

ASSESSMENT OF EFFECTS

DOAN BROOK STREAM ENHANCEMENT PROJECT CLEVELAND, CUYAHOGA COUNTY, OHIO



NOVEMBER 2012

PREPARED FOR:
NORTHEAST OHIO REGIONAL SEWER DISTRICT
3900 EUCLID AVENUE
CLEVELAND, OHIO 44115

**DOAN BROOK STREAM ENHANCEMENT PROJECT
ASSESSMENT OF EFFECTS**

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**Lead Agency:
Federal Aviation Administration**

EXECUTIVE SUMMARY

As mitigation for environmental impacts associated with expansion of the Cleveland Hopkins International Airport, the Federal Aviation Administration (FAA) and City of Cleveland, Department of Port Control (DPC) selected several wetland and stream restoration projects in 2001. Among them was a project in Cleveland that required the restoration of 12,400 linear feet of Doan Brook in Rockefeller Park. Through the Section 106 consultation process, it was determined that the restoration project would adversely impact historic resources. A Memorandum of Agreement (MOA) was reached in 2005 to mitigate those adverse effects, but for budgetary reasons the restoration project was not executed as planned.

The Northeast Ohio Regional Sewer District (NEORS) was authorized to take the lead in managing the Doan Brook project under a reduced scope and budget that was approved by the Ohio Environmental Protection Agency (OEPA) in 2009. Based on an analysis of design options, the new project focused on the south end of the original project area, where infrastructure is most at risk but where the Cleveland Cultural Gardens (part of the Rockefeller Park Historic District) would not be impacted. Within this smaller project area, a Conceptual Plan was developed by NEORS that conformed to the stipulations in the 2005 MOA. The Conceptual Plan was approved by OEPA in November 2009.

In January 2011, the project team held a pre-design meeting with local stakeholders to introduce and solicit input on the new enhancement project. After the meeting, a Stakeholders Involvement Plan (SIP) was created as a framework for the project development process. Conceptual design plans were presented at a stakeholders meeting in May 2011. Comments on the conceptual plan were incorporated into the design plans.

Based on the 90% design plans, the Mannik & Smith Group, Inc. (MSG) prepared an impact assessment for the current enhancement project, which falls entirely within the Rockefeller Park Historic District (listed in the National Register as a stipulation of the 2005 MOA). Since construction activities and impacts will be confined to a small area along Doan Brook at the south end of Rockefeller Park, the recommended Area of Potential Effect (APE) encompasses the construction zone, staging areas and all adjoining property within the viewshed of the project, as depicted in blue in Figure 2 at the south end of the park. Contributing elements in the APE include various natural and manmade features, including a stone culvert, stone walls along the stream banks (1904-1941), lawn areas, rock outcroppings, one modern bridge with original stone

abutments and endposts, the Liberty Row Memorial along MLK Drive, stone and concrete stairs as well as wooded areas. The spatial relationship between the roadways, trees and wooded areas, and open lawns is also a significant character-defining feature of this designed Victorian landscape. Several of these contributing features are contained within the project area; none of the Cultural Gardens are in or near the project area.

Under the current plan, the stream channel will be selectively reconstructed with the proper dimension, pattern, and profile to handle the flows from upstream. This will involve the preservation, modification or rehabilitation of approximately 1,500 linear feet of the contributing stone walls, and the removal of approximately 343 feet of contributing walls. Along with the removal of walls, approximately 0.2 acres of grass lawn along the public side of the stream will be re-graded to include a new rain garden and sculpture play area, and 49 contributing trees will be removed, all within 40 feet of the stream banks. Enhancements will also include planting 184 new trees along the stream, installing 1,124 feet of new stone walls and planting 18 new oak trees along MLK Drive to replace missing Liberty Oaks. No other contributing elements in the APE will be affected by the proposed enhancement project.

Based on our analysis, the area to be disturbed by construction impacts is estimated at 7.8 acres, which represents about 45% of the total acreage in the APE (17.5 acres). The removal of 343 feet of contributing stone walls represents approximately 19% of all retaining walls (total 1,843 linear feet) and the removal of 49 contributing trees represents about 53% of all contributing trees (total 92) in the project APE. The removal of non-viable or non-contributing trees, and the removal and replacement of collapsed/failed or non-contributing walls will have no adverse effect on the integrity of the historic district. Approximately 24% (12 trees) of the contributing trees to be removed are dead/non-viable trees. By definition, the removal of contributing walls, trees, and open lawn does constitute an adverse effect. However, the removal of these elements will occur within an area of the park where significant modern construction has already taken place. In addition, these impacts represent a small percentage of the total contributing elements in the entire historic Rockefeller Park that it will not significantly diminish the integrity of the district as a whole, in terms of its location, setting, feeling and association.

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1.0 PROJECT HISTORY

In November 2000, the Federal Aviation Administration (FAA) issued a Record of Decision (ROD) for expansion of the Cleveland Hopkins International Airport, as proposed by the City of Cleveland, Department of Port Control (DPC). The FAA and DPC selected several wetland and stream restoration projects as compensatory mitigation for the unavoidable impacts to water resources caused by the expansion project. These mitigation projects were stipulated as a condition of the Section 401 Findings and Orders issued by the Ohio Environmental Protection Agency (OEPA) and the Section 404 Permit issued by the U.S. Army Corps of Engineers (USACE) in 2001.

In issuing their Findings and Orders, the OEPA required the restoration of 12,400 linear feet of Doan Brook, from the outlet of the University Circle culvert to the inlet of the culvert at Interstate 90 (I-90). The USACE stipulated as a special condition of the Section 404 Permit that 9,213 linear feet of the stream restoration should include physical habitat modifications and that the total restored length should include hydraulic modifications, to address chronic erosion problems caused by flooding and high flows. Issuance of the permits also required that consultation under Section 106 of the National Historic Preservation Act of 1966 (NHPA) be initiated for the Doan Brook Restoration Project.

The Section 106 consultation process was initiated in May 2002 with the first in a series of seven stakeholder meetings that were held over a three-year period. Representatives from over 15 regulatory agencies, interest groups, and political jurisdictions were initially invited to participate in the process as Consulting Parties. Their goal was to determine if historic resources would be affected by the Doan Brook Restoration Project, and to seek ways to avoid or minimize any adverse impacts to historic resources, if present. Based in part on an inventory and evaluation report generated by Hardlines Design Company (HDC), the consultation process resulted in the findings that Rockefeller Park and the Cleveland Cultural Gardens were eligible for listing in the National Register of Historic Places (NRHP), and that the proposed stream restoration activities along Doan Brook would have an adverse impact on the historic integrity of the park and gardens.

Based on these findings, a Memorandum of Agreement (MOA) was reached in 2005 between the City of Cleveland, the FAA, the USACE, the OEPA, the Advisory Council on Historic Preservation (ACHP), and the Ohio Historic Preservation Office (OHPO) to mitigate those adverse impacts. Under the MOA, the FAA was charged with ensuring the following stipulations were carried out:

- Prepare a National Register nomination for Rockefeller Park;
- Follow established procedures for the treatment of contributing trees;
- Follow established procedures for the treatment of contributing stone walls;
- Develop a final design plan, construction plans, and specifications for the restoration project;
- Develop a Master Plan for Doan Brook/Rockefeller Park that will serve to guide the City with future management of the site;
- Develop, install, and maintain a project signage program for Rockefeller Park;
- Monitor the project improvements and provide an annual report for six years following final acceptance of the project construction; and
- Follow a protocol in the event that unanticipated adverse effects occur or human remains are encountered during implementation of the project.

Under the agreement (signed in January 2005), the MOA would become null and void if not executed within six years from the date of its execution. Also in the agreement were stipulations for amending, terminating, failure to comply, and resolving disputes associated with the MOA. One immediate result of the MOA was that the Rockefeller Park Historic District (which includes the Cultural Gardens) was formally listed on the NRHP in May 2005. The boundaries of the NR district (which also represent the Area of Potential Effects for this enhancement project) are shown in Figure 1.

Design plans were prepared by Camp Dresser & McKee (CDM) for the City of Cleveland in March 2002. The proposed plans were reviewed with the Consulting Parties through the Section 106 process. At the same time, a number of technical studies were undertaken to inventory and evaluate the presence, significance, and condition of historic resources in the area – including trees, stone walls, open lawn space, and structural elements – that might be affected by the project. Guided by these studies, and with stakeholder input, several modifications were made to avoid and minimize impacts to historic resources,

Legend

- Current Project Area
- Rockefeller Park HD
- Rockefeller Park Historic Bridges

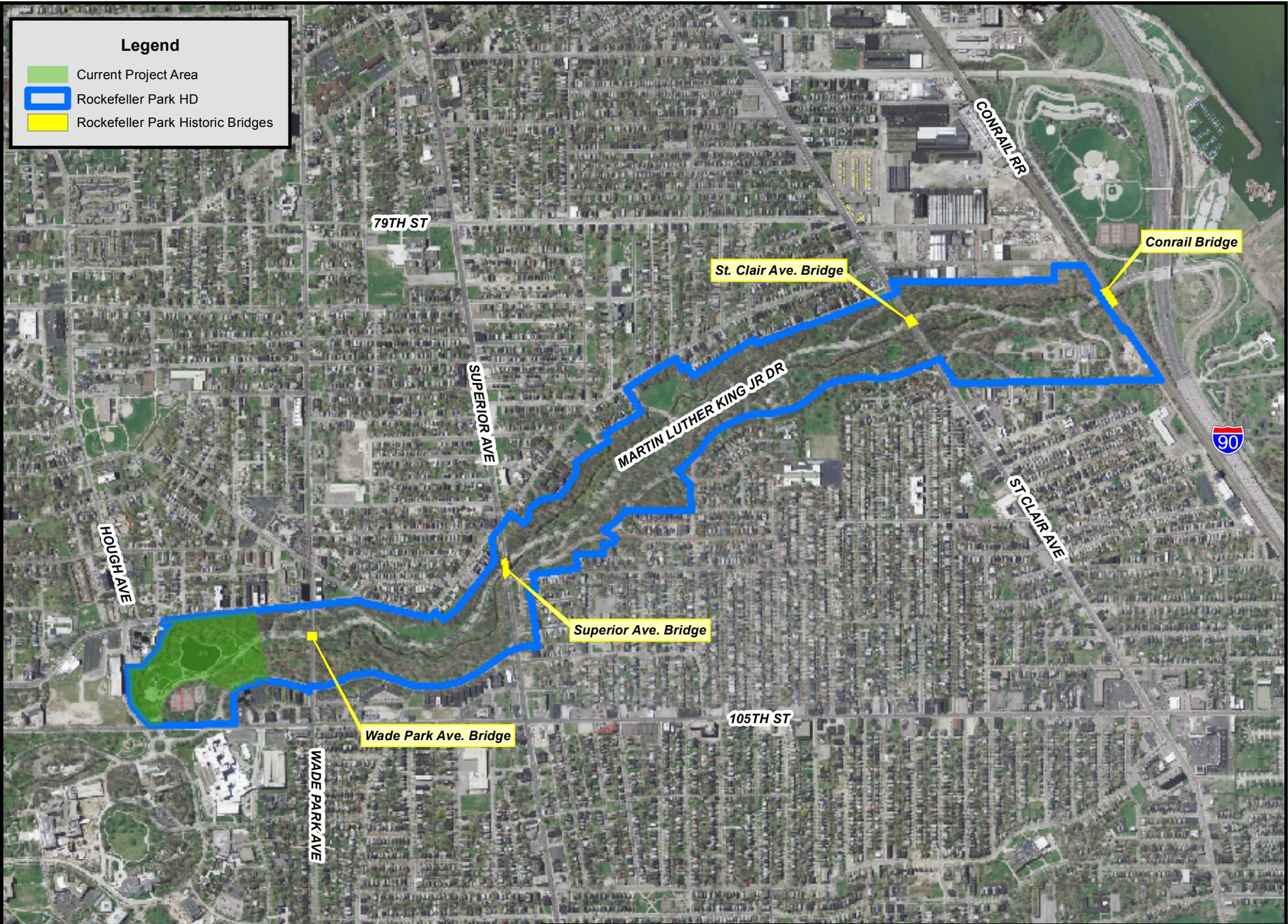


Figure 1: Project Location



while still meeting the project's original goal of habitat restoration, stormwater control, and increased public access. With those modifications, the engineer's estimate for the proposed restoration project was \$6.3 million. Under the first construction bid in June 2005, two bids were received in the public bidding process, one for \$7.4 million and the second for \$12.5 million.

Due to the excessive bid prices and non-responsiveness of bidders, the project was re-bid. In the second bidding in November 2005 there was a greater effort made to attract contractor interest in the project. Additionally, the second bid package provided for bid alternates by breaking the project up into four smaller projects, in an effort to attract contracting firms that specialize in stream restoration projects. Two bids received in response to the second advertisement were \$13.9 million and \$15.9 million. Again, both bids were rejected, and in 2006 the City and OEPA investigated other potential water quality improvement projects in the region to replace or supplement the Doan Brook Project, with no results.

At that time, the City requested that the Northeast Ohio Regional Sewer District (NEORS) undertake an evaluation of the project and consider management of project re-design and construction. As part of the NEORS evaluation, and with stakeholder input, a value engineering type review of the existing design was undertaken by URS in 2006 to identify where changes might lead to cost reductions. Of the five project options identified through this process, the favored approach was a hybrid alternative that focused on the upper portion (south end) of the project area, where infrastructure is most at risk but where the Cultural Gardens would not be impacted.

In October 2007, the City and NEORS met with the OEPA to request an extension of the timeframe and reduction in the quantity of linear feet required for compliance with the 2001 Findings and Orders. That request was granted in May 2009, when the OEPA reduced the project scope and budget in a Director's Modified Final Findings and Orders (DMFFO). Under these Orders, the City of Cleveland was required to invest \$2.5 million (from the original \$5.5 million stipulated in 2003) for stream enhancements on Doan Brook. The 2009 budget adjustment significantly reduced the scope of work from the original restoration project, and changed the design alternatives from those negotiated through the Section 106 consultation process. In November 2009, the NEORS was authorized by the City of Cleveland to take the lead in managing the current Doan Brook Stream Enhancement project.

As a condition of the DMFFO, a Conceptual Plan was developed by NEORSD on behalf of the City, outlining the goals, potential enhancement locations, and a schedule for implementation of the current project. Under the DMFFO, the project was confined primarily to the Doan Brook channel and contiguous riparian area, from East 105th Street to just south of Superior Avenue. This area encompasses five separate stream reaches along Doan Brook (Reaches 1-5) for a distance of approximately 5,200 feet. Per the stipulations in the 2005 MOA, the Conceptual Plan presented concepts for stream restoration that sought to balance the need for preservation of existing historic rock walls and the sensitivity of the park setting. The Conceptual Plan was approved by the OEPA in November 2009.

In January 2011 the project team held a pre-design meeting to introduce the new project, describe the project goals, and collect input from local stakeholders. Following the meeting, with on-site field surveying completed and the 2009 Conceptual Plan as a framework, CT Consultants (CT) began the preliminary design work for the newly defined Doan Brook Stream Enhancement Project. Concurrent with those efforts, a Stakeholders Involvement Plan (SIP) was developed and posted on the NEORSD website for public review and comment. Throughout the project development process, and with the SIP as a framework, stakeholder input will be used to establish and refine community goals for the stream enhancement project and will be incorporated into the final amended MOA, if required.

The 30% conceptual design plans were presented to stakeholders at a meeting in May 2011. At this meeting the design team and NEORSD detailed plans to focus the design plan on the section of stream from East 105th Street to the bridge crossing at Martin Luther King, Jr. Boulevard (Reaches 2-5), an overall project length of approximately 3,800 feet. Three approaches were identified in the plan for implementation of the project goals: construct or improve existing walls (and other structural elements) to protect infrastructure; implement managed enhancements on the public side of the stream such as grade adjustments or backfilling, restoring lawns, and planting behind existing walls; and widen the existing stream bed and introduce naturalized enhancements on the non-public areas of the stream. To determine the selection of feasible enhancement options at Doan Brook, further geotechnical and hydraulic investigations would also be needed to define prevailing site subsurface characteristics and groundwater conditions, and provide slope stability analysis and recommendations.

While the project is still in the design stage, and the scope and budget have been reduced, several stipulations of the MOA for the Doan Brook/Rockefeller Park Restoration Project have been addressed since the agreement was executed in 2005:

- The Rockefeller Park Historic District (which includes the Cleveland Cultural Gardens) was listed on the NRHP in May 2005 (Stipulation I);
- *Doan Brook Watershed Action Plan*, prepared by the Doan Brook Watershed Partnership in October 2009, compiled studies of the area into a comprehensive document and is in the process of identifying key priorities, strategies, and actions that will improve Doan Brook and advance urban watershed restoration efforts and practices (Stipulation V). The Plan has been submitted to ODNR for review and approval;
- *Rockefeller Park Strategic Master Plan*, prepared by Siteworks and McKnight & Associates, was completed in 2009 (Stipulation V). To encourage collaborative partnerships and small-scale neighborhood successes, the plan presented a layered system of design strategies that can be implemented incrementally over time. Working within that framework, the DBWP, NEORS and University Circle Incorporated have engaged the community in a series of ongoing private, cultural and civic infrastructure efforts to preserve and maintain the park and its resources;
- A \$250,000 post construction adaptive management fund was established in 2005 but was not expended because the project was not executed (Stipulation VII);
- At the conclusion of the consultation, a restoration monitoring plan was developed (Stipulation VII) but not implemented because the project did not proceed;
- A project signage program was presented in the initial bid package (Stipulation VI) but was not installed, as construction has not yet been initiated.

The MOA for the restoration project expired in January 2011. However, approval of the amended Enhancement Plan is still required under the 2009 DMFFO, and the project remains bound by the requirements of the Section 404 Permit from the USACE, as well as Section 106 of the NHPA. Since the design of the current enhancement project is significantly reduced in scope and budget from the previous approved design plan, the FAA requests that the previously executed MOA for the project be revised and extended to take into account the changes to the scope of the project. The FAA is also requesting that the

Section 106 consultation process be re-engaged with the OHPO so that the project can once again move forward.

2.0 PROJECT DESCRIPTION

The portion of Doan Brook to be restored under the original project included the stream segment between Euclid Avenue and I-90, which also corresponds with the north-south limits of the Rockefeller Park Historic District (Figure 1). In accordance with the regulatory permitting requirements, the scope of the original project included hydraulic modifications to 12,400 linear feet of stream, and physical in-stream habitat modification of 9,213 linear feet within the same stream reach.

Now at the 90% design phase, the current stream enhancement project is focused on providing enhancements to a section of Doan Brook that begins just downstream of the Mt. Sinai culvert at East 105th Street and continues north through Rockefeller Park to the MLK Drive slab bridge, a total distance of approximately 1,700 feet (Figure 2). Throughout these areas (Reaches 2 and 3), the degrading rock walls have forced the stream in the opposite direction in several spots, which has accelerated bank erosion. Downstream, the channel has over-widened and has very limited natural stream and habitat features.

To rectify these problems, the stream channel will be selectively reconstructed with the proper dimension, pattern, and profile to handle the flows from upstream. This will require the removal of approximately 343 feet (19%) of the contributing stone walls located in the current project area. Approximately 1500 feet of contributing walls (81%) will remain in place, which includes approximately 20 feet (1%) of collapsed wall that will be rebuilt in place and 200 feet (11%) that will be modified by removing the top portion of the wall to lower the wall height. In addition, approximately 200 feet of contributing wall that is believed to be buried at the site is expected to be exposed during construction. There are two areas along the project reach where historic sandstone walls are thought to be buried and may have the potential to be exposed during construction. These two areas are on the river-right bank between stations 13+20 to 14+65 (Area 1) and 18+40 to 18+95 (Area 2). Area 1 has cobble point bar material where the proposed grading is very similar to the existing grading. Up to 145 feet of wall may be below this material but because the proposed grading is similar to existing, the wall may not be exposed if it only exists at deeper depths. If the wall is exposed and it is in poor condition, it will be incorporated into the cobble point bar similarly to the existing.

In the second area, approximately 55 feet of the historic sandstone wall is more likely to exist based on site observations. However, its condition is unknown and it is therefore unknown if it will be able to be saved or

require replacement with new sandstone walls as proposed elsewhere on the project reach. The exposed sandstone wall in Area 2 will be kept if it is of condition similar to the other historic sandstone walls that are remaining onsite without modification. Examples of this include where the rocks and grout are mostly intact, there is no settlement or leaning, or there are no tree or root penetrations through the wall. If a segment of wall in Area 2 has failed and is less than 20-ft in total length, it will be repaired by reusing existing onsite sandstone blocks and tuckpointing them to match the adjacent historic wall sections. The repairs will be made with a typical grout mix used for these types of walls. The grout will be similar in appearance to the historic grout. The design team has developed specifications for the grout, which have been incorporated into the 90% design documents. However, if a wall segment greater than 20-ft has loose or missing rocks, or has an estimated rock strength less than R3 (International Society of Rock Mechanics) as determined by a geotechnical engineer, the wall will be replaced with new sandstone as shown on the construction drawings.

The project also includes the construction of 1,124 feet of new sandstone wall to resemble the existing contributing walls (Figures 3 and 4). To the extent possible, rehabilitated and new walls will be constructed with salvaged stone material or similar materials. The steep downstream slopes will be stabilized and revegetated; stable pools, riffles, and native vegetation will be introduced along the riparian area to provide suitable habitat for an improved biotic community; and new terrace walls will be constructed further back on the banks (with salvaged stone) to create a wider floodplain bench.

Legend

 Contributing Feature in Historic District

 Area of Potential Effects (APE)

 Rockefeller Park Historic District

Reaches

 Reach 2

 Reach 3

 Reach 4

 Reach 5

Map ID	Contributing Feature
1	Mt Sinai Culvert
2	Doan Brook Channel and Walls
3	Lower West Lawn South of Wade Park Ave
4	Lower East Lawn South of Wade Park Ave
5	Rock Garden
6	MLK Drive Slab Bridge #1
7	MLK Drive and Liberty Oaks
8	Stairs from East boulevard
9	East Wooded Area South of Wade Park
10	West Wooded Area South of Wade Park

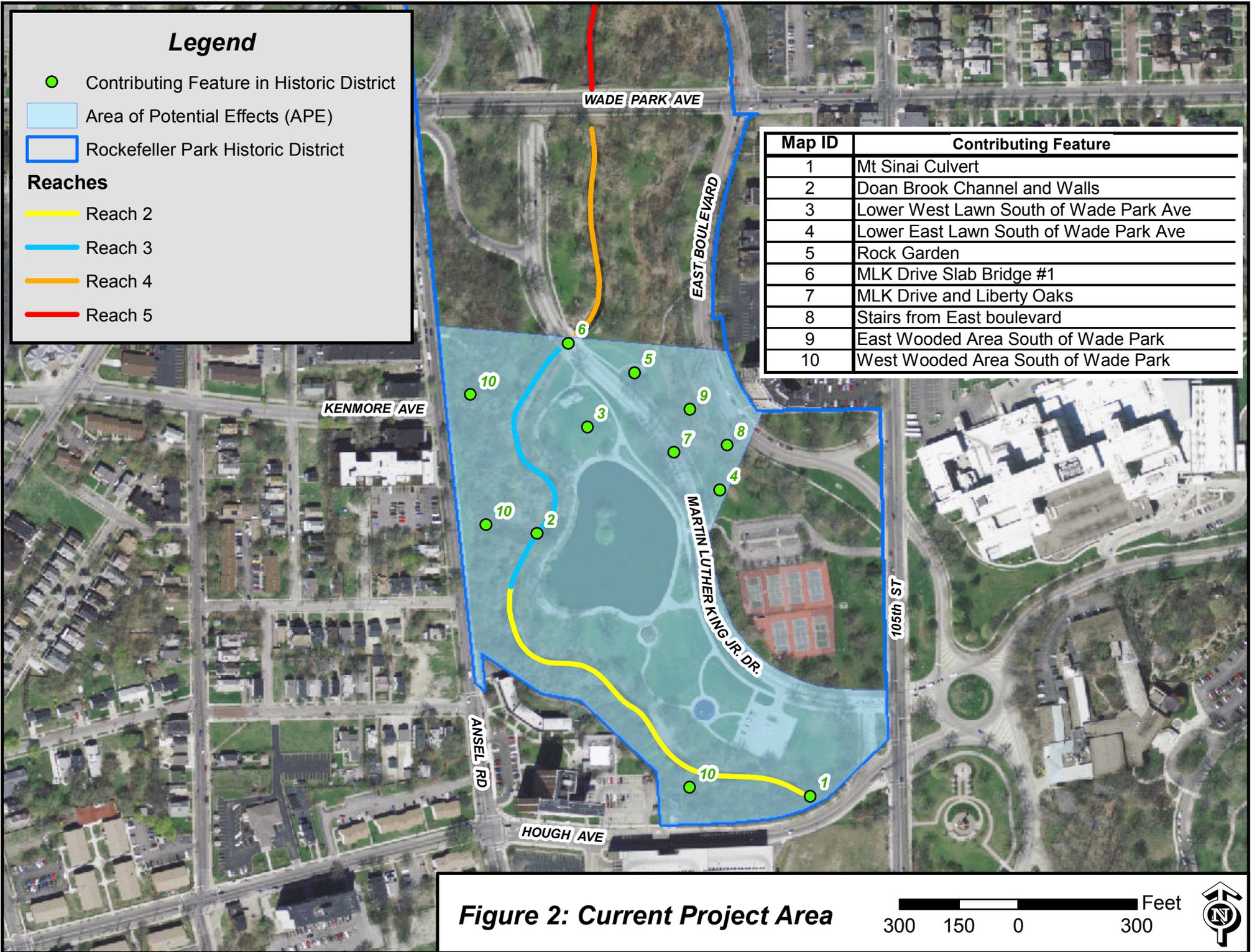


Figure 2: Current Project Area



Figure 3 – 90% Design Contributing Walls & Trees (C-03)

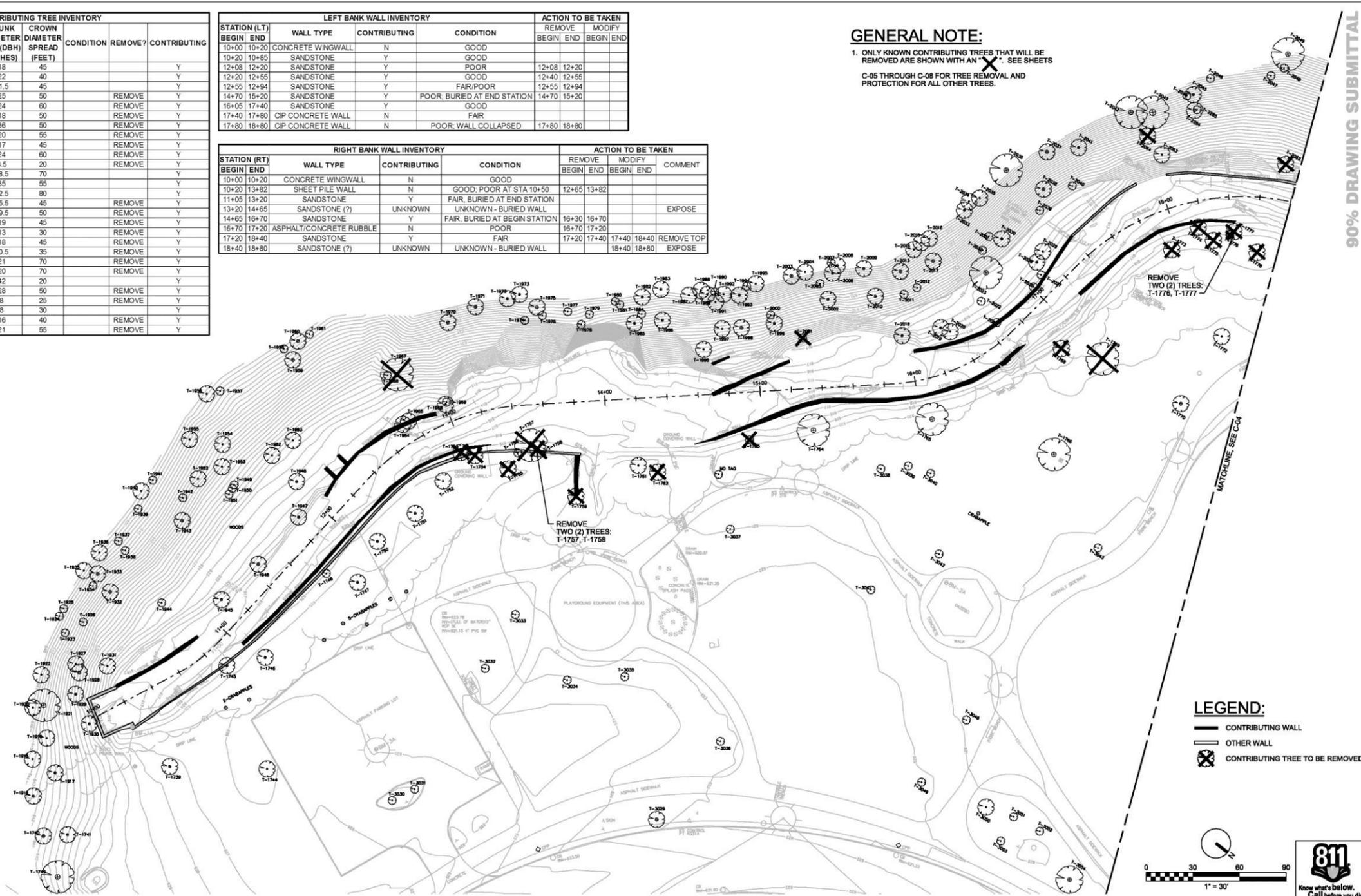
CONTRIBUTING TREE INVENTORY					
TAG NO.	TREE TYPE	TRUNK DIAMETER SIZE (DBH) (INCHES)	CROWN DIAMETER SPREAD (FEET)	CONDITION	REMOVE? CONTRIBUTING
1747	SCARLET OAK	18	45		Y
1750	SCARLET OAK	22	40		Y
1751	SCARLET OAK	21.5	45		Y
1753	BLACK WILLOW	25	50	REMOVE	Y
1754	BLACK WILLOW	24	60	REMOVE	Y
1755	BLACK OAK	18	50	REMOVE	Y
1757	BLACK WILLOW	36	50	REMOVE	Y
1758	BLACK WILLOW	20	55	REMOVE	Y
1759	AMERICAN ELM	17	45	REMOVE	Y
1762	SCARLET OAK	24	60	REMOVE	Y
1763	COTTONWOOD	8.5	20	REMOVE	Y
1764	SCARLET OAK	38.5	70		Y
1765	SHINGLE OAK	35	55		Y
1766	SCARLET OAK	32.5	80		Y
1768	PIN OAK	25.5	45	REMOVE	Y
1769	SCARLET OAK	29.5	50	REMOVE	Y
1773	TULIP POPLAR	19	45	REMOVE	Y
1774	AMERICAN ELM	13	30	REMOVE	Y
1775	TULIP POPLAR	18	45	REMOVE	Y
1776	AMERICAN ELM	10.5	35	REMOVE	Y
1777	COTTONWOOD	21	70	REMOVE	Y
1778	ENGLISH OAK	20	70	REMOVE	Y
1945	EASTERN SYCAMORE	42	20		Y
1967	EASTERN SYCAMORE	28	50	REMOVE	Y
2001	BLACK WALNUT	8	25	REMOVE	Y
2026	AMERICAN ELM	8	30		Y
2062	WEeping WILLOW	16	40	REMOVE	Y
2064	COTTONWOOD	21	55	REMOVE	Y

LEFT BANK WALL INVENTORY					
STATION (LT) BEGIN	STATION (LT) END	WALL TYPE	CONTRIBUTING	CONDITION	ACTION TO BE TAKEN REMOVE BEGIN END
10+00	10+20	CONCRETE WINGWALL	N	GOOD	
10+20	10+85	SANDSTONE	Y	GOOD	
12+08	12+20	SANDSTONE	Y	POOR	12+08 12+20
12+20	12+55	SANDSTONE	Y	GOOD	12+40 12+55
12+55	12+94	SANDSTONE	Y	FAIR/POOR	12+55 12+94
14+70	15+20	SANDSTONE	Y	POOR, BURIED AT END STATION	14+70 15+20
16+05	17+40	SANDSTONE	Y	GOOD	
17+40	17+80	CP CONCRETE WALL	N	FAIR	
17+80	18+80	CP CONCRETE WALL	N	POOR, WALL COLLAPSED	17+80 18+80

RIGHT BANK WALL INVENTORY					
STATION (RT) BEGIN	STATION (RT) END	WALL TYPE	CONTRIBUTING	CONDITION	ACTION TO BE TAKEN REMOVE BEGIN END
10+00	10+20	CONCRETE WINGWALL	N	GOOD	
10+20	13+82	SHEET PILE WALL	N	GOOD, POOR AT STA 10+50	12+65 13+82
11+05	13+20	SANDSTONE	Y	FAIR, BURIED AT END STATION	
13+20	14+65	SANDSTONE (?)	UNKNOWN	UNKNOWN - BURIED WALL	
14+65	16+70	SANDSTONE	Y	FAIR, BURIED AT BEGIN STATION	16+30 16+70
16+70	17+20	ASPHALT/CONCRETE RUBBLE	N	POOR	16+70 17+20
17+20	18+40	SANDSTONE	Y	FAIR	17+20 17+40
18+40	18+80	SANDSTONE (?)	UNKNOWN	UNKNOWN - BURIED WALL	18+40 18+80

GENERAL NOTE:

1. ONLY KNOWN CONTRIBUTING TREES THAT WILL BE REMOVED ARE SHOWN WITH AN 'X'. SEE SHEETS C-05 THROUGH C-08 FOR TREE REMOVAL AND PROTECTION FOR ALL OTHER TREES.



90% DRAWING SUBMITTAL



REV NO	DATE	ISSUED BY	REMARKS

DESIGNED BY: B BROWN
 DRAWN BY: C DAHL
 SHEET CHECKED BY: S MILLER
 APPROVED BY:
 ISSUED DATE: NOV 2012



DOAN BROOK
 STREAM ENHANCEMENT
 PROJECT
 PROJECT NO.: 1131

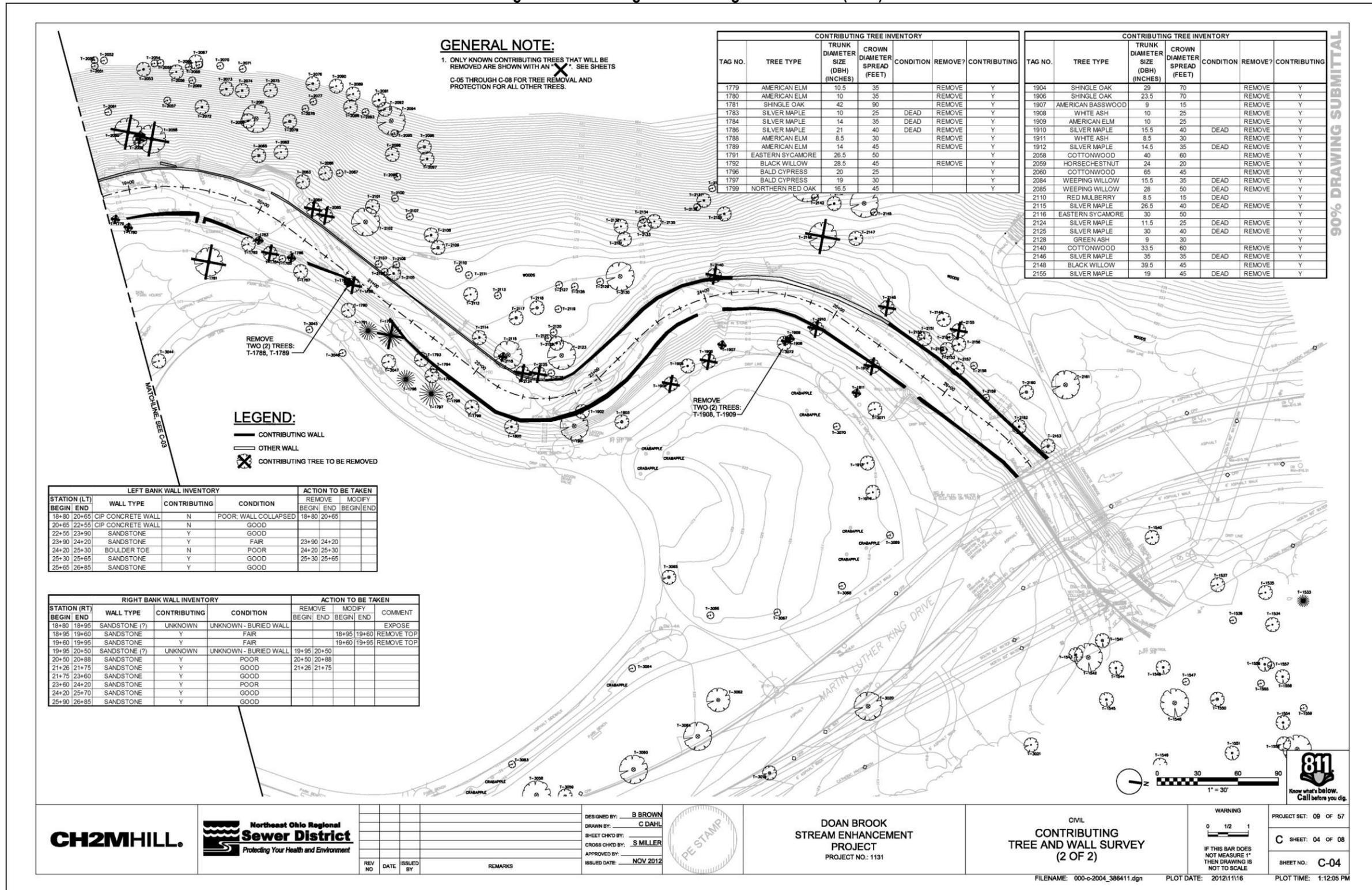
CIVIL
 CONTRIBUTING
 TREE AND WALL SURVEY
 (1 OF 2)

WARNING
 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT SET: 08 OF 57
 C SHEET: 03 OF 08
 SHEET NO.: C-03

FILENAME: 000-c-2003_386411.dgn PLOT DATE: 2012/11/16 PLOT TIME: 1:11:54 PM

Figure 4 - 90% Design Contributing Walls & Trees (C-04)



90% DRAWING SUBMITTAL



DESIGNED BY: B BROWN
 DRAWN BY: C DAHL
 SHEET CHKD BY: S MILLER
 APPROVED BY:
 ISSUED DATE: NOV 2012



DOAN BROOK
 STREAM ENHANCEMENT
 PROJECT
 PROJECT NO.: 1131

CIVIL
 CONTRIBUTING
 TREE AND WALL SURVEY
 (2 OF 2)

WARNING
 0 1/2 1
 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT SET: 09 OF 57
 C SHEET: 04 OF 08
 SHEET NO.: C-04

FILENAME: 000-c-2004_386411.dgn PLOT DATE: 2012/11/16 PLOT TIME: 1:12:05 PM

The goal of these enhancements is to improve aquatic habitat, provide for better control of stream flows, provide for some floodplain relief where possible, improve and enhance riparian vegetative cover, remove invasive plant species where possible, and provide for some limited public access to the brook. Table 1 shows a comparison of the previous and current Doan Brook projects, in terms of their scope, cost, and impacts. The 90% conceptual design plan was prepared by CH2M Hill in November 2012.

Table 1: Comparison of Doan Brook Projects

Design Concepts	Original Project (2005)	Revised Project (2012)
Approximate Restoration Length:	12,400 Lineal Feet	~1,700 Lineal Feet
Approximate Construction Cost:	\$12,000,000	\$3,700,000
Flood Plain Treatments:	Natural un-manicured vegetation, not in keeping with the character of Rockefeller Park	Terraced flood plains; re-using wall material; plantings that fit the park setting
Stream Bank Stabilization:	Drastic modification of alignment; root wads; rock boulder walls; live branch layering; etc.	Maintain current stream alignment (bankfull); re-use of rock walls
Habitat Improvements:	Riparian root wads; stable pools and riffle; boulder J-vanes; hook vanes	Stable pools and riffles; creation of low-flow channel and thalweg
Hydraulic Improvements:	Dramatic modification of alignment to lengthen stream; removal of 50% of rock walls to increase flood plain	Reconstruct a stable stream channel with the proper dimension; patten and profile that can handle local flows

3.0 AREA OF POTENTIAL EFFECT (APE)

Since the construction activities will be confined to a small area at the south end of Rockefeller Park, the recommended Area of Potential Effect (APE) for the Doan Brook Stream Enhancement Project is the southern end of the historic Rockefeller Park District. The APE encompasses the limits of construction, staging areas and adjoining property within the viewshed, where visual impacts may occur. The APE is approximately 17.5 acres in size and is represented on Figure 2 as the shaded blue area. This area has seen many modernized improvements. Because the scope of work for this project is significantly reduced from the original Doan Brook Restoration Project and the current project does not extend beyond the boundaries of the park, we do not feel it is appropriate to include properties or neighborhoods outside the Rockefeller Park Historic District, as in previous efforts.

4.0 STEPS TAKEN TO IDENTIFY HISTORIC PROPERTIES

As part of the original consultation process, a series of detailed studies were performed in and around Rockefeller Park to identify historic properties and evaluate the effects of the proposed stream restoration on those properties. The studies that were directly referenced for current purposes include:

- *Doan Brook Mitigation Project: Retaining Wall Condition Report* (DLZ Ohio, Inc.: 2002);
- *Tree Survey Report* (Camp Dresser & McKee: March 2003);
- *Inventory and Evaluation of Historic Resources for the Doan Brook Stream Restoration Project* (Hardlines Design Company for Landrum & Brown: May 2003); and
- *Rockefeller Park and Cleveland Cultural Gardens Historic District, NRHP Registration Form* (Roy A. Hampton III, Amy D. Case, and Margo Warminski: June 2004).

Given the long passage of time since their completion, these studies were recently supplemented both by the design team and MSG with additional field studies to observe possible changes in the features and conditions of historic resources previously identified in the area. As part of their design process, the consultants field-checked and updated the 2002 tree inventory. Their findings show that some contributing trees are now in poor health, or are no longer present due to storm damage or disease. Results of the recent survey have been incorporated into the 90% design plan (Figures 3-4 and Appendix D) and are quantified in Table 2 below.

Table 2: Contributing Walls and Trees in Project Area

Trees	In Project Area	In APE	% of APE
Contributing	64	92	70%
Non-Contributing	114	327	78%
Total	178	419	42%
Walls	In Project Area	In APE	
Contributing	1843	1843	
Non-Contributing	1362	1362	
Total	3205	3205	

In preparing the impact assessment for the current enhancement project, MSG conducted two site visits. A reconnaissance survey of the entire historic district was performed on 17 May 2011. For part of that day, MSG was guided by Ray Saikus on a tour of the Liberty Oaks and several Cultural Gardens along MLK Drive. A second site visit was performed on 24 May 2011, to look more closely at the features in the project area that might be directly impacted by the proposed enhancement activities. Observations were recorded in field notes and photographs (Appendix E).

5.0 POTENTIAL AFFECTED HISTORIC PROPERTIES

The Doan Brook Stream Enhancement Project is located in Rockefeller Park, a large urban park designed in the Victorian Picturesque style.¹ The park is located in a valley on the east side of Cleveland that runs in a roughly north-south direction along the course of Doan Brook. The valley walls are steeply sloped and on the higher ground to the east and west are surrounded by residential neighborhoods. The park extends north from Mt. Sinai Drive to the Conrail Bridge south of I-90, a distance of approximately 2.1 miles. Through the center of the park is Martin Luther King Jr. (MLK) Drive, a winding two-lane road that roughly parallels Doan Brook.² The south end of the road is straddled by a series of mature pin oaks – referred to as Liberty Oaks – that were planted in 1918-1919 to memorialize soldiers lost in World War I. Each tree was originally accompanied by a bronze plaque dedicated to those soldiers; many of those markers are no longer present.

Rockefeller Park and Cleveland Cultural Gardens Historic District were listed in the NRHP in 2005. Major features of the historic district include a reconstructed lagoon at the south end, four modern concrete span bridges with original Victorian stone abutment and endposts, and four masonry veneer bridges (previously listed in the NRHP) that cross over MLK Drive. Doan Brook itself is a natural feature that forms the centerpiece of the park and adds to its integrity and sense of historic character. Through much of the park, the brook is lined with stone walls that were constructed to address problems with flooding and bank erosion. The walls represent several distinct periods of construction and their condition varies; those constructed from 1904-1941 have been identified as contributing elements. In addition, there are a few sections of original sandstone retaining walls not associated with the brook, a number of rock outcroppings, and a greenhouse complex and two formal decorative gardens at the north end of the park that are contributing elements in the historic district. The period of significance is 1894-1954.

Between Superior and St. Clair avenues are the Cleveland Cultural Gardens, which consist of 20 individual gardens that were built to promote ethnic pride and diversity, international cooperation, understanding between different races and ethnicities, and world peace. Most of the gardens were built between 1917 and 1941, with a small number added from 1958-1970, each with a unique design that reflects the ethnic group

¹ The text that follows was drawn from the NRHP nomination prepared by Roy A. Hampton III, Amy D. Case and Margo Warminski in June 2004

² Formerly known as Lower East Boulevard and Liberty Boulevard, it was first constructed from 1894-1902.

it represents. The gardens consist of plantings, trees, stone walls and terraces, stone and brick walks, and stone and bronze sculptures. They are linked by a series of trees and walkways that were completed in the 1930s. The Cultural Gardens were determined to be individually eligible for listing in the NRHP, but are included as part of the larger historic district. Essential features in the Cultural Gardens are the designed landscapes and freestanding sculptures.

The key defining features at Rockefeller Park that are associated with Victorian Picturesque landscapes are the spatial relationships between the roadways, wooded areas, and lawn, and the presence of stone structures. The topography of the park and the overall configuration of open lawn space alternating with dense groves of trees is a major contributing feature, in that it reflects the park's original pattern of development. Natural features that were deliberately planted or retained as part of the park's original landscaping plan contribute to the integrity of the park. Many of Rockefeller Park's original trees have died, but trees of similar species have been replanted in the original patterns of lawn and forested areas, and thus are contributing elements in the historic district. Despite many changes to the park and surrounding areas, and the loss of some original landscape elements, the overall setting still retains enough integrity to convey the historic character of the site as a whole.

The project area at the southern tip of the historic district is the most heavily altered portion of Rockefeller Park. Features of the area include concrete sidewalks, a children's playground, asphalt parking lot, gazebo, and tennis courts, all non-contributing (contemporary) elements in the historic district. A shallow, irregularly-shaped lagoon surrounded by concrete embankments and sidewalks was recently reconstructed – at half its original size, but in the same vicinity – near the southern park entrance. Doan Brook runs a gently curving course to the west of the lagoon, with dense woods and heavy undergrowth on the sloped valley wall beyond it. A number of original stone walls in these reaches have collapsed or eroded, and in some locations the brook has been lined with steel sheet-pile walls that are incompatible with the historic materials and design. An inventory and assessment of wall conditions in this area (performed in 2002) indicates that 89.5% of the masonry and concrete walls were in poor or failed condition; approximately 352 feet of non-contributing steel sheet pile walls have also been constructed in this area to replace older walls.

Contributing landscape features in the project area include the lower east and west lawns south of Wade Park Avenue, an outcropping of boulders on the eastern valley wall (originally laid out as a rock garden), the Liberty Row Memorial along MLK Drive, and other mature hardwoods along the stream. North of the

lagoon on MLK Drive is a sensitively redesigned concrete span bridge that incorporates the stone endposts and abutments of an earlier 1890s bridge that was part of the original park development. Immediately north of this bridge, the solid stone masonry walls along Doan Brook were constructed ca. 1904-1909 at an early stage in the City's flood control efforts. To the east and west of MLK Drive along the valley floor is a combination of mowed lawn spaces with some hardwood trees, and heavy woods with thick understory growth on the sloped fringes. The woods serve as a visual buffer and isolate the drive from the noise of the surrounding city streets. Outside the project area (approximately 550 feet) to the north is the Wade Park Avenue Bridge, a picturesque stone structure with serpentine staircase that is individually listed in the NRHP.

6.0 ASSESSMENT OF EFFECTS

The Doan Brook Stream Enhancement Project is located in Reaches 2 and 3 at the south end of Rockefeller Park (Figure 2). The project area follows Doan Brook for a distance of 1,700 feet. The area to be disturbed by construction impacts is estimated at 7.8 acres, which represents about 45% of the total APE acreage. The current project involves the removal of some stone walls along Doan Brook, and re-grading or terracing areas around the brook to create a wider flow area for the brook to expand into during high water. The main purpose of these changes is to reduce the flooding that now occurs in Rockefeller Park due to the stream's narrow channel. The challenge for project designers has been to minimize the loss of contributing walls and trees, maintain existing lawns and open areas, and preserve significant structural features, while maximizing stream efficiencies in Doan Brook.

Under Section 106, a project adversely affects a historic property if it alters the characteristics that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property. "Integrity" is the ability of a property to convey its significance, based on its location, design, setting, materials, workmanship, feeling, and association. Adverse effects can be direct or indirect. They include reasonably foreseeable impacts that may occur later in time, be farther removed in distance, or be cumulative. Adverse effects include, but are not limited to: demolition; alteration; removal of a property from its original setting; neglect; abandonment; or the introduction of visual, atmospheric, or audible elements. When a project will affect a historic property, the lead agency (in this case, the FAA) must apply the criteria of adverse effect – defined in 36 CFR § 800.5(a)(1) – to determine if the effect will be adverse, or negative.

The following assessment is based on a review of the 90% design plans prepared by CH2M Hill in November 2012 and presented in Appendix D. Its intent is to analyze and describe the potential adverse effect of the proposed project on contributing elements in the APE. The discussion addresses contributing features within the current project area that may be directly impacted by the stream enhancement, but also includes an overall assessment of potential indirect impacts to the APE as a whole. Figure 2 shows the location of contributing historic resources and property types within the current project area, which are numbered for ease of reference and described below. Photos of these resources are presented in Appendix E, along with views towards the construction zone showing potential visual impacts.

Stone culvert (Feature 1): The concrete walls and culvert (under E. 105th Street) carrying Doan Brook into the south end of Rockefeller Park were likely constructed ca. 1930-1945 (Appendix E, Photo 3). The culvert's segmental arched design is compatible with other Neoclassical elements in the park dating to this period, and it is cited as a contributing structural element in the historic district. No construction activities are proposed in or around the culvert, and the project will have no effect on this resource.

Doan Brook channel and walls (Feature 2): The banks of Doan Brook are reinforced and walled through most of the stream's course through Rockefeller Park. There is considerable variation in the design and composition of the walls. The walls include stone masonry structures, poured concrete and metal sheet pile sections (Appendix E, Photos 3-28). All of the stone walls were intended to harmonize with earlier stonework in the park, especially the textures and features of the four architecturally significant (and individually designated NRHP) masonry bridges that cross MLK Drive. Walls in the current project area are cut more crudely and laid in a more irregular pattern than the walls in the park's northern sections. Extensive work was done in this section of the brook from 1904-1909.

There are approximately 1,843 linear feet of contributing walls and 1,362 linear feet of non-contributing walls in the project area. The treatment strategy for these walls varies. Design plans call for the removal of some walls to open bankfull areas and floodplain in the project area. Other walls will be preserved in place, and approximately 81% of the contributing walls in the project area will be preserved, modified or repaired. In addition, during construction of the project an estimated 200 feet of buried contributing walls are expected to be exposed by the project. Specifically:

- 1,280 feet of contributing walls (69% of the 1,843 feet of contributing walls in the project area) will be preserved in place;
- 343 feet of contributing walls (19% of the 1,843 feet of contributing walls in the project area) will be removed and reused elsewhere in the project area, if possible;
 - 149 feet (43%) of the 343 feet of contributing walls to be removed have failed or are in poor condition
- 200 feet of contributing walls (11% of the 1,843 feet of contributing walls in the project area) will be modified by removing the top of the wall in order to reduce the overall wall height;

- 20 feet of contributing walls (1% of the 1,843 feet of contributing walls in the project area) will be rebuilt in place; and
- 200 feet of additional contributing walls are expected to be exposed during construction.

The impacts to the contributing walls are summarized below in Table 3.

Table 3: Impacts to Contributing Walls

Contributing Walls	Length in Project Area (Linear Feet)	Failed/Poor Condition (Linear Feet)	% in APE
Preserve	1280		69%
Remove ⁺	343	149 (43%)	19%
Rebuild	20		1%
Modified	200		11%
Expected to be exposed	200		
Total Remaining	1500*		

⁺Stone will be reused elsewhere in the project area if possible.

* Does not includes walls expected to be exposed.

Removal and replacement of collapsed/failed or non-contributing walls will have no adverse effect on the integrity of the historic district. Approximately 1,500 feet of existing stone walls – which represents 81% of all walls in the project area – will be retained in place, and the project will likewise have no adverse effect on these resources.

Under the current 90% design plan, 343 feet of contributing stone walls (19%) will be removed. By definition, the demolition of contributing resources constitutes an adverse effect. In addition, the project includes 1,124 feet of new sandstone walls to be consistent with the historic nature of the park. It is our opinion that the proposed wall treatments will have an adverse effect on historic properties within the APE, however because the project is limited to the southern end of Rockefeller Park and is much smaller in scope than the previous project, it will not significantly diminish the integrity of the Rockefeller Park Historic District in terms of its location, setting, feeling and association.

Lawn areas (Features 3 and 4): The topography of Rockefeller Park is a significant landscape element, and the pattern of open lawns that contrast with dense patches of trees is a signature feature of the

nineteenth-century American Romantic/Victorian movement as applied to park design. The park's original layout of winding drives, open lawns, and clusters of trees – dating to 1894-1899 – remain important features of the designed landscape. As part of the larger landscape context, the lower east and west lawns south of Wade Park Avenue (Appendix E, Photos 22, 26) retain sufficient integrity of design and setting to be contributing historic elements in the historic district.

With the proposed removal of walls, in some areas the stream banks will be pulled back as terraced walls with salvaged or compatible stone walls (as stipulated in the MOA). The streambed will not be moved, but channel widening will require the limited removal of lawn space adjoining the stream banks, which may introduce changes in the project area setting. Under the 90% design plan, approximately 0.2 acres of grass lawn (of the total 17.5 acres in the APE, or approximately 1.0%) will be re-graded along the public side of the stream (closer to MLK Drive) for expansion of the brook during high water (Appendix E, Photos 10, 19); some areas on the west side of the stream will also be graded and terraced (Appendix E, Photos 12-16), but these areas are largely wooded and lawns will not be impacted. The introduction of set-back terrace walls will not only direct the overflow water appropriately, but will help maintain a defined edge within the floodplain area and thus minimize any functional or visual effects.

Most of the lawn impacts will occur along the stream banks to the southwest of the lagoon, an area that has already experienced considerable alteration with the installation of a parking lot and playground equipment (Appendix E, Photos 1-2). In this area, a rain garden will be created for stormwater runoff from the existing parking lot. The rain garden is a low-profile element, with reclaimed/recycled stone (from the stream) set around the perimeter of the garden and native wildflowers, perennials and grasses planted within it. A sculpture play area is planned adjacent to the rain garden. Topographic alterations to the lawns will be minimal, furnishings and sculptures are impermanent, and plantings will be natural and unobtrusive. Because a significant amount of formal lawn space will still be maintained along MLK Drive under this plan, the visual effects of these changes will be minimal, and the project will not adversely impact the landscape. The proposed plan will therefore have no adverse effect on the overall integrity of lawns in the project area or the APE.

Rock garden (Feature 5): On the sloped eastern wall of the stream valley, at the north end of the current project area, is an outcropping of boulders that were originally intended as the setting for a rock garden

(Appendix E, Photos 37-38). There are no remnant plantings in this vicinity that might be associated with a rock garden, and the outcropping is surrounded by dense tree cover that serves as a visual buffer. From this wooded area, the proposed enhancements will be shielded from view (Appendix E, Photos 39-40). The project will therefore have no effect on this element of the historic district.

MLK Drive slab bridge #1 (Feature 6): The MLK bridge over Doan Brook south of Wade Park Avenue was originally a steel girder structure, one of four such bridges built in Rockefeller Park (Appendix E, Photos 27-28). The stone abutments and endposts were built 1897-1899. The bridge was reconstructed with a modern concrete deck within the past 30 years and the original wrought iron railings were replaced with newer stone railings that were designed to mimic older stonework in the park. Only the endposts and abutments are considered contributing elements in the historic district. Under the current plan, no new construction is proposed in the vicinity of this structure, and the contributing walls adjoining the bridge will not be altered (Figure 4). The enhancement project will therefore have no effect on this bridge, or other bridges in Rockefeller Park, either directly or indirectly.

MLK Drive and Liberty Oaks (Feature 7): MLK Drive is a major curvilinear road that forms the spine of Rockefeller Park (Appendix E, Photo 45). Now a two-lane asphalt road, it was constructed from 1894-1902 during the initial park development phase. It now serves as a major arterial between I-90 and University Circle. In 1918 the road was re-designated as Liberty Boulevard and was established as a memorial to the 830 Cleveland area soldiers lost in World War I. Oak trees were planted along the side of the road (Appendix E, Photo 36), along with bronze and concrete plaques mounted at the base (Appendix E, Photo 46). Some of the original trees have been cut down, and many of the plaques are gone, but the Liberty Oaks are important elements in the park. While the road has been widened (after the end of the period of significance), the alignment and path of MLK Drive still conform to the original curvilinear development pattern in the park. As all construction activities will be confined to the area within or abutting Doan Brook, the proposed enhancements will have no impact on MLK Drive or the Liberty Oaks.

While the roadway and memorial trees will not be impacted by the current project, the 90% design includes the addition of 18 new oak trees in the APE along MLK Drive. The intent of the planting is to replace missing Liberty Oaks and enhance the tree canopy along the road. The trees will be planted in their original locations. This activity will have no adverse effect on the historic district.

Stairs from East Boulevard (Feature 8): Stone and concrete steps from the original phase of park construction (1894-1899) are located on the east valley slope (Appendix E, Photo 33). The stairs provide access to the park from residential neighborhoods along East Boulevard. The setting is steeply sloped with heavy tree cover. From within this wooded area, the proposed enhancements will be shielded from view (Appendix E, Photos 34-41). The project will therefore have no effect on this element of the historic district.

Wooded areas south of Wade Park Avenue (Features 9 and 10): The relationship between densely wooded areas and open lawn is an important aspect of Victorian park design. Rockefeller Park still has many old-growth trees that were planted in the early years of the park's development, as well as newer trees that were subsequently planted to replace them. The survey conducted in 2003 established a baseline inventory of trees in Rockefeller Park and identified 2,277 trees with a diameter of 8 inches or more. Field survey and analysis of the survey data indicates that 502 trees in the park are over 50 years of age and contribute to the park's historic character. Trees that are less than 50 years old but were deliberately planted or retained as part of the park's historic landscaping plan are also considered contributing elements in the historic district.

In accordance with the 2005 MOA (Stipulation II), the project designers have made every effort to limit tree removal for this enhancement project. Under the 90% design plan, 43 contributing trees (all viable) in the APE will be preserved (Table 4; Figures 3-4). There are 16 contributing trees located within or near the project construction limits that will be preserved in place, which are identified on the 90% design drawings. During construction, these trees as well as 73 non-contributing/unknown status trees will be protected as shown on Sheets C-05 and C-05 in Appendix D). As stream banks are reconfigured, 49 contributing trees (about 53% of all contributing trees in the APE) will be removed, which includes 12 (approximately 24%) non-viable or dead contributing trees. All of the trees are located within 40 feet of the stream banks. Most of the contributing trees are Norway maple, American elm, silver maple, weeping willow, black cherry, tulip poplar, black locust, or mulberry. Several of these species were present during the early history of the park and in the early twentieth century. The viable contributing trees targeted for removal (37 trees) represents 40% of the contributing trees surveyed in 2003 in the APE. Several of the trees to be removed are located on the sloped walls on the west side of the stream. Upon completion of construction, 184 new trees will be planted in the project area to offset the loss of trees. Of the 184 new trees, 104 will be the same species as

contributing trees and/or species identified in the historic original design plans for the Rockefeller Park, as stipulated in the 2005 MOA.

Table 4: Impacts to Contributing Trees

Contributing Trees	Number	Dead	% in APE
Preserve	43	0	47%
Remove	49	12 (24%)	53%
New Contributing Trees	104		
Total	92*		100%

**Total does not include new trees to be planted*

By definition, the demolition of contributing resources constitutes an adverse effect. It is our opinion, however, that the modest loss of trees in this area does not significantly reduce the existing tree canopy along the stream, and does not disturb the character or setting of the designed landscape. In fact, removal of some trees along the stream bank will enhance the efforts to preserve existing stone walls, as some trees have grown into the walls or their roots have dislodged or destabilized the wall structure (Appendix E, Photo 17). Assuming that the best management practices and the protocol for treatment of contributing trees stipulated in the 2005 MOA is followed (Stipulation II), the proposed tree removal will not adversely impact the integrity of the historic district. The tree removal and protection plan illustrated on Sheets C-05 through C-08 of the 90% design plans (Appendix D) is consistent with those stipulated practices.

7.0 PUBLIC OUTREACH

Public involvement is a key component of the Section 106 process, and stakeholder involvement efforts for both the design and historic preservation aspects of the project are required. Upon assuming responsibility for managing the current enhancement project, on behalf of the City of Cleveland and the FAA, NEORSD has adopted a vigorous outreach effort. They began by developing a list of stakeholders with an interest in the outcome of the planning process, specifics of the environmental engineering design, and/or the project's impacts to the historic integrity of the Rockefeller Park Historic District. The list included individuals, elected officials, local, state and federal agencies, and other organizations, many of which were either signatories to or concurring parties on the 2005 MOA. The current list of stakeholders is presented in Appendix B. This list may be revised through the planning process as new stakeholders are identified.

A pre-design stakeholders meeting was held by the NEORSD on 18 January 2011 at Judson Manor in Cleveland. Invitations to this meeting were extended to all individuals, agencies and organizations currently included on the stakeholders list, and others with a vested interest in the project. At this meeting, project team members introduced themselves to the attending stakeholders, provided a description of the enhancement project (previous and current efforts) and the Section 106 process, and explained the roles that each team member will fulfill. Following these presentations, break-out groups were utilized to solicit more detailed information about each aspect of the project (impact to historic properties, stream restoration designs, and plans for public open space) and to provide preliminary input to the project team prior to the commencement of technical design work. Notes from that meeting are presented in Appendix A.

Based on feedback from that meeting, a Stakeholder Involvement Plan (SIP) was developed for NEORSD by MSG (Appendix B). The SIP is intended to supplement previous activities and to describe the basic methods by which additional input can be solicited and integrated into the current project planning process. Stakeholder input will be used to establish and refine community goals for the stream enhancement project and will be part of the Section 106 consultation process. Stakeholder input will also be used to evaluate project performance. In March 2011 the SIP was posted on the NEORSD website (www.neorsd.org/doanbrook) and a dedicated space was created to provide up-to-date information about the project, including documents, exhibits, and project data.

Upon completion of 30% design plans, a second stakeholder meeting was held on 24 May 2011 (Appendix C). The meeting provided an update on the status of the project, presented initial design plans, and allowed stakeholders to provide input on the design, including any concerns about its impact on the environment of Doan Brook and/or on historic properties within or adjacent to the Rockefeller Park Historic District. The meeting was videotaped to document the proceedings and discussion that followed. No issues related to historic resources were raised by the attendees. Copies of the taped proceedings are available upon request.

In August 2011, the NEORSD prepared a flyer describing the current status of the enhancement project (Appendix F). The flyer provided a brief history of the project, the goals and importance of the project, a description of the agency interaction, and a tentative schedule for construction. The flyer was posted on the NEORSD "Doan Brook" Website and was circulated at the Doan Brook Fishing Derby in September 2011. The flyer will also be included in the next Doan Brook Watershed Partners newsletter, which includes a mailing list of 4,000 as well as electronic mailings to several thousand additional recipients.

NEORSD has also used its current presence on various forms of social media to disseminate information about the project and to collect feedback from stakeholders and interested members of the public. These social media outlets include YouTube, Facebook, Twitter, Flickr, and the NEORSD blog (neorsd.blogspot.com). On 3 September 2011, NEORSD set up a display about the project at the Family Fishing Day event at the Rockefeller Park lagoon to raise general public awareness of the project.

APPENDIX A

PRE-DESIGN STAKEHOLDER MEETING

APPENDIX B

STAKEHOLDER INVOLVEMENT PLAN

APPENDIX C

30% DESIGN STAKEHOLDER MEETING

APPENDIX D

90% DESIGN PLANS

APPENDIX E

PHOTOGRAPH LOG

APPENDIX F

PUBLIC OUTREACH