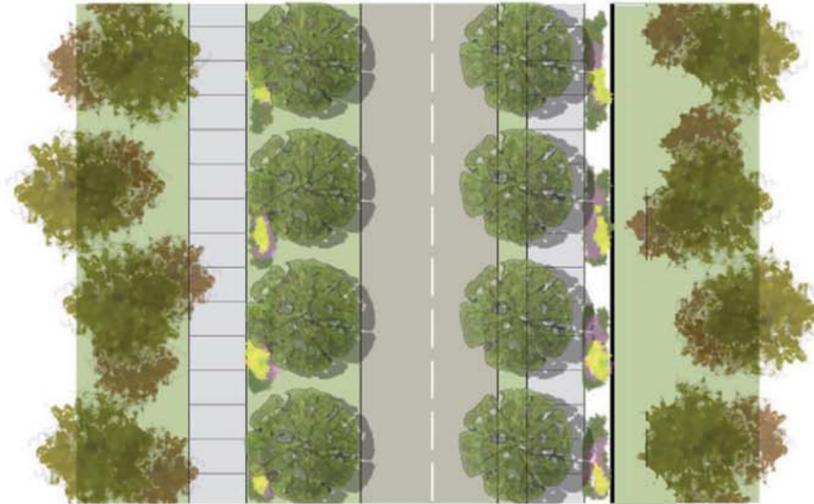
XERISCAPING (DROUGHT-  
RESISTANT NATIVE PLANTS)

BIO-SWALE FOR STORMWATER  
FILTERING AND COLLECTION

RECYCLING FACILITIES  
ON STREET

SOLAR-POWERED PEDESTRIAN  
AND STREET LIGHTING  
WITH DARK-SKY CUTOFFS

74'				
10'	20'	24'	5'	15'
b	c	d	c	b



## 05 Implementation

### 05.1 Next Steps

As this site has the distinct opportunity to serve as a catalyst for the growth of the region, these are some of the regional objectives that can be served from a planning and policy perspective as the process unfolds.

- Make the case for smart growth policies, and promote the development of housing choices that are proximate to job centers
- Demonstrate support for a sustainable regional growth strategy, and promote agreement among public, private and non-profit stakeholders that a sustainable strategy will enable the region to grow responsibly
- Articulate a vision to guide future development to the stakeholders and the public
- Establish a forum for public officials to address regional issues in an open dialogue that guides local action
- Advocate shared goals to promote sustainable land use strategies, and create an alliance of stakeholders to serve as a barometer for public support of smart growth policies
- Incorporate the vision in longer range transportation plans, and develop consensus on plans for continued regional growth
- Support smart growth development and conservation throughout the region

### 05.2 Recommendations

The following are the recommended steps to consider upon completion of this study from the planning team, as well as examples of the resources available to assist TVA and the NACD in their efforts going forward.

#### 05.2.1 Public Participation Process- Continuation

In our experience, as the plan for the reservation develops, it will remain important to maintain a “public participation” process. In our experience, an effectively managed public process can be effective in generating public interest in the property and its future, as well as providing ideas and potential solutions to particular planning challenges. Stakeholder Group input, consisting of local community groups, is invaluable, as agencies and organizations that are critical to the success of the Shoals community can provide significant and valuable information. Additionally, these stakeholder groups are able to contribute to the strategic understanding of any issues that must be addressed during a successful redevelopment of the Reservation property. The process consists of a series of coordinated public meetings with structured agendas that allow for an exchange of input and information. Referred to as the “Charette” approach, it includes an explanation to the public as to how their input is incorporated into the Master Plan, while simultaneously promoting effective feedback from the public. More strategic and targeted focus group meetings can be planned to allow the Stakeholders to participate in detailed assessment of the Master Plan as it is developed.

### **05.2.2 Adaptive Use Cost Estimates**

The historic buildings in the Central District are physically located at the core of the property, and exist as a significant resource for marketing the Reservation. The financial viability of the re-use of the structures is critical information to the due diligence process that a development partner will need to evaluate to determine their level of interest. Therefore, an important next step would be to select an appropriate sample number of buildings of various type and condition, and do a detailed design and cost estimate, while also placing each into a model pro-forma that can be analyzed in a due diligence scenario. This vital information will assist in marketing a property with unique structures that have varying levels of adaptability, and ensures that all potential concerns have been answered. In addition, this step provides an opportunity to involve select developers to review the building cost estimates along with all property information, and to provide a critical analysis of the development potential.

### **05.2.3 Fiscal and Economic Development Impact Analysis**

A critical factor in finding solutions for the future development of the Reservation property lies in the determination of the financial as well as economic impact on the area, more specifically the municipalities. As stated previously, the NACD or "District" will become responsible for the property at some point in time, and therefore it is vital for the leaders of both TVA and the District are clear on the potential revenues and expenses attached to the transfer of the property. The Fiscal and Economic Development Impact Analysis will serve to answer these issues and in the process aid in building the relationship between TVA and NACD. Detail numbers and formulas that would be based on financial assumptions derived from realistic expectations for development, and drawing on the Market Analysis in this and the prior Study, should produce a working document that highlights potential terms for an agreement between TVA and NACD.

### **05.2.4 Development Analysis**

Considering the complexity and the magnitude the redevelopment of such a large piece of sensitive property, and the importance of this Reservation's future on the future of the Shoals Area, it is critical to obtain objective, professional, and credible input and advice. A formal development analysis by either a developer / development consultant with regional experience would provide a developer's perspective on the potential of the Reservation, and would provide a realistic and practical business assessment of the property.

## 05.2.5 Urban Land Institute Technical Assistance Panel

The Urban Land Institute (ULI) Technical Assistance Program (TAP) is designed to provide objective and responsible advice to municipal and community-based non-profit organizations. The TAP program is designed to address specific issues such as project feasibility, planning, development, or implementation.

A panel of ULI members will be assembled to focus on the Client's problem or issue. Member expertise encompasses commercial retail, office, industrial, residential and mixed-land uses in a multiplicity of urban forms. Analysis will typically be organized around:

- Defining site characteristics and limitations
- Identification and assessment of community and neighborhood goals
- Consideration of alternative land use strategies in the context of preliminary feasibility analysis
- Recommendations for next steps toward implementation

In addition the relationships created with developers serving on the panel, along with the considerable media/marketing potential that accompanies a TAP exercise, can only serve to bring positive attention to the Shoals Area.

## 05.2.6 Marketing and Public Relations Strategy

It is important to produce a Marketing package and a Public Relations Strategy that takes advantage of the rich history of the Reservation and promotes the assets and advantages of the property. Once TVA has completed the Comprehensive Master Plan as well as the other items mentioned in this section, it will have the material for a competitive marketing package that answers any and all issues that a potential development entity would find valuable for their decision making. In a highly competitive national and international economic development arena, addressing all questions and concerns of a potential development partner will provide the Reservation with a competitive edge, and lead to a positive future for the property and the Shoals Area.

### **05.2.7 Economic Development Programs, Tools and Incentives**

The Muscle Shoals Area and the Reservation as a critical piece of the community, will be one of thousands of communities across the nation competing for jobs and development. Therefore, it is vital for the Reservation and the Shoals to have a package of tools that can be utilized to attract employers, businesses, industry, developers and builders to be a part of the reservation and the Shoals. This will benefit from an organizational structure for managing development and recruitment that is professional, focused and offers logical and practical reasons for an entity to choose the Reservation over other desirable communities. The following are a few of the options to explore as part of an overall Economic Development strategy.

- Redevelopment Authority to serve as management organization
- Community Improvement Districts
- Enterprise Zone Tax Allocation District / Tax Increment Financing
- New Market Tax Credits Historic Tax Credits
- Incentive Zoning / Form-Based Codes
- Partnerships with Universities and Research Companies
- Teaming with State economic development agencies or pension funds

### **05.2.8 Public Private Partnerships- Financing Options and Strategies**

Current economic conditions make it more difficult to drive development on the Reservation property in the near term. As a result, creative solutions will be necessary to compete with other areas in the country that are attempting to attract researchers, businesses and industries that might consider locating to Northwest Alabama. Public Private Partnerships (PPP) are tools that have been used in the region for many years now to provide dynamic development areas, industrial or technology parks. The proper legal structure of a PPP can allow for numerous financial incentives to be implemented in the competitive recruitment process. The PPP options and potential strategies for implementation would be a significant component of the Fiscal and Economic Development Impact Analysis.

### **05.2.9 Other Opportunities: Smart Growth Implementation Assistance Program**

The Environmental Protection Agency (EPA) has initiated the Smart Growth Implementation Assistance Program (SGIA). The SGIA Program is an annual, competitive solicitation open to state and local governments (and non-profits that have partnered with a governmental entity) that want to incorporate smart growth techniques into their future development.

Selected communities receive direct technical assistance from a team of national experts in one of two areas: policy analysis (e.g., reviewing state and local codes, school siting guidelines, transportation policies, etc.) or public participatory processes (e.g., visioning, design workshops, alternative analysis, build-out analysis, etc.). The assistance is tailored to the community's unique situation and priorities. EPA provides the assistance through a contractor team that provides a multiple-day site visit and a detailed final report, to help the community achieve its goal of encouraging growth that fosters economic progress and environmental protection.

# .team

## a c k n o w l e d g e m e n t s

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**Architectural and Planning Consultant**  
Lord, Aeck and Sargent Architecture  
1201 Peachtree Street, NE, Suite 300  
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877.929.1400  
[www.lordaecksargent.com](http://www.lordaecksargent.com)

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Atlanta, GA 30303  
404.586.0277

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106 E. Sixth Street Suite 900  
Austin, TX 78701  
512.215.3156

