

Lick Run Watershed Strategic Integration Plan Cincinnati, Ohio



Partnership for Sustainable Communities

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1.0 Introduction and Report Purpose

1.1 Project Groundwork and the Sustainable Infrastructure Program

To assist the Metropolitan Sewer District of Greater Cincinnati (MSD) in evaluating issues associated with sustainable infrastructure for addressing Combined Sewer Overflow (CSO) issues affecting the City and the Ohio River, the United States Environmental Protection Agency (US EPA) commissioned this Lick Run Watershed Strategic Integration Plan to outline coordinated actions, investments and decision-points that could be needed to implement a Sustainable Infrastructure Program approach for CSO control. This Plan's purpose is to identify the specific public investments, actions, milestones and opportunities that will be needed to implement a viable sustainable infrastructure alternative. This technical assistance was provided for US EPA's Office of Brownfields and Land Revitalization under contract by SRA International, Inc., and Tetra Tech, Inc. (Technical Assistance Team).

"Sustainable Infrastructure," will be used in this Plan to describe the following types of "green infrastructure" being considered by MSD as possible components of its program for CSO control. As defined in the Wet Weather Implementation Plan approved under the consent decree, this includes "source control or stormwater offloading through:

- Combined sewer separation (both natural conveyance and storm sewers)
- Bioretention and stormwater detention
- Stream restoration
- Stream daylighting
- Other Low Impact Development (LID) best management practices (BMPs)."

These source control measures can reduce the volume of stormwater flows draining into the CSO system during wet weather events. Between 2002 and 2010, the US EPA and MSD agreed to an Interim Partial Consent Decree (2002), a Global Consent Decree (Consent Decree on Combined Sewer Overflows, Wastewater Treatment Plants, and Implementation of Capacity Assurance Program Plan for Sanitary Sewer Overflows), and a First Amendment to Consent Decrees that have all been entered by the US District Court for Southern District of Ohio Western Division. These require that MSD must implement measures to address the approximately 14 billion gallons of annual overflows from the City's combined storm and sanitary sewers, and sanitary-only sewers.

The City's response, called Project Groundwork, will lead to an investment of over \$2 billion in infrastructure improvements. Project Groundwork's history, requirements and program components are described in the Project Groundwork 2010 Summary Report, which is included with Appendix C. As described on the MSD's program website, **Project Groundwork** is intended to:

- Reduce or eliminate sewage overflows into local rivers and streams and sewage backups into basements;
- Benefit Hamilton County communities through environmentally, socially and economically sustainable solutions to these current problems; and
- Revitalize the economy through creation of jobs and growth opportunities for local businesses¹.

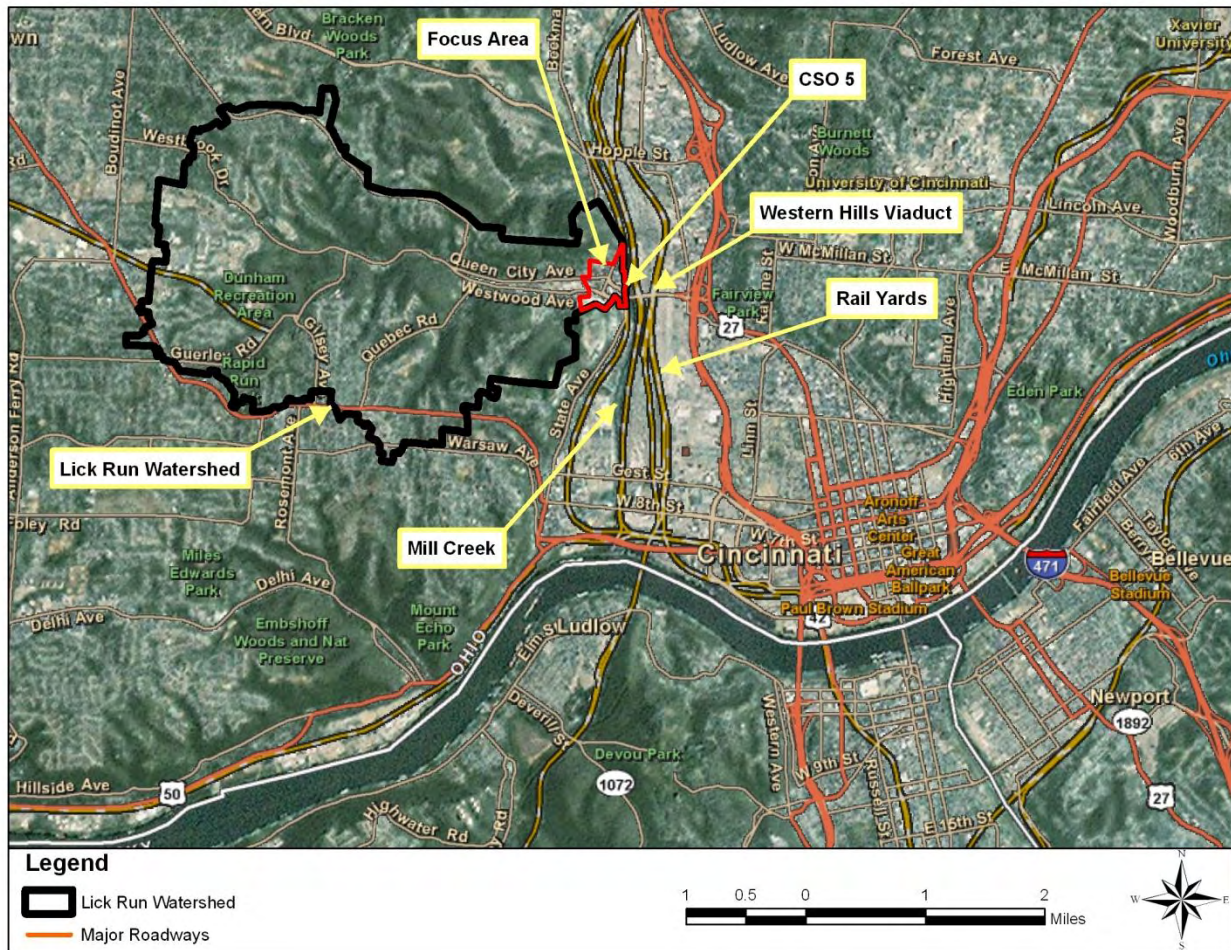
As an important component of Project Groundwork, the MSD is evaluating use of LID and source reduction stormwater techniques blended with the use of conventional sewer separation, conveyance and storage, sometimes called "gray infrastructure," to achieve maximum environmental, social and economic benefit while managing storm runoff volumes and preventing sewer overflows. The Sustainable Infrastructure approach combines the natural systems and processes of soils and plants used in LID and source reduction techniques with engineered systems, in order to store storm runoff and treat stormwater

¹ <http://www.projectgroundwork.org/>

through infiltration, evaporation and evapotranspiration. Sustainable Infrastructure techniques have the advantage of including landscape features that improve the aesthetic and environmental quality of neighborhoods where they are installed, and providing ancillary economic benefits. Within Cincinnati, the Sustainable Infrastructure Program is intended to enhance the quality of the neighborhoods, parks and districts where CSO improvements are made, and to yield an overall greater return on the public investment in CSO controls than would be realized through conventional, underground storage tunnels and systems.

The Lick Run Watershed will be a focus of MSD’s Sustainable Infrastructure Program. This watershed lies within the Mill Creek Valley watershed and is a focus area for MSD’s effort to evaluate use of both gray and green infrastructure, rather than conventional underground tunnels, to meet its CSO management needs in a way that improves the community. As one component of Project Groundwork, MSD must remove approximately 1.6 billion gallons of the annual combined sewer flows from this watershed area, which encompasses 2,700 acres at the west side of the City. The watershed includes the South Fairmount neighborhood along with portions of several others (Figure 1, Location Map), and is the site of MSD’s largest combined sewer (CSO 5).

Figure 1 Location Map



Certain regulatory requirements affecting Project Groundwork, along with the history of the wet weather issues in Mill Creek Valley and an initial Sustainable Infrastructure concept for the Lick Run watershed, are documented in the MSD's *Wet Weather Strategy: Lick Run Watershed Report* (MSD 2009) (included with Appendix C). The strategy lays out the arguments for using the Sustainable Infrastructure approach, along with a description of the deep tunnel that is the "default setting" that must be implemented unless MSD can demonstrate that Sustainable Infrastructure projects will meet the reduction requirements of the Consent Decree.

While a conventional CSO storage tunnel could be designed to meet the numerical requirements of the first phase of the Consent Decree (and this is in fact the default solution for managing CSOs in the Lower Mill Creek service area), MSD believes that implementation of the Sustainable Infrastructure approach within the Lick Run Watershed offers a wide range of opportunities, and the potential to make a transformational change in both water quality and community livability. As part of past water management efforts in the early 1900s, the Lick Run stream was buried and constructed as an underground, sewer tunnel conduit. By re-introducing Lick Run and its tributaries as surface waters within the neighborhood, and coordinating these re-established waterways with engineered, naturalized stormwater treatment, the City and MSD intend to manage the watershed's storm flows and water quality, reduce stormwater inputs to the drainage system, convey more natural flow to the Mill Creek during both dry and wet weather conditions and create new landscape and environmental features that beautify the area, coordinate with other public investments, and enhance the area's opportunities for economic development.

Realizing the full potential of the Sustainable Infrastructure Program within Lick Run will require consistent, detailed coordination across the many departments, programs and investments ongoing and planned for the Lick Run Watershed and South Fairmount neighborhood. Sustainable Infrastructure approaches to CSO mitigation have been demonstrated to provide multiple social, environmental and economic benefits when coordinated with other revitalization efforts and investments, and when the new systems are effectively maintained². As many important initial steps have been taken by US EPA, MSD and the City towards this goal, this Lick Run Watershed Strategic Integration Plan provides a framework and integration approach that can help organize and coordinate future steps among departments and programs. This Plan provides a set of "Framework Actions" – a set of ongoing, strategic topics that should be pursued consistently across departments to achieve the full potential benefits of the Sustainable Infrastructure Program. These benefits range from regulatory compliance and beautification to potential job training, land banking and revitalization that could be developed out of, or in strong partnership with, the Sustainable Infrastructure Program and Project Groundwork. This Plan also provides Strategic Integration and Schedule Tables that present the Framework Actions, along with associated opportunities, milestones, funding approaches and potential program synergies (see Appendices A and B). By keeping these Framework Actions in mind as other cross-program initiatives are developed, it is hoped that the City, MSD and particularly the South Fairmount neighborhood will see enhanced and ongoing benefits to the environmental, economic and social neighborhood quality as Project Groundwork is implemented.

1.2 Project Setting

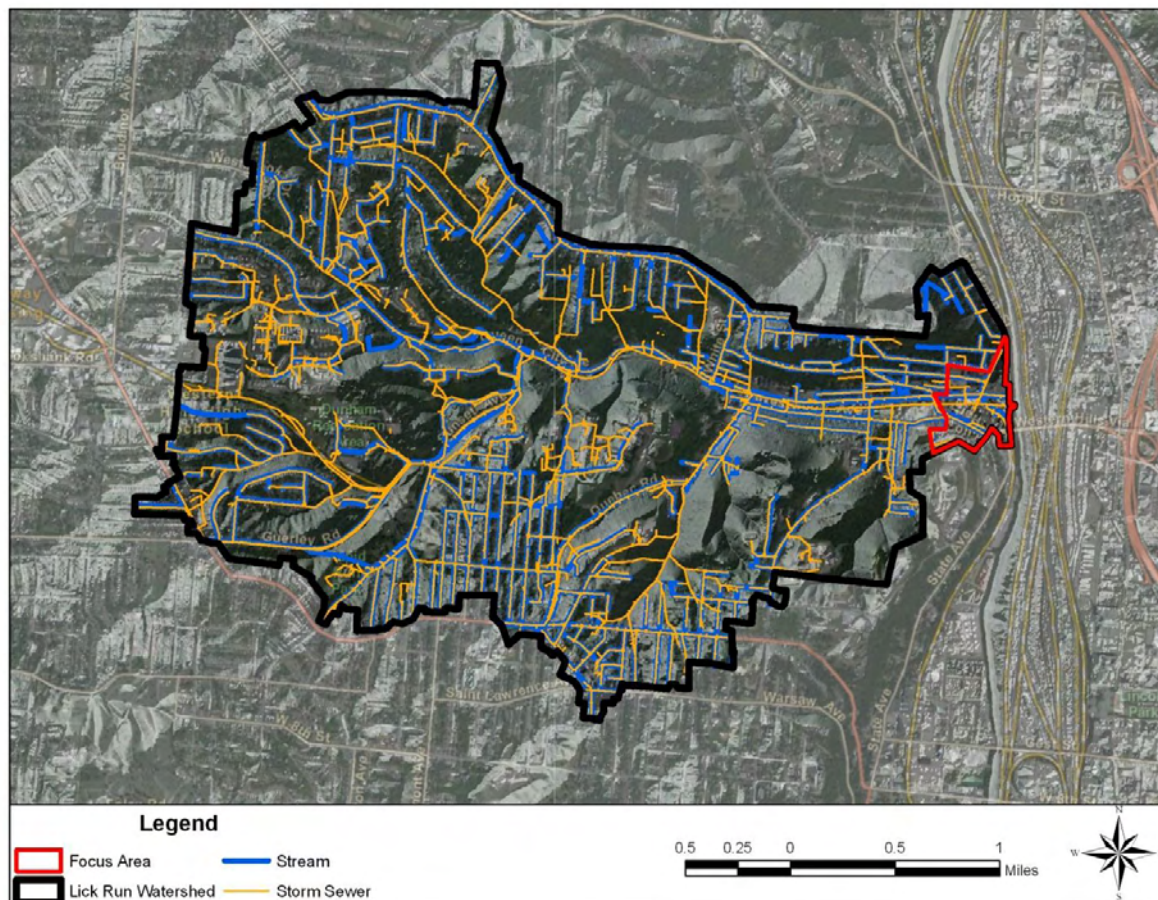
The Lick Run Watershed, where there is strong potential to restore surface water features along with pressing needs for urban revitalization, has been identified by MSD as the pilot neighborhood for the Sustainable Infrastructure Program and MSD's accompanying Communities of the Future (COF) initiative for public outreach and engagement. As described on MSD's Sustainability website, COF is

² As references, see Water Environment Research Foundation publications: *Decentralized Storm Water Controls for Urban Retrofits and CSO Abatement*; *Protocols for Studying Wet Weather Impacts and Urbanization Patterns*; *Best Practices for the Treatment of Wet Weather Wastewater Flows*; and *Benchmarking Decision Criteria for Urban Wet Weather Abatement*

intended to develop “...an alternative vision that addresses the source of the problem (rainwater) and marries this source control strategy with community revitalization. MSD has designated Lick Run as our first, fully integrated effort to develop a sustainable solution for the community based on source control.” (MSD website 2010; <http://projectgroundwork.org/sustainability/groundwork/cof.html>)

Several factors make Lick Run an ideal watershed in which to pilot the Sustainable Infrastructure Program for CSO mitigation, and also make the outreach, engagement and planning essential to its success. First, the historic encasement of Lick Run itself and several of its tributary streams provides an opportunity to restore a natural, historic stream feature to the neighborhood as both an open space/urban design and wet weather management feature. As noted in MSD’s Lick Run Technical Report (MSD 2009, see Appendix I) and the Wet Weather Strategy, several tributaries of Lick Run have been enclosed within a 19.5-foot-diameter pipe that runs 3,700 linear feet through the neighborhood (Figure 2, Current Drainage Features). This pipe connects to CSO 5, a relief outfall at the east end of Queen City Avenue that overflows into Mill Creek during heavy rains. Of the 1.7 billion gallons of combined sewage and stormwater that goes through CSO 5 annually, approximately 75% comes from storm drains and what used to be natural stream flow, rather than from sewage. From an engineering standpoint, this means that a strong program of stormwater source control, and creation of a natural stream channel with a functioning floodplain, is likely to be a highly effective means of reducing stormwater inputs to the sewer system, and thus preventing overflows.

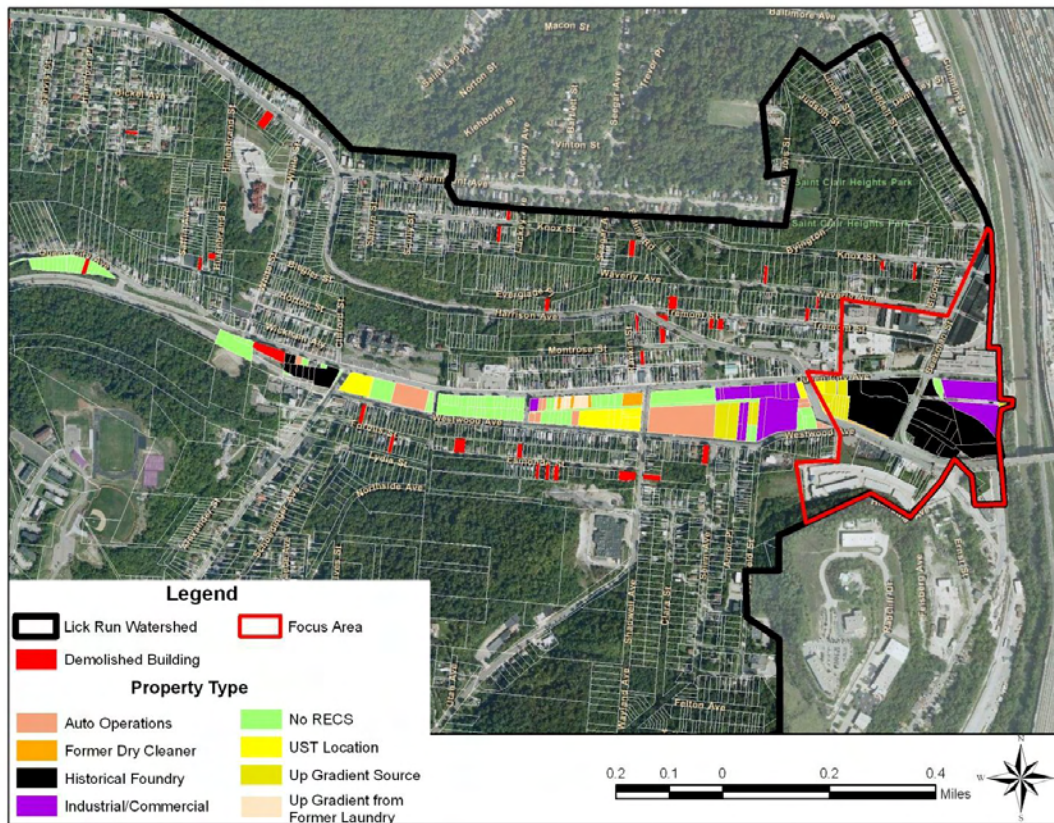
Figure 2 Current Drainage Features



Second, the Lick Run Watershed and South Fairmount also are strong candidates for sustainable infrastructure because of the neighborhood’s physical and socio-economic conditions. From a physical standpoint, the Lick Run Watershed has a relatively low percentage of impervious surface area, relative to other highly urban neighborhoods: roughly 30% impervious, versus upwards of 70% in some urban residential neighborhoods (MSD 2009, p. 2-8). The watershed area has approximately 1,200 acres with tree canopy cover (MSD 2009, p. 2-3), and roughly 400 acres of land under public ownership, including portions of the Cincinnati Parks system (MSD 2009, p. 2-7). This combination of available open land, public land, tree cover and substantial areas of permeable land makes it more likely that green infrastructure and LID practices such as infiltration and bioretention can be sited in the watershed.

As further documented in the Lick Run Technical Report, however, the socioeconomic and land use conditions in the area make revitalization investments especially important, opportune and timely. The South Fairmount area has higher than average unemployment rates, high school dropout rates and housing vacancy rates, along with lower median household incomes than other parts of the City, region and state (MSD 2009, pp. 2-14 to 2-18). The area also features an abundance of vacant and under-market properties, including a number of Brownfields (abandoned and potentially contaminated) sites. The US EPA has been investigating many of these Brownfield sites, completing both Phase 1 and Phase 2 environmental site assessments to identify potential locations for remediation. The City has been adding to the amount of open land within the neighborhood and watershed: (1) for many years it has applied funds from the Department of Housing and Urban Development’s Neighborhood Stabilization Program (HUD-NSP) to purchase and demolish vacant and dilapidated housing, and (2) MSD has been purchasing land to support infrastructure plans. Figure 3 (Demolished Buildings and Brownfields Investigation Sites) shows a composite of the sites that are being, or have been, investigated as Brownfields and buildings demolished through the HUD-NSP program in the project area.

Figure 3 Demolished Buildings and Brownfields Investigation Sites



Note: RECS indicates recognized environmental conditions.

In the proposed Sustainable Infrastructure approach to combined sewer mitigation and particularly stormwater source reduction, vacant properties become part of the physical infrastructure for stormwater attenuation and management, making identification and planning for these parcels especially important. Sustainable Infrastructure approaches will involve modifications and improvements using these vacant parcels, along with investments that affect the visual appearance and sometimes function of buildings, parks, streets and other open spaces. As a result, there must be a strong vision for the desired outcome and strong support for the physical and land use changes that will need to occur in the area. Public investments ranging from transportation through historic preservation must be coordinated and planned with the Sustainable Infrastructure outcome in mind, so that decisions made by one sector do not compromise the overall plan. MSD has recognized this need for integrated planning by establishing the COF approach for Lick Run; the COF establishes a multi-agency/stakeholder forum for communication and engagement, which is a first step in achieving success. The remainder of this Strategic Integration Plan outlines other coordination and cooperative steps that will need to be taken to ensure that maximum revitalization benefits are accomplished from the Sustainable Infrastructure Program.

1.3 Strategic Integration Plan Purpose

Identifying and organizing efforts across multiple City departments, agencies, non-profit organizations and public initiatives is, in and of itself, one of the core challenges of a Sustainable Infrastructure project. This Plan presents the specific public investments, actions, milestones and opportunities involved in the implementation of this Sustainable Infrastructure project, organized as Framework Actions and Supporting Actions. This plan further identifies ongoing activities in the watershed (sponsored by multiple departments and organizations), which can be coordinated to support successful implementation of the Sustainable Infrastructure project (Supporting Actions). The Strategic Integration Table in Appendix A provides a summary of the plan's recommended actions, showing how the various Framework Actions and other investments in the area can be integrated. The Schedule Matrix in Appendix B lays out the important past approvals, upcoming milestones and anticipated construction dates pertinent to Lick Run, along with other prospective actions that will affect the success of the Sustainable Infrastructure Program – and how much ancillary community benefit is received from these investments.

The Framework Actions and Supporting Actions are summarized in Table 1.

Table 1: Framework Actions and Supporting Actions

Framework Actions: systems, agencies and decisions needed to construct the project	Supporting Actions: actions, investments and policies that can support implementation
Community Engagement & Vision Definition	Planning & Historic Preservation
Park and Open Space Coordination	Housing & Community Redevelopment
Code and Regulatory Framework	Transportation, Transit & Bikeways
Land Acquisition, Brownfields and Land Use Strategy	Economic Development
Maintenance Agreements	

Two critical elements of the feasibility and ultimate success of the Sustainable Infrastructure Program involve other significant City departments and initiatives. The first is ongoing coordination and continued updates of the existing Memorandum of Understanding (MOU) between MSD and Cincinnati Parks (see Appendix D). Because the Sustainable Infrastructure project essentially involves using landscape and open space as water treatment infrastructure, a strong understanding between the City's open space managers – Cincinnati Parks – and its infrastructure managers – MSD – is critical to implementation and long-term success. Cincinnati's accomplishments through the MOU are commendable and especially important to the viability of the Sustainable Infrastructure Program; the absence of this level of common purpose and clearly articulated responsibilities for funding, maintenance and planning has been a major

barrier to comparable infrastructure approaches in other cities. Updating, amending or expanding the MOU over time as the project evolves will be essential.

The second major funding and planning initiative is the Land Development Code (LDC) update effort, funded in part through a U.S. Housing and Urban Development (HUD) Community Challenge Planning Grant awarded to the City's Department of Planning and Buildings. The LDC update is an umbrella project involving multiple, discrete planning and code amendment activities, and includes a Lick Run Watershed Master Plan and Lower Mill Creek Watershed Master Plan led in partnership with MSD. According to the City's initial grant application to HUD (City of Cincinnati 2010, p. 7), the watershed plan is to include a housing evaluation and action plan, transportation plan and master plan geared towards informing the update of the City's codes and regulations. As the ultimate purpose of the LDC-related plans may differ somewhat from what MSD and others must accomplish for specific aspects of the Sustainable Infrastructure Program, this Plan recommends several elements (notably a strategic land acquisition and use strategy) that should either be included within the LDC-related effort, or implemented as a complementary effort.

This Lick Run Watershed Strategic Integration Plan also advocates that MSD and the City continue the strong, consistent public engagement effort that has been initiated through COF, and which can be strengthened with the development of a detailed, neighborhood-specific information, outreach and engagement program. Sustainable Infrastructure Program components will affect individual parcels, buildings and neighborhood land use patterns to a much greater degree than conventional subsurface sewer and storm drainage projects; having on-the-ground support for the goals of the project as well as individual actions will be critical. The public engagement strategy must both define a vision for the area, and identify neighborhood-scaled impacts and issues at early stages in each component of the project. While the charrettes and public engagement events currently underway and discussed in this Plan are important, a micro-scale local action plan for outreach and communication is essential as well.

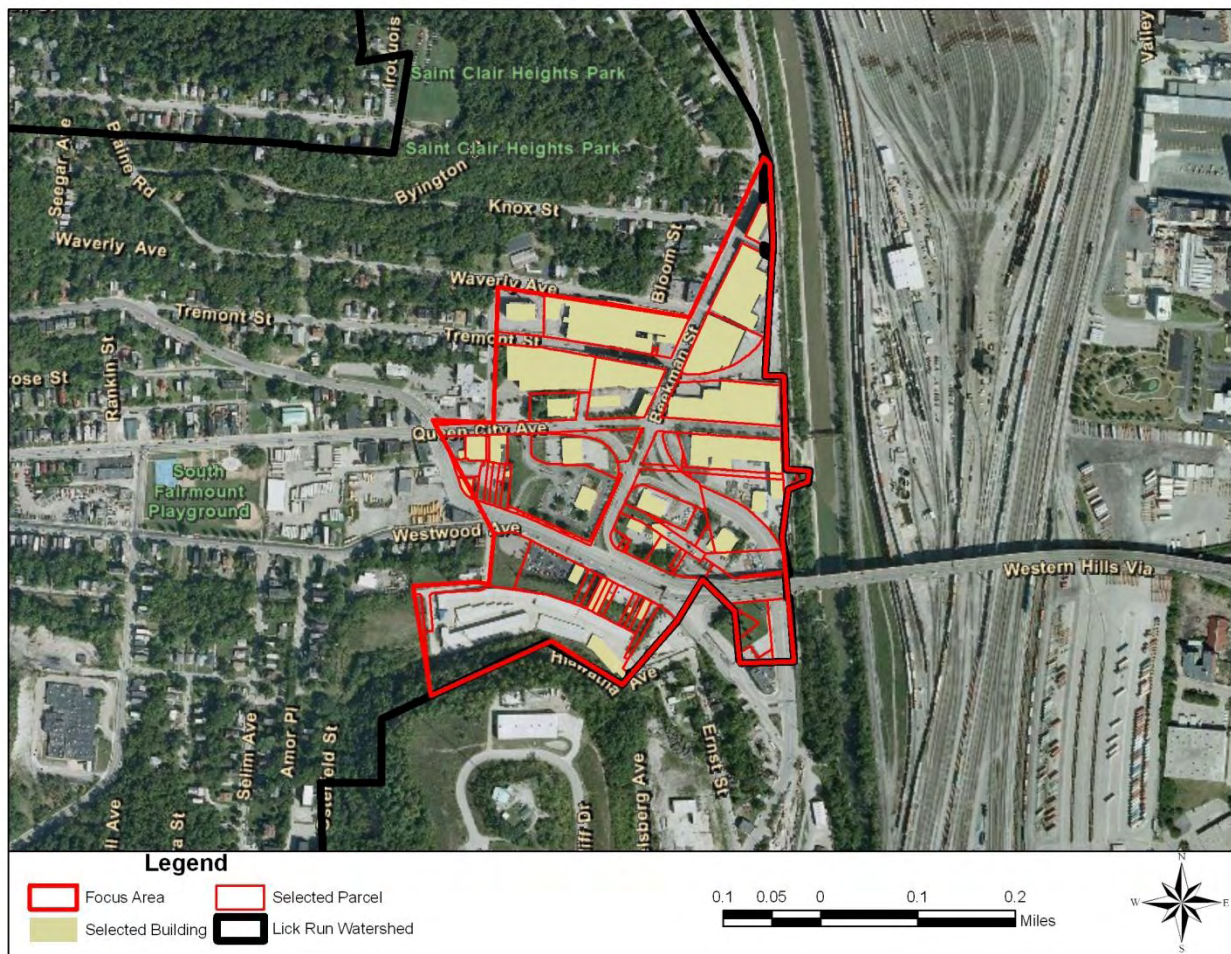
Finally, the intent of this Plan and the Framework Actions is to offer flexible, adaptive guidance on the types of investments and initiatives that can be linked to Project Groundwork to achieve greater benefits in the Lick Run Watershed. To this end, this Plan identifies investments in the Lick Run Watershed that may occur during the timeframe of Project Groundwork (such as planned improvements through the City's Department of Transportation and Engineering, Brownfields assessment and remediation and the work of the Mill Creek greenway trail project). This Plan makes every effort to incorporate known organizations and initiatives that can serve as Supporting Actions for area revitalization and Sustainable Infrastructure efforts. Over time, however, there will be a host of potential synergies among and between the Sustainable Infrastructure Program investments and other City, regional and non-profit agencies. These could range from "green jobs" training for maintenance of Sustainable Infrastructure to sidewalk improvements that incorporate bioretention and stormwater storage. The Framework Actions are intended to ensure that there is a system and framework in place for identifying, shaping and directing these new investments and supporting activities as they arise.

2.0 Project Background

2.1 Lick Run Watershed /South Fairmount Setting

This Strategic Integration Plan focuses on upcoming and potential actions in the eastern-most 60 acres of the Lick Run Watershed and the South Fairmount neighborhood (Focus Area, Figure 4). This 60-acre area is a key portion of the overall Lick Run Watershed, which comprises 2,720 acres in total, and for Project Groundwork, since many of the major drainage system components and opportunities for the Sustainable Infrastructure Program are found within this smaller area. The focus area includes the eastern end of the Lick Run channel, the most intensely-developed properties in South Fairmount and the Western Hills Viaduct. As discussed in this Plan, the Western Hills Viaduct is a major transportation feature in Greater Cincinnati and is part of the focus area; this viaduct is slated for rehabilitation or reconstruction as funding is made available and capital planning permits.

Figure 4 Focus Area



Like many of the nation’s urban neighborhoods, the South Fairmount community was developed on top of historic, natural and hydrologic features, including Lick Run and a number of stream tributaries. Currently, a number of previous natural streams have been replaced with man-made underground sewer lines (for example, the former Lick Run stream) (Figure 2, Drainage Infrastructure). A major change associated with the Sustainable Infrastructure approach is restoring the Lick Run channel to an open,

flowing stream. While upstream areas of the watershed have substantial areas of tree canopy and undeveloped or permeable lands, the lower focus area does not. The intensive transportation system and historic land development pattern, which rely on combined storm and sanitary sewers to convey water out of the area, resulted in significant discharges of stormwater to the sewer system during rain events. When these combined flows cannot be handled by the downstream wastewater treatment plant, overflows of untreated sewage and rainwater reach Lower Mill Creek. As a result, Lick Run and Lower Mill Creek are a significant focus for MSD's CSO abatement strategy.

Implementing the Sustainable Infrastructure Program requires a thorough and site-by-site understanding of the neighborhood where these improvements will be installed. The Lick Run Technical Report prepared for MSD in 2009 describes the land use, socioeconomics and physical characteristics of the Lick Run Watershed and South Fairmount focus area. Historically, the area developed around a broad range of manufacturing and industrial enterprises located along Queen City Avenue and Westwood Avenue, with single-family residential neighborhoods flanking the main corridor. As noted in the Technical Report, the neighborhood has many substantial "anchor" buildings dating from the community's historic development, including churches, schools, industrial buildings and the Cincinnati Water Works (MSD 2009, p. 2-11). The other legacy of this development history is the presence of the potential for significant site contamination or "Brownfields" properties. These brownfields properties are being documented by the US EPA and the Port of Greater Cincinnati Development Authority (Port Authority) through a series of Phase 1 and Phase 2 environmental site assessments.

The transportation network through the corridor is an important land use feature in and of itself. There are 214 acres of road right-of-way (MSD 2009, p. 2-10), with high through-traffic volumes accessing I-75 at the Western Hills Viaduct, which crosses both Mill Creek and the CSX Queensgate rail yard. Despite having sidewalks on both sides of the local street network and nearly continuous bus service through the corridor, the high traffic volumes (Table 2) and auto-oriented land use pattern in the Westwood Avenue corridor discourage pedestrian use.

Table 2: Lick Run Corridor Traffic Volumes

Road Segment	Average Annual Daily Vehicle Traffic (AADT)
	Year
Western Hills Viaduct east of State Avenue	22,563 (2006)
Queen City Avenue at Quebec Road	17,339 (2006)
Westwood Avenue east of Grand Avenue	18,205 (2006)
Westwood Avenue west of Harrison Avenue	44,926 (2004)

Source: Ohio-Kentucky-Indiana Regional Council of Governments Regional Traffic Count Directory, http://www.oki.org/pdf/traffic_count/HamiltonDirectory1995-2006.pdf, accessed 3/1/2011.

As discussed in Section 4 of this Plan, the final design of the Sustainable Infrastructure Program and particularly the central Lick Run corridor will have significant impacts on the existing street network, and as such will constitute a neighborhood transportation plan. Determining and gaining City Department of Transportation & Engineering sign-off on a preferred alternative for the circulation network flanking Queen City Avenue and Westwood Avenue is a fundamental decision point for the project. More broadly, plans for reconstruction of the Western Hills Viaduct and other I-75 improvements also may offer opportunities for coordinating stormwater management approaches and investments.

Finally, the Technical Report also describes the socioeconomic conditions in South Fairmount and the greater Lick Run Watershed area, which has been affected by population loss and economic decline. Measures such as median household incomes, property values and educational attainment are well below

City and regional figures (MSD 2009, pages 2-16 to 2-19). Data in Table 3 provides community profile information and comparisons to the City of Cincinnati as a whole.

Table 3: South Fairmount Socioeconomic Profile

Category and Data	Comparisons/Analysis
Population	
Total Population: 3,215 (2000) 2,842 (2008)	Slight decline in population from 2000 to 2008 Compared to city as a whole:
Population > 25 years old without high school completion: 37% (2008)	<ul style="list-style-type: none"> • Appears to have greater loss in population from 2000 to 2008 • Significantly greater percentage of adults not completing high school (37% versus 19%)
Race: 38% White (2008) 54% Black (2008)	
Housing	
Persons per household 2.44 (2008)	Compared to city as a whole,
Four-person households 24% (2008)	<ul style="list-style-type: none"> • Household size and percent of four-person households is greater (24% versus 16%) • Percent of vacant houses is higher • Average home value is 54% lower • Generally higher percentage of Section 8 housing
Average home value: \$60,000 (2008)	
Percent home vacancy: 27% (2008)	<i>Note: The mortgage crisis hit areas such as South Fairmount particularly hard and these impacts may not be completely captured in the available data.</i>
Percent of Section 8 Housing >12%* (2008)	
Income/Employment	
Median household income \$27,197 (2008)	Compared to the city as a whole:
Per capita income: \$13,000 (2008)	<ul style="list-style-type: none"> • Median household income is 73% of city-wide average • Per capita income is 51% of the city-wide average • Per capita income growing at a slower pace (2000 to 2008)
Households with income < \$15,000 32% (2008)	Change in unemployment and joblessness (1980 to 2000) in South Fairmount*
Unemployment: 14% (2000)**	<ul style="list-style-type: none"> • Unemployment is 61% higher • Joblessness is 33% higher
Joblessness ³ : 49% (2000)**	

Notes: > = greater than; < = less than.

Primary Data Source: Lick Run Draft Technical Memorandum (MSD 2009) (included as Appendix I). *Source: US HUD Data (2008), reported in Cincinnati Enquirer by Gregory Kort and Mike Nyerges. Accessed at: <http://www.enquirer.com/editions/2008/09/14/0914Section8percent.pdf>

Responding to the economic and property distress in the area, the City has used HUD Neighborhood Stabilization Program (NSP) funds to purchase properties or demolish buildings in disrepair (particularly in the East Price Hill area), which adds to the stock of vacant land in the watershed that may be repurposed for stormwater management and CSO reduction through the Sustainable Infrastructure project, or else banked and used for redevelopment in the future. As discussed in this Plan, in addition to repurposing abandoned properties and those in disrepair to productive uses supporting the Sustainable Infrastructure approach, the Framework and Supporting Actions discussed in this Plan provide opportunities to integrate social, economic and environmental investments to improve conditions and create a sustainable, livable community for those that reside in, work in and move through the focus area.

³ ** Joblessness includes citizens outside the traditional civilian labor force (e.g., those in institutions, students and those over 65). South Fairmont in this report includes two census tracts (the eastern is the eastern part of Lick Run (census tract 87); data above appear to address the entire South Fairmont area). The Social Areas of Cincinnati: An Analysis of Social Needs. Fourth Edition. Patterns for Four Census Decades. University of Cincinnati, School of Planning, UC Institute for Community Partnerships (UCIP) (Maloney and Auffrey, 2004). Accessed in January 2010 at: <http://www.socialareasofcincinnati.org/report.html>

2.2 Conventional versus Sustainable Infrastructure Approach for Lick Run

In response to the US Department of Justice and US EPA's Enforcement Order and Consent Decrees, MSD has developed and evaluated several alternatives for removing stormwater flows from the combined sewer system and reducing CSOs from the Lick Run Watershed (MSD 2009; MSD 2010). The Sustainable Infrastructure Program uses the opportunity of drainage improvements as a catalyst to revitalize the neighborhood, while achieving the required reduction targets, using a restored stream channel, distributed stormwater treatment features, and a robust program of source reduction through street, sidewalk and building retrofits. The Sustainable Watershed Evaluation Process (SWEP) is a watershed based evaluation process that assists in the evaluation of alternatives to traditional grey infrastructure. Preliminary concepts for Lick Run Watershed have been developed at a conceptual design level, as illustrated in Figure 5, the Preliminary Synthesis Plan. MSD must now present compelling evidence of the potential to implement this approach on a timetable suitable for compliance with the framework of the Consent Decree, which calls for MSD to submit its Preferred Alternative in 2012.

Figure 5 Preliminary Synthesis Plan



Source: Developed by Human Nature, Inc; Strand Associates, Inc.; and XCG Consultants, Inc., for MSD.

Two principal CSO mitigation alternatives have been outlined and are being considered as acceptable solutions for Phase 1 of the Consent Decree, both focusing on Lick Run. Both options – construction of an underground storage tunnel and the Sustainable Infrastructure Program – are described in detail in the 2009 Lick Run Technical Report (MSD 2009) and summarized briefly below.

Storage Tunnel: This option is a 30-foot diameter, 1.2 mile-long, underground storage tunnel that would collect stormwater and wastewater and direct it to a wastewater treatment plant. The tunnel is referred to as the “default” setting because its engineering design would provide for sufficient physical storage of rainwater to meet the numerical removal goals in the Consent Decree. It is estimated in the Consent Decree that the tunnel would require \$244 million in capital investment to construct. The annual maintenance and capital cost of the tunnel would be significant and “lumpy,” with larger costs incurred at infrequent intervals rather than smaller and more predictable regular maintenance costs. The tunnel approach likely would tie MSD into future CSO solutions that would include extending the tunnel. And finally, sending storm flows to wastewater treatment plants that are designed to treat pollution-heavy sanitary wastewater, rather than relatively clean stormwater flows, is a costly and energy-intensive solution from a capital and operational expense perspective.

Sustainable Infrastructure Program Alternative: The Sustainable Infrastructure Program alternative, illustrated in Figure 5 and described in Section 3.01 of the Technical Report, would rely on a network of surface water and natural storage features, along with a set of distributed underground infiltration and storage facilities, extensive stormwater source reduction and disconnection measures, and

additions to the watershed's tree canopy. The intent of the Sustainable Infrastructure Program is to mimic the functions (particularly stormwater storage) of the natural hydrologic and watershed systems that originally existed, thereby reducing the amount of storm flows reaching the combined sewer system. A reconstructed or "daylighted" Lick Run would be the central feature. The stream would bring the underground stream flows to a naturalized channel on the surface and remove much of the underground inflow to the sewer system that currently contributes to CSOs. Along with the stream, a network of surface detention features would be retro-fitted or built to provide upstream stormwater management. Concurrently, flows from impervious surfaces such as roofs, sidewalks, streets and parking areas would be intercepted and managed through source reduction measures, such as green roofs, rain barrels or cisterns and infiltration areas on available sites or within the transportation right-of-way.

In conjunction with the Technical Report, three alternatives were assessed for daylighting Lick Run and installing the other stormwater storage features: an Urban Ravine/Canal alternative, a Green Spine/Central Park alternative and a Green Street/Main Street alternative. Each alternative also looked at redevelopment opportunities for the adjacent land uses and buildings (including the historic and "anchor" buildings described previously), as well as impacts on (and options for) the adjacent transportation system. A "synthesis plan" was then developed that adopts most of the components of the Green Street/Main Street alternative, including a range of elements such as:

- Transform the former Queen City Avenue into a Main Street, with an improved pedestrian realm (traffic-calming elements, street trees and street planters); potentially combine Queen City and Westwood Avenues into a multi-lane parkway coordinating with recent improvements to Queen City Avenue.
- Preserve and provide adaptive re-use of architecturally significant buildings identified in the plan.
- Encourage mixed-use redevelopment, pedestrian-friendly development (including civic, commercial, office and residential uses) (see Figure 5).
- Promote larger-scale, mixed-use redevelopment (industrial, institutional, civic, and/or commercial) at the eastern end of the corridor.
- Create a central green space with a day-lighted stream, trail/path opportunities, active recreation and other amenities.
- Celebrate the connection of the stream to Mill Creek with a large-scale pond/detention area, which would be the primary interactive, civic and celebratory space for the neighborhood.

From a cost standpoint, the Sustainable Infrastructure Program alternative requires a similar level of capital investment. The Sustainable Infrastructure alternative involves highly complex construction, land acquisition and O&M planning challenges compared to the Storage Tunnel alternative, including (1) sewer and water line relocations and replacements, clear-span bridge crossings, retrofits and construction of detention facilities, and (2) a wide array of site-specific source control interventions throughout the watershed. However, the Sustainable Infrastructure alternative is estimated and projected to be substantially less expensive and to have more predictable maintenance expenses than the Storage Tunnel option, both in terms of annual operating costs and on a present value basis. Moreover, this alternative can serve multiple public goals, particularly environmental and aesthetic improvements to the neighborhood and coordination with other public projects as outlined in Sections 3 and 4 of this Plan. This longer-term and holistic approach would use the Consent Decree requirements as an opportunity for meeting stormwater/CSO abatement requirements in the short term, and laying the foundation for environmental, economic and social benefits in the long term.

Regulatory Considerations: The key regulatory differences between the two options are construction feasibility and engineering estimates of volumes of CSO removal. Sizing of the tunnel for various stormwater volumes is, from a regulatory standpoint, perceived as managing a definable quantity of water, unaffected by variability in natural systems or by the timing and location of multiple source control, storage and natural feature restoration projects. By contrast, because green infrastructure relies on the stormwater storage functions of natural systems across multiple sites, rather than storing water in a

concrete structure with a known and defined size, implementation of the Sustainable Infrastructure Program is less easily estimated with respect to storm volumes than a physical underground storage space. The land use impacts and setting are more complex as well, which is one reason this Plan has been commissioned to look at the overlapping issues involved in changing the neighborhood's surface area to manage stormwater. Implementing the Sustainable Infrastructure Program, and particularly stream restoration, will profoundly change the physical features of the corridor by creating a stream where there are now streets and buildings. This option involves multiple land parcels under multiple ownerships and relies on a collection of individual features and designs to determine the total volume likely to be treated. Building a storage tunnel would put the CSO solution principally underground, and while disruptive during implementation, the existing land use and transportation patterns in the neighborhood would resume (or be enhanced) after construction.

2.3 Project Leadership and Community Engagement

The complexity of the Sustainable Infrastructure Program alternative, and its impact on the physical appearance and function of the neighborhood, underscores the central importance of leadership and community engagement in implementing the alternative. As the owner of the drainage infrastructure and wastewater treatment facilities serving the Lick Run Watershed and greater Cincinnati, MSD has principal responsibility for compliance with applicable pollution control laws and the authority to levy sewer and water fees on system customers to pay for required improvements. MSD has primary responsibility for implementation of Project Groundwork and compliance with the Consent Decree, and will make significant investments that can help other departments leverage additional funds and resources.

However, the physical outcome of the Sustainable Infrastructure Program will depend on many decisions made by agencies including the Cincinnati Department of Planning & Buildings, transportation agencies and particularly by Cincinnati Parks and the Cincinnati Recreation Commission, which is responsible for the spray park and ball fields in the neighborhood. As individual components of the project are implemented, different neighborhood land use features (such as parks, sidewalks, access points, travel paths, etc.) will be disrupted or altered, even if temporarily. Moreover, the incremental nature of a sustainable Infrastructure approach makes future changes in schedule, design and siting not only possible but likely, requiring further communication. Thus, planning for Lick Run must be communicated early in the process to the public and other stakeholders (including city planning, recreation, transportation, housing, economic development and local residents and organizations) to ensure that all parties have provided input and that the best solution is identified, agreed upon and integrated into area revitalization efforts.

Goal - *Through strong community engagement and coordination with Project Groundwork, establish an over-arching vision and framework for the Sustainable Infrastructure Program so that public and private actions in the Lick Run watershed help leverage maximum benefits from investments in planning, economic development, transportation and transit systems, housing, parks and open space and ongoing maintenance.*

The four project alternatives in the Technical Report illustrate the types of decisions to be made and the public communication issues that must be addressed to develop a successful project. From these four alternatives, MSD could choose the baseline investment in a standard stream channel feature and several small, sub-surface storage areas to achieve regulatory compliance, without adding enhancements such as an urban tree canopy, new greenspaces within the neighborhood, or a linear recreation path along the restored stream. By contrast, with sufficient public support, land area and co-investment from transportation and parks, MSD could pursue the option to create a linear park feature with public access, improved streets and sidewalks that act as drainage features, enhanced habitat, new greenspaces within the neighborhood as stormwater treatment features and strong aesthetic benefits that galvanize interest and investment in the neighborhood.

Public outreach completed to date for Project Groundwork, and the COF effort, have created a strong foundation for dedicated outreach within the Lick Run Watershed and particularly South Fairmount. Recent community open house meetings (Appendix E, COF Outreach) and upcoming planned charrettes, other actions identified in the MSD's Lick Run Watershed Conceptual Solution Ongoing Communications Strategy, and ongoing public engagement programs and events, will continue to keep the Sustainable Infrastructure Program and its potential benefits in front of the public and local stakeholders. Moving forward, MSD has challenges on two fronts: (1) continuing this outreach and dialogue on design alternatives, future land use options and coordination with other City departments and initiatives (notably transportation and parks); and (2) refining and implementing a "micro-level" public outreach and communication process specific to the South Fairmount neighborhood where so much of the implementation, and potential disruption, will take place. This is discussed specifically under the Framework Actions in Section 3. With the schedule for decision-making and action relatively short, it is imperative that all stakeholders understand the project goals along with individual responsibilities and decision points.

2.4 EPA Partnership for Sustainable Communities

As described in the Introduction, the Cincinnati Department of Planning & Buildings is preparing to begin a major planning effort that will culminate in an overhaul of the City's development codes and regulations. The umbrella project for these tasks, the LDC Update, recently received \$3 million in grant funding through the Partnership for Sustainable Communities, a joint initiative of the US EPA, HUD and the U.S. Department of Transportation. MSD itself is providing \$3 million in matching funds for the initiative, which is intended to improve access to affordable housing, provide more transportation options, and lower transportation costs while protecting the environment. Projects funded through this initiative are intended to support Livability Principles (right) by coordinating federal housing, transportation and environmental infrastructure investments in ways that enhance environmental quality, promote equitable development and also address the challenges of climate change.

Sustainable Communities Livability Principles

- *Provide more transportation choices.*
- *Promote equitable, affordable housing.*
- *Enhance economic competitiveness.*
- *Support existing communities.*
- *Coordinate and leverage federal policies and investment.*
- *Value communities and neighborhoods.*

Because the Sustainable Infrastructure Program within the Lick Run Watershed has the potential to affect multiple aspects of community development, from parks to public buildings, and provide land for housing and economic development, the Partnership's livability principles and focus on coordinating investments are especially relevant. This Plan's recommendations for public outreach and engagement, discussed in Section 3.2, stress the importance of the Livability Principles to the core messaging that will be done for Project Groundwork and particularly for the Lick Run Watershed Plan task as part of the LDC Update.

2.5 Upcoming Decisions and Steps

This Plan was commissioned in part to support a series of decisions and action steps anticipated in 2011. By September 2011, MSD plans to begin assembling an internal preliminary plan that presents and evaluates the alternatives to the tunnel storage approach to federal and state regulators. The final plan must be submitted for approval by December 2012, and the 2 billion gallons of overflow reductions must be achieved by 2018 within the Lower Mill Creek. These mandated deadlines form a baseline schedule, into which Framework Actions and Supporting Actions must be integrated. The actions and schedule integration are presented in Sections 3 and 4 and Appendices A and B.

3.0 Framework Actions

3.1 Overview

Achieving the potential benefits of the Sustainable Infrastructure Program will require significant and ongoing inter-agency and inter-department coordination. Responding to the upcoming schedule milestones, work done to date and events and initiatives planned for the remainder of 2011, this section outlines five “Framework Actions” that should be formalized and pursued to underpin the Sustainable Infrastructure Program: (1) Community Engagement & Vision Definition; (2) Land Acquisition and Use Plan; (3) Cincinnati Parks Coordination; (4) Planning & LDC Update; and (5) Maintenance Agreements. The section concludes with recommended coordination actions and steps linking these Framework Actions to the MSD’s compliance schedule, and the anticipated timing of upcoming planning initiatives, construction projects and other actions affecting the watershed area.

3.2 Framework Action #1: Community Engagement & Vision Definition

Goal:	A consistent and effective communication and engagement strategy at both the watershed/City and micro/neighborhood scales, providing a consistent message across City and non-profit initiatives and directly engaging neighborhood members who will be affected by the physical changes from the Sustainable Infrastructure program.
Opportunity:	Align a community revitalization message across all upcoming public investments. Leverage multiple agencies’ public communications to promote goals. Develop local understanding and support for site-specific project components.
Lead responsibility:	MSD, working with a local communications coordinator/point person.
Key agencies:	MSD; Planning & Buildings (LDC update); Transportation; Housing Authority; Schools; Neighborhood agencies and organizations.
Timeframe:	Initial plan and messaging: ongoing Detailed local communications plan and coordination: Implementation underway; ongoing development, events and outreach to occur Vision/messaging strategy: mid-2011 Outreach and integration with other initiatives: 2011-12 Continued communication and feedback: 2013 →

Because of the ground- and building-level changes and impacts of the Sustainable Infrastructure approach, it is essential to ensure that residents, businesses and community leaders in schools, community lending and housing thoroughly understand and, ideally, strongly support a vision for how the project can transform the community’s visual quality and amenities over time. As discussed in this Plan, two levels of engagement are needed to ensure that the Sustainable Infrastructure Program can be implemented and, more important, strongly supported within the immediate neighborhoods where the physical changes will take place. The first is the higher-level engagement of agencies, funders and decision-makers whose investments will affect the viability of the overall outcome, such as Cincinnati Parks, Planning & Buildings, and Transportation and Engineering. This type of engagement ensures that the goals of Project Groundwork and particularly the Sustainable Infrastructure Program will be thoroughly integrated into plans and policies; it also helps avoid conflicting approaches or policies that could undermine the project. To date, MSD has strongly engaged other City departments in Project Groundwork, and the collaboration on the HUD Community Challenge Grant is an excellent example of the type of leveraging that has already been achieved through this collaboration. MSD’s Project Groundwork Communication Plan also defines the engagement process at this broader level. Design charrettes planned for the late summer and

fall of 2011 will further this level of engagement, especially with respect to the micro- or neighborhood-level design and land use planning options for the area.

The second level of engagement, at the micro or neighborhood scale in the affected parts of South Fairmount, requires additional definition and is a recommended Framework Action for the immediate future. The recommended steps are outlined below.

1. Continue to utilize the COF Advisory Committee (CFAC) and expand membership with people knowledgeable about the area's information pathways and experience with public sector projects and investments.

MSD's work on the CFAC within the neighborhood can assist with implementation of the neighborhood-level engagement plan, since MSD has already compiled a sizeable stakeholder database and on January 19, 2011, hosted a targeted neighborhood outreach event (Appendix E, COF Outreach). The CFAC is intended to act as a community sounding board, and to provide input to MSD on its vision to link local improvements to other community revitalization goals.

It is recommended that COF be tasked with steps 2 through 5 below, and that individuals with a working knowledge of the neighborhood's "information systems" be engaged to help. One option could be to restructure a sub-committee or projects committee from within CFAC to work on specific issues, and offer a point for communication, and engagement by specific stakeholders. Participants of great value would include staff or clergy of the neighborhood's churches; staff from the Cincinnati Metropolitan Housing Authority knowledgeable about the area; Community Reinvestment Act officers from the banks active in the area (potentially including nearby branches of Warsaw Federal Savings & Loan, Cincinnati Federal Savings & Loan and PNC Bank); police officers, particularly the District 3 Neighborhood Liaison Officers who cover the watershed's neighborhoods; and staff from the Orion Academy who have roles or experience with parent communications.

2. Define neighborhood "information pathways" and understand how the area's residents and businesses obtain information about public projects and actions.

A critical element in the communications plan, which MSD has begun to define and address, is to outline how the neighborhood residents and businesses who will be affected by the project receive their information, particularly regarding public-sector actions. It is essential to understand what sources are credible, and what sources are seen as suspect – possibly including City agencies themselves, and what information pathways are most likely to convey accurate information effectively. Common information pathways in urban neighborhoods may include local schools, churches or community newspapers; however, informal information sources, such as bulletin boards at laundromats or supermarkets, are equally important to identify. The need for Spanish-language materials or publications, and appropriate outlets such as radio, TV or newspapers, is also important to define.

Recent public actions can provide ways to identify information pathways. As one example, recent NSP expenditures in the area have led to the purchase and demolition of housing. It would be valuable to design of the Sustainable Infrastructure Program to understand what neighbors know about the NSP purchases and demolitions, how they learned about these actions, and whether the information received was found to be sufficient.

3. Define a message for Project Groundwork and the Sustainable Infrastructure Program.

Once information pathways are defined, a consistent, simple message should be developed in partnership with the CFAC that introduces the program, its potential benefits, how it affects residents and businesses and where people can go for further information. While the message can be simple, it should be backed with opportunities to obtain more information and engage in other aspects of the project and public outreach process. The message also will need to address, or at least acknowledge, that land and housing units are being acquired by MSD (as well as HUD), and should offer further credible information and

resources for anyone concerned about the impact or process for acquisitions. Moreover, it is important to clarify that while NSP funds from HUD are being used for acquiring properties, and an overall strategy and understanding for land use is crucial to the neighborhood, NSP acquisitions are not made for the Sustainable Infrastructure Program per se and must be done in accordance with NSP purposes and guidelines.

4. Develop Frequently Asked Questions (FAQs)

It is strongly recommended that the CFAC and MSD continue to develop and distribute new, and targeted, “Frequently Asked Questions” outreach materials specific to the neighborhood. These should address residents’ likely concerns and also their opportunities to become involved in the project. MSD has already developed and distributed FAQs in the Lick Run Watershed area; however, regular updates will be needed as the project evolves and different events or milestones are reached. Since the Sustainable Infrastructure Program will rely heavily on very localized source reduction and stormwater retention systems, residents and businesses who will live with these systems must be informed, and must develop trust that Sustainable infrastructure measures will not lead to any harm; questions about mosquitoes and flooding must be anticipated and credible answers made available. It has been the experience of many communities working on green infrastructure capital programs and projects that a thorough FAQs list is one of the more consistently used and useful documents generated in the course of a project; this step is recommended to be completed as soon as possible, preferably before the upcoming round of charrettes.

As a related issue, public land acquisition within an existing, developed neighborhood like South Fairmount is often very controversial and can provoke concerns and animosity if residents and businesses are not very clearly informed of the reasons for acquisition, the decision-making process involved, and where this information can be found. A FAQ with links to further information is an important resource to keep current and updated, in order to ensure that appropriate information is made readily available.

5. Establish a communication feedback loop specific to the neighborhood.

Finally, it will be essential to continue to have an outreach coordinator familiar with the neighborhood’s information pathways, the mission and the FAQs to ensure consistent, locally-responsive information. There will need to be accountability for continuing feedback both locally, and at the City level. This outreach coordinator could be visible in the community by attending South Fairmount Community Council meetings and other meetings with local groups and non-profit organizations. As one example of the type of outreach that will be needed, business owners who want to understand the impacts of the project on their properties and investments need a point of contact that is familiar with the neighborhood and Project Groundwork to address questions on scheduling, construction-phase disruption or land purchases. Likewise, constituents for specific neighborhood features (such as the spray park) must be able to go to a credible source for information, or there may be objections to an aspect of the project that cause delays and misunderstanding.

3.3 Framework Action #2: Land Acquisition, Brownfields and Land Use Plan

Goal:	Develop a central, strategic land ownership and use inventory and plan for the watershed and focus area, identifying public acquisition and Brownfields status; outlining criteria and procedures for acquisition, revegetation and management; and identifying options for re-use of acquired lands.
Opportunity:	Take a multi-agency approach to evaluating the watershed's inventory of under-market, vacant or publicly-owned lands to find opportunities and develop a strategic stormwater, open space and redevelopment plan. Develop zoning strategies in conjunction with the LDC update to implement a strategic plan and support redevelopment.
Lead responsibility:	Department of Planning & Buildings and/or Department of Community Development.
Key agencies:	MSD; US EPA (Brownfields); Port Authority of Cincinnati; Cincinnati Parks; Cincinnati Metropolitan Housing Authority, Department of Community Development, Cincinnati Recreation Commission.
Timeframe:	Plan development: 2011-12 Integration with zoning: 2013 Monitoring/adaptation: 2014 →

Because sustainable infrastructure approaches use land surfaces rather than underground storage to manage stormwater, initiatives like the Sustainable Infrastructure Program for Lick Run are, essentially, neighborhood land use plans. Implementation within the Lick Run Watershed will create a land use setting with a network of open spaces that are used principally for stormwater management. The channel will be the major and organizing feature of this network, but additional lands on City parks and within the neighborhood will be involved.

Public land acquisition is an increasing part of the local land use setting. Cincinnati Parks and the Cincinnati Recreation Commission own land within the watershed and corridor, and both MSD and the City are continuing to purchase land, to prepare for Project Groundwork activities or remove abandoned or unrepared housing, respectively. In addition, the corridor along Westwood Avenue and Queen City Avenue has a significant inventory of identified contaminated or "Brownfields" properties that are the subject of Phase 1 or Phase 2 investigations; many of these may ultimately be involved in the Sustainable Infrastructure Program, raising further issues regarding their potential for adaptive reuse. As a result of all of these activities, there will be a substantial and changing inventory of publicly-owned property that will require planning and management, but which could create opportunities for land assembly to carry out both stormwater and other revitalization projects.

All of these issues point to the need for a strategic, comprehensive land use plan and strategy. The strategy would focus on the potential uses of properties in the Sustainable Infrastructure Program, as well as the potential uses and opportunities for current or future publicly-owned properties that are not ultimately used for stormwater and CSO control. The purpose of such a plan is to help prioritize and focus acquisitions across departments, understand the potential opportunities and challenges of the emerging pattern of public land ownership, and enable Cincinnati to target public investments in land – whether Brownfields remediation, housing redevelopment, economic development, community open space and parks or stormwater management.

As one example of a strategic land use plan of this type, airport authorities acquiring lands under the U.S. Federal Aviation Administration's (FAA's) Part 150 noise program are required to develop noise land inventories and land use plans, including specific plans for reuse of purchased properties for airport purposes or "disposal" (sale) if acquired lands are not needed for airport purposes. This type of plan

provides both local land use agencies and the public with a sense of how and where properties will be acquired, and the options for future use.

It is recommended that a Land Acquisition, Brownfields and Land Use Plan be prepared, either independently or as a component of the Partnership for Sustainable Communities/LDC Update process task in Framework Action #4 below, with the following components:

1. Comprehensive Land Use Inventory with Ownership Status

A comprehensive and fine-grained (parcel-by-parcel) inventory of the land use within the 60-acre Focus Area should be prepared including ownership status (e.g., privately owned, MSD, Parks or Housing Authority); potential for public acquisition; potential purpose for public acquisition (e.g., neighborhood stabilization, Project Groundwork, both or other purpose); and brownfields investigation/remediation status. This inventory ideally would include rights-of-way and potential right-of-way acquisition for transportation projects.

2. Brownfield Coordination

Developing a strategy for dealing with brownfields – properties potentially contaminated by prior land uses – is among the most important planning issues for implementing Project Groundwork in the Lick Run Watershed. A strategic Land Acquisition and Use Plan will need to incorporate information on brownfields status so that evaluation and remediation efforts can be focused in the areas where remediation or evaluation can enable either a Project Groundwork component, or another land use plan objective. The brownfields objectives may also inform future land use recommendations, since some sites may require more intensive remediation to become suitable for residential uses than others and, therefore, may be preferred uses for commercial or other purposes.

Phase 1 and Phase 2 brownfields investigations are underway throughout the project focus area and Westwood Avenue/Queen City Avenue corridor, through the Port Authority of Cincinnati and US EPA. The US EPA is actively supporting brownfields assessments in the area through its own contracting and has provided a \$1 million Targeted Brownfields Assessment (TBA) grant to the Port Authority of Cincinnati, which will fund assessments of area properties. MSD and the City's Department of Planning & Buildings may seek grant funding from the Clean Ohio Fund for Phase 2 Assessments and remediation, which will include environmental assessment of publicly-owned properties in the Lick Run corridor, and evaluation of additional properties that may require relocation. The City also may apply for an EPA Brownfields Assessment Grant since it allows for area wide planning (up to 75% of the total) efforts that might support the TBA grant work. This area wide planning effort might focus on the older industrial buildings located in the eastern gateway study area.

Project Groundwork, associated transportation improvements, neighborhood stabilization efforts, and housing and economic development all will require excavation and property transfers, which can be complicated significantly by soil and groundwater contamination. Among many other conditions, soil contamination conditions greatly affect the potential cost and viability of infiltration and other Sustainable infrastructure practices, as well as the cost to remediate a site for residential versus commercial use. Therefore, all of the agencies involved in the comprehensive strategy for Lick Run must maintain close coordination and information exchange regarding the brownfields assessments being done in the corridor.

One of the rationales for Framework Action #2, the strategic Land Acquisition, Brownfields and Land Use Plan, is to identify properties whose acquisition or re-purposing can help accomplish a larger goal, such as aggregating sufficient land for redevelopment, transportation right-of-way or Project Groundwork needs. The same principle should be carried through to prioritizing Brownfields and particularly remediation investments, so that funds are directed first to the sites with greatest opportunity. Incorporating Brownfields information within plans and inter-agency discussions will help ensure that remediation provides the greatest benefit, and that brownfield issues are as small of a barrier as possible to Project Groundwork implementation.

3. Greenspace/Parks Analysis

Once an inventory has been prepared, one area of analysis should be the status and availability of open space and public parks (both active and passive) to different areas of the community, and the potential for Sustainable Infrastructure Program components to provide or enhance green space within the neighborhood, particularly for underserved areas. This could be done through ongoing coordination with Cincinnati Parks (Framework Action #3 below) or another planning venue, and provides an excellent opportunity for further public engagement in the shape and outcome of the Sustainable Infrastructure Program. This task also should consider the need and opportunity for community gardens, if suitable lands for a garden are not required for Project Groundwork.

4. Market and Opportunity Analysis

With the extent of land being purchased by different public agencies, and the major investments envisioned for this corridor through Project Groundwork, there may be opportunities to assemble suitable areas of land for larger-scaled economic development or housing initiatives, as well as to add to transportation rights-of-way for reconstruction or realignment projects. A market and opportunity analysis would identify locations where groupings of land acquisitions are anticipated, along with the current ownership/acquisition and Brownfields investigation status of each parcel. These areas could be flagged as important resources either for the Sustainable Infrastructure Program, or as sites to be considered for economic development or housing. This type of analysis may help prioritize MSD and HUD NSP or other investments synergistically, to maximize opportunities for enabling more substantial projects over the coming years.

5. Zoning and Implementation Strategy

Completing a Land Acquisition, Brownfields, and Land Use Plan in advance of the City's LDC update represents an excellent opportunity to develop zoning and code provisions for implementation. Whether through form-based coding or conventional zoning districts, it will be beneficial for Project Groundwork and the neighborhood to have a land use strategy developed before the code update occurs.

3.4 Framework Action #3: Cincinnati Parks Coordination (Ongoing)

Goal:	Continue to update and work through the MOU between MSD and Cincinnati Parks to accomplish planning and implementation of the Sustainable Infrastructure Program and improve neighborhood open space and park resources.
Opportunity:	Provide a model for cooperative maintenance, funding and upkeep of distributed stormwater source control and treatment; provide "green jobs" opportunities and training once projects are implemented.
Lead responsibility:	MSD and Cincinnati Parks.
Additional agencies:	Mill Creek Restoration; HUD Neighborhood Stabilization; Cincinnati Schools.
Timeframe:	First MOU expires December 30, 2012; MOU Renewal for 2013 – 2015.

On April 1, 2010, MSD and Cincinnati Parks entered into an MOU that represents a crucial positive step towards making the Sustainable Infrastructure Program a feasible response to the regulatory requirements of the Consent Decree (Appendix D, MSD and Cincinnati Parks MOU). The second and third clauses of the MOU describe the vital relationship between Cincinnati Parks, its lands and activities and the outcome of the Sustainable Infrastructure Program:

“WHEREAS, Parks controls and operates a system of parks and spaces and has experience in mitigating uncontrolled and unplanned stormwater runoff through urban forest development and management and through the development and management of park lands.

“WHEREAS, the Infrastructure Programs will be for the use and benefit of MSD and may include...practices and structures that use or mimic natural processes to infiltrate or reuse stormwater, and includes the use of the city’s parkland as a stormwater mitigator.”-- *(MSD April 1, 2010; page 1)*

The current MOU provides for MSD to reimburse Parks and the Cincinnati Parks Board (CPB) for the time and expenses Parks incurs providing services on MSD-authorized projects related to urban forest development, planning and management, as well as management and maintenance of stormwater best management practices (BMPs). Among other provisions, MSD is to provide the CPB with manuals for various stormwater BMPs, and CPB is to provide public relations support to “...inform affected property owners and to educate citizens on the intent and benefits of such collaborative work.”

The MOU emphasizes that Cincinnati Parks, as managers of and planners of the City’s urban forest and open spaces, are vital to all phases of the project from planning to long-term maintenance. This collaboration is a core Framework Action; monitoring the success and any issues with the MOU and its provisions should be a continuous process. It is also worth emphasizing that Cincinnati Parks’ participation in the upcoming charrettes, as well as an expanded CFAC process, is essential.

In the short term, it is also essential to ensure that Cincinnati Parks is fully engaged in planning for the details of the Sustainable Infrastructure Program, particularly the main linear Lick Run restoration area. In the next year, many decisions will be made on the details of the water feature that will determine both how a daylighted Lick Run functions as a recreation area (or not), and its future maintenance issues and costs. Cincinnati Parks, and the Cincinnati Recreation Commission, also may need to be actively involved in any Project Groundwork components that would affect local recreation facilities, such as the recently-improved South Fairmount Aquatic and Recreation Area. Input from Cincinnati Parks is also crucial to plan for specific park and recreation impacts that could occur during construction if neighborhood facilities must be affected or taken out of service.

3.5 Framework Action #4: Regulatory Framework and Land Development Code (LDC)

Goal:	Develop a watershed-area plan and regulatory framework fully supportive of Project Groundwork implementation and the strategic land acquisition, brownfields, and land use plan.
Opportunity:	Build source reduction and green infrastructure into the land use planning and regulatory/implementation structure for the Lick Run Watershed.
Lead responsibility:	Department of Planning & Buildings.
Additional agencies:	MSD; Cincinnati Parks; Economic Development; Department of Community Development.
Timeframe:	Watershed area plan and task definition: 2011 Charrettes: Summer 2011 Watershed area plan development: 2011-2012 Regulatory framework development: 2013

Cincinnati has recently embarked on what will be a crucial under-pinning of the Lick Run Watershed plan: a comprehensive update of its LDC, the City’s basic governing statute for building, development and land use review. US EPA has recognized that the Sustainable Infrastructure Program could substantially advance other US EPA-backed Sustainable Community goals by contributing to many important features of community livability, such as access to parks and open space, aesthetic

enhancements, educational opportunities and improved air quality. The LDC is intended to move beyond traditional regulation to consider and manage the impacts that development regulations have on public health and the environment, through working collaborations with the Cincinnati Health Department, MSD and the MCRP. This LDC effort is timely since it will assist with the implementation of the recently adopted *Go Cincinnati Plan*.

The LDC project incorporates large-scale planning projects that will serve as models and test cases for planning prior to the actual update of the LDC. Along with the Cincinnati Streetcar initiative and a master plan for the Lower Mill Creek watershed (which is to include corridor restoration for Mill Creek coordinated with Mill Creek Restoration, Inc.), the City's third specific task identified in the grant application is a watershed plan for Lick Run. Like the Lower Mill Creek Watershed Master Plan, the Lick Run Master Plan is intended to: (1) develop strategies to expand affordable housing and transportation options that pair with MSD's proposed infrastructure investments; (2) advance redevelopment with reuse of Brownfields, vacant or otherwise abandoned and underutilized properties for economic and job creation; and (3) incorporate strategies to expand traffic choices and connect the urban greenways to urban centers. As currently described, the activities envisioned for the Lick Run Master Plan are: (1) data collection for integrating housing and transportation within four watersheds, (2) public preference sessions, (3) public visioning charrettes, (4) housing evaluation and action plan, (5) transportation plan, and (6) master plan development.

This task is clearly complimentary to Framework Action #3 discussed above. Depending on the lead agency chosen, the two could be combined as long as the specific components from Framework Action #3 are defined. This task is also already in process as a series of design charrettes are planned for the Lick Run Watershed area in the summer of 2011, sponsored through MSD. To improve the reach and effectiveness of the charrettes, it is recommended that the Lick Run Master Plan and charrettes should include the following scoping and task development activities:

1. Detailed Land Use Inventory for Watershed Features

Integrating watershed concepts into the initial data collection could greatly improve coordination and multi-benefit outcomes as housing, transportation and green infrastructure are designed. As detailed in Section 3.4 above, parcel level detail is needed for the watershed. This parcel level data should integrate ownership, land use, Brownfield investigation findings, impervious cover and forest cover data, including any updated data sets from City or regional agencies. Moreover, the data collection for "integrating housing and transportation" should look specifically at opportunities for building- and site-level disconnection and retrofits to support MSD's source reduction and control needs as part of the Sustainable Infrastructure Program. Data collection must include not only housing types and conditions, but also lot drainage types and infrastructure by neighborhood and block, lot development types, yards or other areas available for disconnection and green infrastructure features, and potential land use "hot spots" (e.g., areas with illegal dumping or informal vehicle storage) where more active source control or stormwater management could be beneficial. In addition, potential path and transportation connection points might be identified and then correlated to soil type and relationship to drainage infrastructure, to see where permeable pavement installations could be used to meet both transportation and source control needs.

2. Transitional Design and Management Standards for Vacant Lots

An important contribution that could be made through this plan are protocols and design concepts for managing the many publicly-owned vacant and transitional parcels in the watershed, which will be a feature of the Project Groundwork process as acquisition and implementation happen over time. The Pennsylvania Horticultural Society (PHS) developed an extremely successful and cost-effective model for managing vacant lots during the transition between public ownership and demolition, and eventual reuse for stormwater management, community gardens, redevelopment or neighborhood parks (Appendix G, Land Stewardship and Green Job Examples). PHS uses a standard grading and planting plan, along with

simple wooden fencing, to improve the appearance of stabilized lots and to discourage illegal dumping. The lots are then maintained by “Community LandCare Organizations,” providing further support to community organizations. PHS has found that marking and caring for the lots creates a positive public awareness of the City of Philadelphia’s green infrastructure program, which is an especially important and transferable lesson for South Fairmount and the Lick Run Watershed. Adopting a similar standard approach among Cincinnati Parks, MSD, Transportation & Engineering, and Neighborhood Stabilization would support public engagement needs as well as the multi-benefit objectives of the Sustainable Infrastructure Program. Community gardens are another opportunity; Cincinnati recently enacted regulations within the Zoning Code for community gardens, which will offer another option for managing vacant lands.

3.6 Framework Action #5: Maintenance Agreements

Goal:	Outline and assign responsibility and funding for maintenance of Project Groundwork components, including individual building-site source reduction, transportation-related facilities, regional stormwater storage and treatment facilities and the Lick Run channel restoration—supporting a green jobs mission wherever possible.
Opportunity:	Identify possible green jobs training and development strategies, and supplemental funding sources that can help support Project Groundwork maintenance over time.
Lead responsibility:	MSD
Additional agencies:	Cincinnati Parks; Community Development; Office of the Mayor.
Timeframe:	Set up communication structure among agencies: 2011-12 Work to define expectations and maintenance issues: 2012-13 Identify green jobs partnerships, opportunities and funding: 2012→ Develop agreements for maintenance and funding: 2013 → Implementation and feedback: 2014→

The final Framework Action, under the catch-all of “Maintenance Agreements,” encompasses the need to begin developing long-term provisions for managing the ultimate network of Sustainable Infrastructure Program facilities – from individual source reduction measures, such as cisterns or green roofs, to the restored Lick Run channel and ancillary detention basins, to stormwater management features within the right of way, as well as the neighborhood’s open spaces and corridors that result from land acquisitions, transportation improvements, Brownfields remediation and other revitalization initiatives.

One of the important potentials of the Sustainable Infrastructure Program is the opportunity to enhance the community’s aesthetic, environmental and economic climate by building a network of well-managed landscape features that can be maintained (and in some cases constructed) by well-trained local crews – as opposed to an underground tunnel, whose construction and maintenance requirements are not suited to local job and community management programs. As the Sustainable Infrastructure Program and Framework Actions evolve, care should be taken to look for opportunities to create community-based maintenance, installation and stewardship programs wherever possible. These efforts can engage and use the particular skills of citizens of the area, local universities and colleges, non-profit organizations, area businesses and others. Some of these opportunities are listed below, and examples of comparable efforts are included in Appendix G:

1. Vacant property stabilization can be supported by community members (PHS’s Community LandCare Organizations)
2. Installation of building- and site-level source controls, such as rain barrels, can be done through community-based training (Savannah, GA Water Resources Bureau and Rutgers (NJ) Cooperative Extension)

3. Stream channel and detention/infiltration area maintenance often can be done through youth organizations or conservation corps projects (South Burlington, VT/Vermont Youth Conservation Corps)
4. Implementation of community gardens, coordinating through the Civic Garden Center of Greater Cincinnati and evaluating the effectiveness of the recently-enacted zoning code provisions for community gardens , or stormwater management features such as rain gardens, on previously-vacant sites
5. Urban forestry and tree planting included in MSD's source control modeling and calculations can in many cases be coordinated with community-based groups, working closely with Cincinnati Parks.

The purpose this Framework Action is to ensure that community engagement in the physical implementation, maintenance and well-being of the Sustainable Infrastructure Program is a consistent, over-arching goal, even though it will require substantial administrative work to ensure that appropriate agreements are available to cover funding, staffing, training, legal, liability and performance issues. Green infrastructure programs often are not pursued in this way because it is simpler to use existing contract vehicles than engage in the often difficult process of building local capacity to manage LID BMPs. While easier in the short-term, the simpler approach would not yield the long-term value of engagement and community participation. With the extent of the investments that will be made in the Lick Run Watershed, the amount of land area and vacant land that will be affected through different programs and the level of economic distress, this is a critical opportunity that warrants consistent attention and resources.

4.0 Supporting Actions

As discussed previously, Supporting Actions are ongoing and planned to support the Sustainable Infrastructure Program, though they may not be directly required to implement the infrastructure alternative. This section presents Supporting Actions identified during development of this Plan and provides a framework for integrating additional Supporting Actions over time.

4.1 Overview

One of the greatest challenges for implementation of the Sustainable Infrastructure Program is the sheer number of public and private investments that either are affecting, or may affect, implementation as time progresses. As City departments, stakeholders and MSD work to implement the COF concept and the Framework Actions discussed in Section 3.0, other City actions, private investments and community initiatives will be taking place in the neighborhood that will need to be coordinated, at least in pertinent parts, with the Sustainable Infrastructure Program.

If organized around the goals and objectives of the Framework Actions, the investments to be made by MSD and other agencies provide opportunities for coordinated, co-investment in public features such as streets, sidewalks, lighting, landscaping, drainage and transportation systems. Using LID BMPs and green infrastructure design principles and features can also help improve community livability by, for example, incorporating streetscape bioretention into projects that fix broken or incomplete sidewalks; using the construction of stormwater treatment or constructed wetland areas as catalysts for improving parks and public spaces; identifying sites with ponding water and chronic icing as priority locations for improved drainage; and using separation and other construction projects as opportunities to address inadequate street lighting or landscaping, which also supports crime prevention and environmental health.

The long-term economic conditions of South Fairmount also can benefit from both the Framework Actions and active coordination of the housing, economic development, land acquisition and facility maintenance work that will be involved in Project Groundwork and components of the Sustainable Infrastructure Program. As discussed in Section 3.3, land acquisitions may be structured to support future housing and economic development, and the types of community-based maintenance activities described in Section 3.6 have been used in other jurisdictions as a source of “green jobs” training and employment opportunities. Moreover, ongoing investments in a consistent and organized regulatory framework, community livability and well-functioning infrastructure are strong economic development catalysts in and of themselves.

This section of the Plan lists and briefly discusses initiatives of several City and regional agencies that will affect South Fairmount and the Lick Run Watershed in the same timeframe as the Project Groundwork investments, and highlights some opportunities for coordination. Maintaining current information through updates on these program areas and the addition of new areas will be important to the success of the project over time. The planning and investment actions with the greatest importance in the near term, presented below, are: (1) planning and historic preservation, (2) housing and economic development, and (3) transportation, transit and bikeways.

4.2 Planning and Historic Preservation

Cincinnati has a long and distinguished history of planning. Recently, the City initiated a multi-year process called “Plan Cincinnati” to update the Comprehensive Plan last completed in 1980. This process included extensive community outreach, and an Issues Paper on infrastructure that describes Project Groundwork and the Lick Run issues in particular (see Appendices F, Area Planning Activities, and Appendix H, Plan Cincinnati Infrastructure White Paper). Hamilton County’s Community Compass and Agenda 360: A Regional Action Plan (<http://www.agenda360.org/>) are two other regional initiatives that have included public outreach and engagement on general long-range planning.

Sustainable Infrastructure planning and Brownfields investigation are both, fundamentally, neighborhood land use planning. In using a Sustainable Infrastructure approach in Lick Run, coupled with investigating and mitigating Brownfield sites, Cincinnati has the opportunity to pioneer the use of natural and engineered features that not only manage stormwater runoff, but also create public and neighborhood green spaces, enhance the neighborhood's aesthetic quality, and integrate with improved public facilities from parks to sidewalks, streets and redevelopment sites.

Land Use Planning: Following the completion of Plan Cincinnati, the next major land use planning initiative will be the Lick Run Watershed Plan task in the LDC update. This is a critical planning task for the Sustainable Infrastructure Program. Linking the land acquisition and management components with a comprehensive plan and vision for the community's design, environmental function and character will bridge the gap between the high-level vision for the watershed and the site-specific implementation issues. Working Sustainable Infrastructure principles and individual projects into the overall goals of the Lick Run Watershed Plan, and directly incorporating the Framework Actions identified in this Strategic Integration Plan (particularly parks coordination and land acquisition, brownfields, and land use planning) may allow the Lick Run Watershed Plan to function as the main working document for Project Groundwork within this area.

Historic Preservation: As noted in the Technical Report (MSD 2009, page 2-11), South Fairmount has several historic buildings that anchor the study area corridor along Westwood Avenue. The Urban Audit completed for the Technical Report identified examples of many architectural styles representing different periods and styles found elsewhere in Cincinnati, including Italianate, Queen Ann, Greek Revival and Empire. Some historic buildings in the neighborhood, such as the St. Francis Apartments, have been modernized through adaptive reuse, and others are candidates for this type of investment. Many of the buildings are rental units, which could benefit from the use of the Historic Preservation Tax Credit as a redevelopment tool. It is strongly recommended that any historic preservation activities or adaptive reuse enable and include source reduction measures, such as rainwater harvesting cisterns, rain barrels and planters, in all phases of design and implementation.

Section 106 review for Project Groundwork will be necessary, and complex. There may be opportunities to consolidate reviews, possibly using the consolidated land use plan as a basis for evaluating the interaction of historic resources with potential acquisition, Brownfields investigation and future redevelopment plans.

City Buildings and Schools: Ohio's ambitious program for greening schools and public buildings has become a national model for improving urban sustainability, and Cincinnati Public Schools has received national attention for its work on green schools design. The initiative within the Lick Run Watershed will be furthered substantially by incorporating as many stormwater source reduction and site permeability measures as possible into all public building and school greening efforts in the future, in addition to the basic Leadership in Energy and Environmental Design (LEED) standards for stormwater management and water-conserving fixtures. Any retrofits that can highlight source reduction and rainwater capture will greatly further the effort and create more visibility and support within the community. As the Land Acquisition, Brownfields and Land Use Plan evolves, other opportunities for City buildings and schools may include creating or maintaining community gardens or green spaces that complement public facilities, and using these spaces to showcase Project Groundwork components such as rainwater harvesting or rain barrels, constructed wetlands, permeable pavements or xeriscaping (landscaping designs that reduce or eliminate the need for supplemental irrigation).

Recommendations:

- Develop a scope for the Lick Run Watershed Plan, as part of the LDC update that makes implementation of the Sustainable Infrastructure Program a principal goal and brings together the Framework Actions identified in this Plan.

- If possible, structure the Lick Run Watershed Plan to act as the overall coordinating document for implementing the Sustainable Infrastructure Program in the focus area over time.
- Coordinate with sustainability efforts for schools, City-owned buildings and Clean Ohio-funded programs to include source reduction, Sustainable Infrastructure techniques and educational components in any City building sustainability or retrofit projects, above standard LEED measures for water-conserving fixtures and stormwater management.
- Ensure that the LDC update's provisions regarding historic buildings and particularly adaptive reuse enable or encourage incorporating source reduction features such as green roofs, rainwater harvesting structures and permeable landscaping materials.
- Look for sites in the Land Acquisition, Brownfields, and Land Use Plan that are proximate to, or could complement, greening efforts for the neighborhood's public and historic buildings.
- Through the US EPA's current Targeted Brownfield Assessment project, ensure that information on site assessment status and results for all parcels within the Lick Run Watershed is continuously provided to MSD and to the Department of Planning & Buildings, so that this information is fully incorporated into the Land Acquisition, Brownfields, and Land Use Plan, Lick Run Watershed Plan/LDC update, and decisions regarding the use of NSP funds.
- Through collaboration among MSD, the Department of Planning & Buildings, US EPA, and the Port Authority, begin to outline a potential priority list and schedule for remediation, focusing on properties whose analysis or remediation will provide the greatest value to advancing Project Groundwork design or implementation.
- Investigate creation of a land bank authority that could be a partnership between Hamilton County, City of Cincinnati, and the Port Authority. Continue to look for opportunities to leverage funds through brownfields tax credits and other strategies in support of redevelopment and restoration.

4.3 Housing & Economic Development

As has been the case in many of Cincinnati's historic neighborhoods, South Fairmount has experienced significant disinvestment, leading to falling property values and an abundance of vacant and under-utilized properties. New investment since the 1970s has consisted principally of auto-oriented development, such as fast food restaurants, convenience stores and gas stations. Within the larger Lick Run Watershed, the resulting land use pattern is principally residential, with a large stock of single-family units; the focus area at the eastern end of the watershed is a mix of commercial, institutional and industrial land use. The area now serves as a major commuter pass-through area for significant volumes of vehicle traffic from the western suburbs to downtown, particularly along Westwood Avenue.

The focus area and Lick Run Watershed has received federal HUD monies for many years, through several different programs. Both Community Development Block Grant (CDBG) and NSP funds have been used in the area for stabilization, principally demolition of abandoned or unrepaired housing, but also for loans for rehabilitation projects such as the St. Francis Senior Apartments. The St. Francis Senior Apartments is an important example of the type of project that will further both neighborhood revitalization and Project Groundwork, as this complex is also the site of a green infrastructure stormwater project that is replacing excess pavement with rain gardens.

Current attention remains focused on vacant properties and removing abandoned buildings, but preserving existing housing stock is a long-term goal. As another long-term concern, there is the possibility of gentrification for South Fairmount that coincides with the public infrastructure improvements coming from Project Groundwork as well as other transportation improvements. Throughout the redevelopment process, there needs to be dialogue with the present residents of the Lick Run Watershed about the opportunity to continue living in the neighborhood after the implementation of the Wet Weather Plan.

Housing Redevelopment: Depending on population trends, market conditions and economic development opportunities in the Lick Run Watershed, there are a number of potential sources of redevelopment financing that could promote both improved housing stock and conditions, and implementation of Sustainable Infrastructure program components. Continued activity through CDBG and the NSP may be adjusted to support land acquisition, demolition, planting and stabilization of vacant sites, and community land management, as described in Framework Action #4. In addition, South Fairmount may be able to take advantage of the Build Cincinnati Development Fund (BCDF), which is intended to provide pre-development loans for residential projects and small businesses in some of the City's underserved neighborhoods. The Cincinnati Development Fund, a non-profit providing gap financing for projects that are traditionally difficult to finance through other sources, is another active source of rehabilitation funds, having made over \$200 million in loans for over 3,500 units of housing. Cincinnati Housing Partners, Inc., which rehabilitates housing for low- and moderate-income households also may become active within the watershed, along with other local housing organizations.

Economic Development: South Fairmount's income and employment profile point to the level of economic distress that the neighborhood has experienced for many years. At present, the neighborhood has many liabilities that are driving away potential economic development: an abundance of vacant and under-utilized parcels; extensive brownfield issues; a traffic corridor with high volumes of through traffic; and historic "anchor" buildings in varying states of use and repair. However, all of these conditions represent opportunities to improve economic conditions through strategic investments, transportation improvements, and redevelopment.

Project Groundwork's upcoming investments in the neighborhood offer a potential catalyst for economic development, both through direct investments in infrastructure projects and through the LDC planning and regulatory update process. Four of the Framework Actions are directly related to the economic development goals of Project Groundwork in this watershed. Coordinating actions and recommendations include:

Local business support during construction: The locally-specific engagement and communications program in Framework Action #1 is essential to helping preserve and support existing businesses within the watershed and focus area, especially as construction activities begin. **Local businesses that will be affected by construction- and operation-phase disruptions, particularly to traffic and parking, must be identified and engaged as soon as possible,** and preferably before construction plans have to be presented as a "done deal." Taking the approach of many "main street" transportation projects, MSD should consider making traffic and access plans the first step for all of its construction work in the corridor, including identification of construction-phase parking, business access and temporary signage so that businesses experience as little disruption as possible.

Economic and retail market analysis: As part of Framework Action #2 (Land Acquisition and Use Plan) or #4 (Regulatory Framework and LDC Update [including the Lick Run Watershed Plan task]), **it is recommended that analysis of real estate, retail and economic development market conditions be completed within the next year so that all stakeholders can understand the realistic, well-founded options for revitalization in the area.** A market analysis would evaluate data such as vacancies, highest and best uses, competitive retail areas, retail functions served within the neighborhood, population trends and demand scenarios to establish a common understanding of the short- and long-term potential for viable redevelopment in the neighborhood. The market analysis also may indicate that a change in transportation and circulation patterns would facilitate one potential outcome over another. As an example, the Lunkenheimer site, a historic anchor building with its foundry still partially in use, could have a host of reuse options, but both brownfields assessment and an understanding of market and competitive opportunities will be needed to form effective strategies. Ideally, some housing and economic market analysis would be presented at the beginning of the upcoming summer design charrettes, so that plans and designs reflect realistic opportunities and focus on how to achieve them.

Supporting local green jobs through maintenance and implementation: As outlined in Framework Action #5, **realizing the potential for Project Groundwork to support and catalyze strong, locally-generated “green jobs” and land stewardship will require organization, attention and investment.** Since source control construction and maintenance activities will be required to implement the project, this is perhaps the most certain upcoming economic opportunity for the neighborhood resulting from Project Groundwork. Recommendations in this area include:

Recommendations:

- Target CDBG and NSP funds, along with other available housing funds, to support implementation of Project Groundwork and the strategic goals of the Land Acquisition, Brownfield and Land Use Plan (Framework Action #2).
- Complete a market analysis outlining the competitive housing and economic development climate within South Fairmount and its market area, and short- and long-term reinvestment and redevelopment opportunities.
- Provide competitive market information to inform the charrettes so that land-based solutions reflect realistic scenarios for redevelopment.
- Include detailed plans and outreach to local businesses in all construction planning for Project Groundwork activities, including construction-phase plans for business signage, access and parking and make contact with business owners or representatives well in advance of finalizing construction plans.
- Make locally-generated green job components a central focus of all investments and economic development activity within the watershed.

4.4 Transportation, Transit & Bikeways

The initial Synthesis Plan for restoration of Lick Run and the Sustainable Infrastructure program (Figure 6) highlights the central importance of transportation planning to the ultimate outcome of the project for the neighborhood. Because the central feature of the Sustainable Infrastructure Program will parallel Westwood Avenue and may eliminate Beekman Street (Figures 6 and 7, Transportation Networks), planning for the final form of the stormwater infrastructure network and the transportation network cannot be separated. A phased construction plan will be needed as a mid- to long-term goal. The goal will be to avoid significant disruptions of the large volume of commuter traffic through the corridor; MSD and the City are encouraged to coordinate schedules so sewer projects occur at the same time that road projects occur.

Figure 6 Current Transportation Network (Bus Routes and Abandoned Rail)

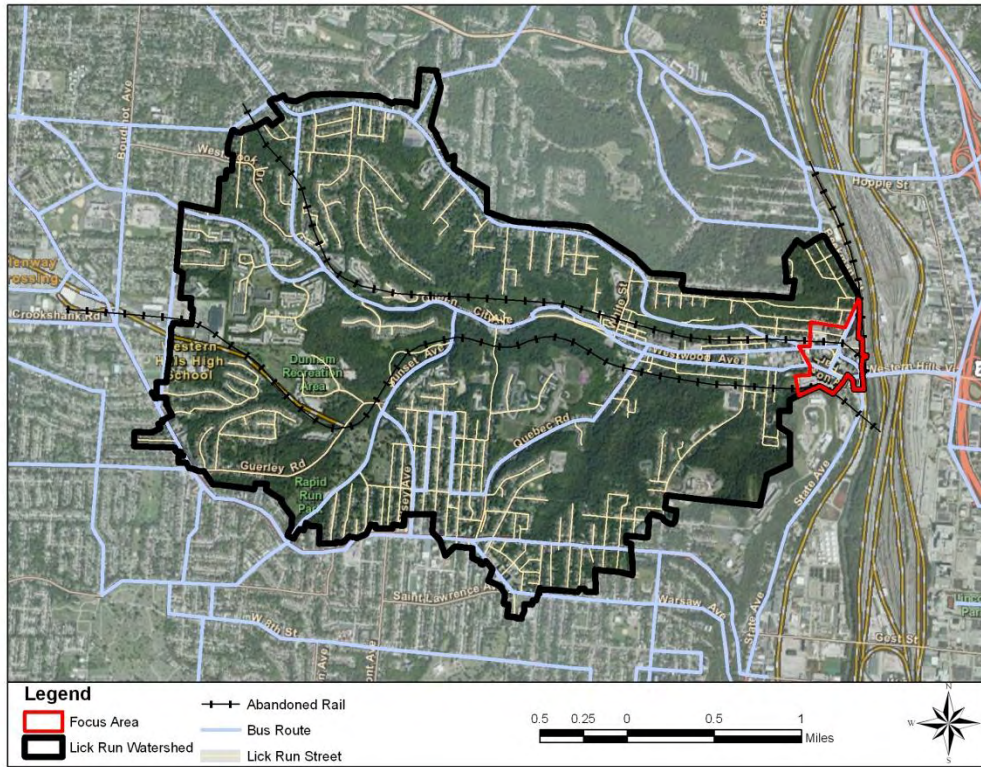
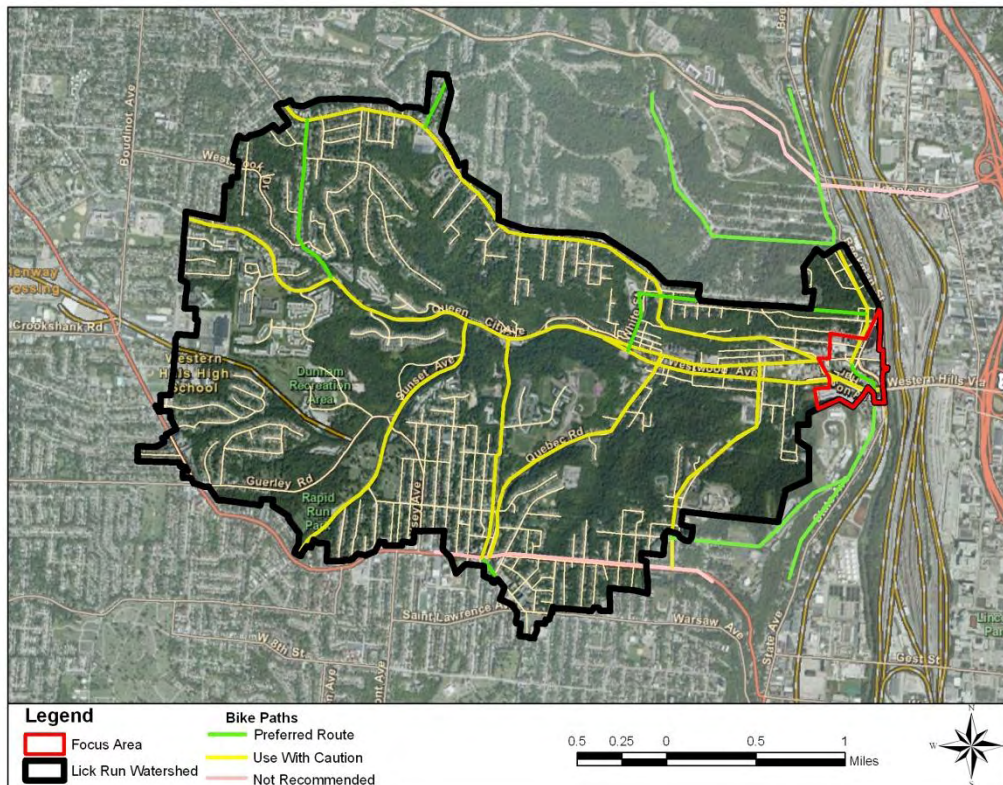


Figure 7 Current Transportation Network (Bicycle Paths)



As noted in Section 2 of this Plan, despite sidewalks on both sides of most streets and nearly continuous bus transit service through the corridor, the focus area has high traffic volumes, limited pedestrian facilities and few features that would improve its walkability.

Representative intersections and sidewalk/streetscape images are provided below.



Photographs showing current Lick Run Focus Area and watershed sidewalks, intersections and streetscapes.

In keeping with the Sustainable Communities Livability Principles of the LDC update process, the City and MSD have committed to improving options for transit, walking and bicycling as planning and implementation occur. Project Groundwork will have a substantial impact on the resulting transportation network, the environment and facilities for walking and biking, and on housing and redevelopment efforts whose form will depend, in large part, on the available transit and traffic network.

Many transportation plans and projects are in varying states of preparation through the Ohio Department of Transportation (Ohio DOT), the City’s Department of Transportation & Engineering, the Southwest Ohio Regional Transportation Association (SORTA), and more recently the HUD Sustainable Communities Grant, which as noted above requires a focus on transportation alternatives and transit-oriented design. Among the key projects that will be evolving in the area are:

Replacement/Repair of Western Hills Viaduct: The Western Hills Viaduct (WHV), which is owned by Hamilton County but maintained by the City, is being evaluated for replacement or expansion. A final scoping study is due in November 2011. MSD and the City Department of Transportation & Engineering (DOTE) have met and agreed to combine efforts on the National Environmental Policy Act (NEPA) analysis that will be required for both the WHV project and transportation changes related to MSD efforts in the area; however, it is reasonable to expect that this will be on a longer timeframe than Project Groundwork within the corridor.

Transit: SORTA manages public transportation in the City of Cincinnati and is responsible for ongoing transit planning activities. Through different studies and discussions, the potential to locate a bus transfer location in South Fairmount has been noted, but more study is needed. Evaluation of a bus transfer location would be an excellent add-on or component of the LDC update’s Lick Run Watershed Plan, since adding a bus transfer station could reduce the neighborhood’s function as a pass-through for traffic, and potentially create a node for economic development. Siting,



Constructing green infrastructure features in locations with poor sidewalks improves water quality and pedestrian facilities. (City of Los Angeles 2010, www.lastormwater.org)

potentially create a node for economic development. Siting, however, would need to be coordinated with the final decision on the transportation and circulation network.

Complete Streets: Cincinnati is working to finish its Complete Streets Policy, which requires active design to incorporate safe bicycle, pedestrian, and transit facilities in all road reconstruction projects. A first Complete Streets project was implemented in the summer of 2010 along Madison Road between Grandin Road and Dana Avenue. This policy is important to the Sustainable Infrastructure program, and also represents an opportunity to move beyond the City's existing policy to pilot greater use of stormwater infiltration techniques in roadway and right-of-way projects. Any

street network changes made as part of Project Groundwork will need to comply with the City's guidelines, but in addition, could incorporate LID techniques such as infiltration or bioswales to create a "Green Street" as well as a "Complete Street," as illustrated above.

Cities also are using green infrastructure and infiltration techniques within traffic calming measures such as curb bump-outs (curb extensions) or chicanes (an S-shaped curve in the vehicle driving path). These options are another possible consideration for Lick Run, depending upon final street network design, anticipated traffic volumes, soil types and available land area.

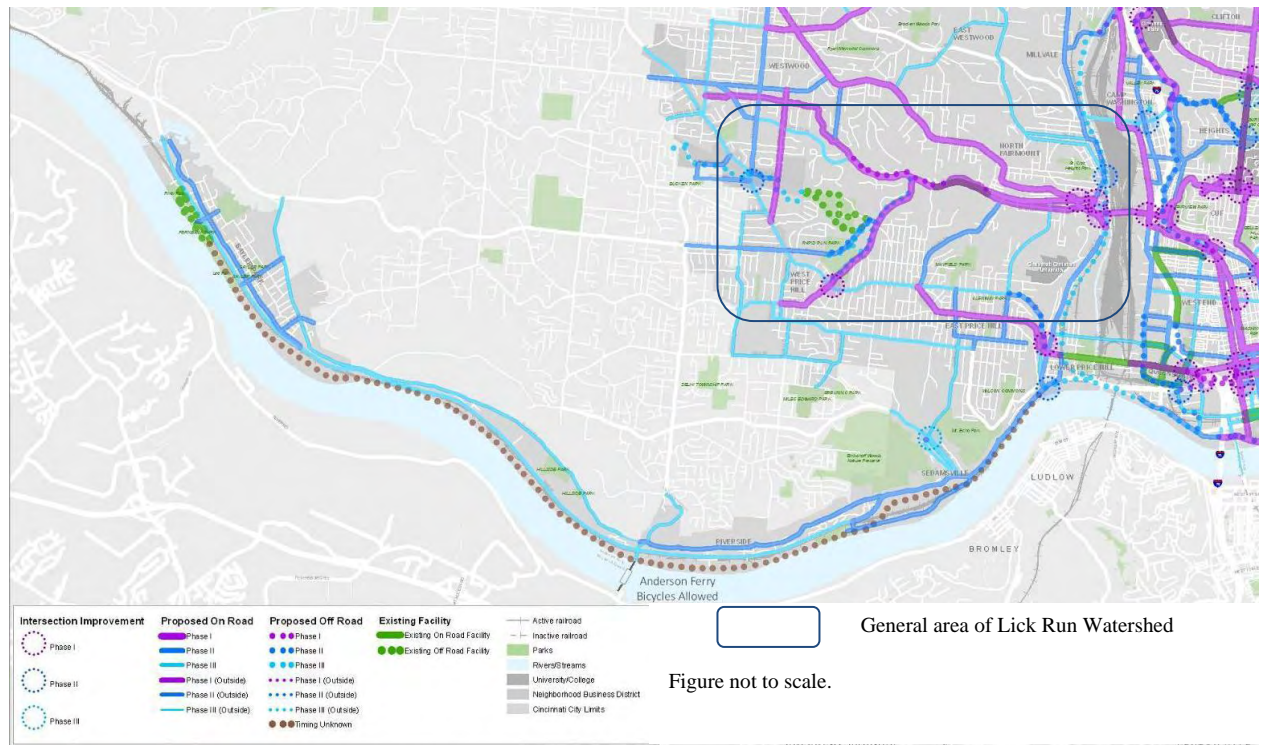
Pedestrian Facilities: Implementing green infrastructure offers several important ways to ensure that pedestrian needs are met and walkability is promoted, as outlined in the Sustainable Communities Livability Principles. As the Sustainable Infrastructure program is designed, participants should be encouraged identify poor quality or missing sidewalks, excessively wide intersections, locations prone to flooding and icing, areas without street trees or furniture, and particularly areas with missing or poor quality streetlights, street furniture or transit shelters as "opportunity spots" for Sustainable Infrastructure program components, and other livability improvements. Since MSD will have flexibility in siting the specific location of source control measures like infiltration areas, bioswales, permeable pavements, and street trees, engaging residents in a "walk-through" to find the locations most in need of better infrastructure or improvements (e.g., permeable pavement in a location prone to flooding, pedestrian refuges or curb bump-outs with infiltration at wide intersections) will provide a direct link between Project Groundwork construction work and community benefits.

Bicycling: Implementation of "Complete Streets" and green streets in the watershed and focus area, in conjunction with a re-worked street network, could gain substantial support and insights from bicycling advocates and plans for the area. The City of Cincinnati Bicycle Transportation Plan includes plans for bicycle facilities in Phase I through North and South Fairmount areas, and recommends intersection improvements and bike lanes within the heart of the focus area along Westwood Avenue, Queen City Avenue and Harrison Avenue. (Figure 8, Cincinnati Bicycle Transportation Plan, June 2010, Map B, Phase I Network by Preliminary Facility). Any of these bicycle plans, including current DOTE planning for Harrison Avenue between Kling Avenue and Queen City Avenue, would be substantially affected by the final circulation plan within Project Groundwork. Therefore, bicycling groups such as Queen City Bike and its Bicycle Friendly Destinations Program should be engaged (particularly in the design charrettes) to ensure that they are supportive of the project goals and can offer input on final roadway profiles, bicycle facilities and network design.



An example of a "green street" with bioretention (Low Impact Development Center 2011)

Figure 8 Bicycle Plans for Lick Run Watershed



Source: Toole Design Group and KZF Consulting in support of City of Cincinnati Bicycle Transportation Plan.

Mill Creek Restoration: Lick Run is a tributary to the larger Mill Creek watershed, which drains to the Ohio River. Mill Creek Restoration Project (MCRP), a non-profit organization focusing on communities along Mill Creek, has been active since the mid-1990s. The organization has been successful in obtaining grant funds from the State of Ohio to build sections of greenway along Mill Creek and its tributaries, as well as organizing educational programs in area schools. Over the next five years, MCRP plans to complete a continuous 13.5 mile greenway from the Hamilton County Fairgrounds in Carthage to the Ohio River, including a section along Mill Creek within the project focus area.⁴ The current plan is for this section to be constructed in 2013, but the schedule could be accelerated or pushed back depending upon MSD’s progress and schedule for the daylighted Lick Run channel. MCRP’s engagement and lessons learned from its years of activity in the larger watershed will be valuable, particularly in considering the design of greenway and bicycle/pedestrian features along a daylighted Lick Run channel. MCRP also may be able to assist with support for outreach to schools, environmental education, water quality testing and reforestation efforts. Recommendations for this area include:

Recommendations:

- Begin laying groundwork between MSD and Cincinnati Department of Transportation & Engineering (DOTE) for a phased construction plan that will eventually cover changes to the street network and various phases of Project Groundwork in the area; each phase should include the business outreach and access planning described in Section 4.4.
- Identify a dedicated “point person” within Ohio DOT and DOTE who will agree to be responsible for keeping MSD and the CFAC informed of the status of transportation projects in and around the Lick Run Watershed.

⁴Robin Corathers, MCRP, personal communication, October 22, 2010

- If possible, evaluate the potential for bus transfer locations as part of the watershed planning process in the LDC update, or through another transportation planning initiative, and incorporate findings into the strategic Land Use and Acquisition Plan for the focus area.
- As part of the public engagement and outreach process, conduct neighborhood “walk-throughs” or surveys to identify locations where pedestrian infrastructure is inadequate or missing, and work to make these priority sites for Sustainable Infrastructure program components (e.g., permeable pavements, bioswales, tree planting, infiltration areas) along with enhanced street lighting, transit stops, or other needed improvements.
- As plans for the street network in the focus area are developed, work with DOTE to incorporate Sustainable Infrastructure and LID concepts into the “complete streets” principles when planning traffic calming, bicycle lanes and reconstruction projects.
- Engage Queen City Bike, the MCRP and bicycle system planners in the upcoming design process so that options for the street network, greenway and enhancing pedestrian/bicycle facilities are understood and supported.

5.0 Implementation: Governance and “Glue”

Within the Lick Run Watershed, and particularly South Fairmount, Project Groundwork offers an enormous opportunity to transform a neighborhood and build its capacity for revitalization. It also involves a sprawling network of potential connections across over a dozen federal, City and State agencies, each with its own responsibilities, mission and limited resources. The project also is slated to take place within a neighborhood that does not have strong social infrastructure in place. There is a clear need for additional governance support, and also for an individual or dedicated team to act as the project’s “glue,” holding the pieces together so that opportunities are not overlooked.

There are several options for addressing this issue, none of which will be ideal and each of which will require some investment of both staff time and financial resources. At a minimum, it is recommended that the City explore options for at least a temporary staff person to work directly in the community, potentially for the South Fairmount council office, and for the City’s Inter-Department Task Force (described in #2 below) to evaluate other governance and management needs as soon as possible in light of the Framework Actions and upcoming schedule. The goal should be for a team and chain of command to be established with the responsibility to carry out the recommended actions and shape the upcoming tasks (particularly the design charrettes and scoping for a Lick Run Watershed plan through the LDC update) around the Framework Actions and goals.

Considerations for the City’s Inter-Department Task Force should include:

1. Inter-agency points of contact.

Responsible persons must be designated within Cincinnati Parks, the Cincinnati Parks Board, DOTE, MSD, Department of City Planning & Buildings, Port Authority, Hamilton County, US EPA, HUD and Office of the Mayor (at a minimum) who have the responsibility, and authority, to maintain a current working knowledge of the many cross-cutting initiatives affecting Lick Run and communicate regularly with their counterparts. The City has established a joint task force composed of multiple department heads that will meet regularly to discuss the Lick Run corridor, led by Tony Parrott (Executive Director, MSD), which was scheduled to convene in January 2011. Below the department head level, designation of a point of contact in each agency is strongly recommended.

2. City Planning Project liaison.

This initiative, while principally led by MSD, will require strong inter-department coordination and dedicated staff attention. A staff liaison within the Department of Planning and Buildings can serve as a liaison for the Lick Run project and provide a strong cross-department presence that will lead to better coordination as MSD and Planning begin the tasks in Project Groundwork and the LDC update. Continuous monitoring should be done by the Inter-Department Task Force to ensure that the staff member charged with these responsibilities has a well-defined role, sufficient lines of communication with other departments and the Inter-Department Task Force and sufficient resources to carry out assigned responsibilities. With respect to the staff member’s role, strong coordination with DOTE is particularly important given the impact of Project Groundwork on the street network, and the opportunities for incorporating stormwater source control into transportation, street and sidewalk improvements.

3. Sustainability Team Involvement.

The City’s Office of Environmental Quality (OEQ) has the opportunity to become more involved in this project and there are many opportunities to connect Green Cincinnati efforts to this neighborhood. Roles for the Sustainability Team should be defined carefully so that expectations about the scope of Project Groundwork and LDC update tasks are well managed; however, the Sustainability Team could be an excellent liaison for outreach or initiatives that could involve schools, community gardens and grant opportunities. OEQ also could play a role in

tracking the GHG impacts of MSD's Project Groundwork, and would be able to use its communications networks to tell the story of these impacts and benefits.

4. Foundations.

Local foundations have not yet been invited to the table as part of this effort. With the variety of issues encompassed in this Plan, a foundation may be able to support a community organizer who can focus on the neighborhood, and particularly the outreach, communication and green jobs capacity-building needs, at least during the planning phases of development. Temporary staff positions with the South Fairmount Council may be one option for foundation support; a staff member within this office could work to coordinate with City departments and local residents on community engagement and green jobs and land stewardship activities.

5. Cincinnati-Area Universities.

Given the lack of existing community organizing resources available in the neighborhood, Cincinnati's universities may be able to provide support for various phases of the project as long as initiatives are coordinated through a dedicated staff person with oversight responsibility.