Franklin Soil and Water Conservation District

Creating Conservation Solutions for Over 70 Years

City of Columbus Department of Utilities and Franklin Soil and Water Conservation District 2017 Working Agreement

This working agreement is between the City of Columbus and Franklin Soil and Water Conservation District (FSWCD). This agreement is effective upon execution of the City and terminates on December 31, 2017. The agreement is subject to the limitations of authorities, resources and policies of Franklin Soil and Water Conservation District and the City of Columbus.

Franklin SWCD will provide the following services for the City of Columbus:

The purpose of this agreement is to provide support and coordination for the following programs and projects:

1) Lawncare Practices Outreach and Involvement Program (Attachment A)
2) Community Backyards (Attachment B)
3) Stormwater and Conservation Education in schools within City of Columbus (Attachment C)
4) Franklin County Stream Resource GeoDatabase (Attachment D)
5) Develop Urban Watershed Delineations (Attachment E)

For benefit of City of Columbus, Department of Utilities in managing stormwater and improving source water quality.

The City of Columbus will provide the following:

The City of Columbus shall compensate Franklin SWCD in the form of a working agreement in the amount of $277,700. Franklin SWCD reserves the right to expend funds as needed to

meet working agreement components and overhead costs. This agreement supports our current mission and goals.

It is Mutually Agreed:

That Franklin SWCD is a conservation technical and education service agency and therefore is not granted regulatory authority in the Ohio Revised Code.

That the working relationship will be defined to include lines of communications with appropriate staff.

That the City and Franklin SWCD will meet when necessary to review and coordinate activities and programs with the aim of developing a multi-discipline approach to resource management.

That this working agreement may be amended or terminated at any time by mutual consent, or the agreement may be terminated by either party giving sixty (60) days notice in writing to the other.

SIGNATURES:

The below signatures certify consent on the above agreement.

_____

Signature Title Date

CITY OF COLUMBUS

_____

Signature Title Date

Franklin Soil and Water Conservation District

Creating Conservation Solutions for Over 60 Years

Attachment A: 2017 City of Columbus Lawn Care Practices Outreach and Involvement Program Scope of Services

Franklin Soil and Water will develop and administer the *Get Grassy* lawn care program with City of Columbus and other Municipal Partners. In 2017, the District will:

1. Work with our partners for continued program development

    a. Develop or contribute to an updated OSU Extension Fact Sheet(s) with guidance from The OSU Turfgrass Extension Team which provides science-based information and industry knowledge.
    b. Engage with lawn care companies and program partners to ensure we receive feedback, and that their commitment continues to grow through the program development.
    c. Cultivate relationships in the "green" industry with exhibitions and attendance at seminars and conferences including local tradeshows by the Ohio Turfgrass Foundation and the Midwest Green Industry Experience.
    d. Partner with Columbus Public Health to distribute information during their lawn mower exchange program at N. Broadway Lowes and look for opportunities for more outreach at this location.

2. Create materials for distribution

    a. Utilize print materials to include a program flyer, pledge forms, and seasonal tip sheets.
    b. Provide "Seasonal How-To" cards for lawn care companies, featuring City of Columbus logos as well as their own and the District's.

3. Communicate via website, social media and E-updates

    a. Update the program website (*getgrassy.org*) to provide additional material and information to existing and potential lawn care partners, City of Columbus residents and homeowners, and additional interested Franklin County residents.

b. Employ social media and E-updates to provide videos and seasonally-appropriate messages and reminders, thereby keeping the City of Columbus and additional partners up-to-date in real time on developments.

4. Reach more residents and gain commitments with advertising and outreach

a. Use our existing working relationship with local nurseries and garden centers to promote *Get Grassy*!
b. Explore additional opportunities at big box stores.
c. Provide paid program advertising in the Home and Garden section of the Columbus Dispatch.
d. Target at least three community events in the City of Columbus where we believe homeowners concerned about lawn care will be present.
e. Incorporate *Get Grassy*! into Community Backyards programming with one course specifically focused on lawn care.

5. Will measure participation and program effectiveness

a. Paper and online pledges asking residents to commit to simple behaviors for better water quality as it relates to lawn care will be collected.
b. Incentives will be provided (rain gauge, entry into lottery) for submitting pledges
c. Website visits, data collection, materials distributed, participant surveys, and requests for additional information will be tracked to gauge level of participation in the program.

6. Assist the Division of Water in developing materials and programs to work with urban and suburban watershed protection initiatives described in the Watershed Master Plan. Initiatives will include efforts to minimize point and non-point pollution entering source water reservoirs, and educational and communication strategies for watershed stakeholders.

This winter, Franklin Soil and Water Conservation District looks forward to meeting with prospective and current lawn care companies (as well as our nursery partners) to receive feedback on the program's launch in 2016. This feedback will allow us to adjust current messaging and explore methods to integrate *Get Grassy!* into our other conservation programming.

Materials and information will be provided to lawn care companies and partners in time for spring 2017. Detailed directions and guidance will be provided to help ensure consistency of messages. <u>These combined efforts will result in educational materials being distributed to at least 4,000 residents with 600 residents completing a pledge form.</u>

Get Grassy! Lawn Care Program Estimated Expenditures

Funding Request = $63,200

FSWCD Contribution = $17,300 Total Project Cost = $80,500

Material and Supplies	Budget 2017
Consultant website management	$3,500.00
Promotional stickers, magnets, "mow high" rulers	$5,000.00
"Seasonal How-To" cards for lawn care companies and additional partners	$8,000.00
Staff/consultant time for development of program flyers and additional literature	$4,500.00
Get Grassy wagon & pull-up display; other display materials	$1,500.00
Total Materials Development	**$22,500.00**

Program Outreach	Budget 2017
Paid advertising and press release	$6,000
Community event promotion at 3 events	$3,000
Staff time for communication with lawn care companies, including stormwater training	$10,000
Tradeshow exhibitions, registration for continuing education events, or additional outreach	$4,500
Incentive rain gauges or other conservation prompts	$2,000
Total Program Outreach	**$25,500**

Program Development and Research	Budget 2017
Pledge management and surveys	$5,000
Work with OSU Extension on fact sheets and guidance documents.	$5,000
Research, partner communications and future recommendations development	$2,500
Watershed Master Plan Implementation Phase 1	$20,000
Total Program Development and Research	**$32,500**
Total Estimated Expenditures	**$80,500**

Franklin Soil and Water Conservation District

Creating Conservation Solutions for Over 60 Years

Attachment B

2017 Community Backyards Program

Scope of Services

Franklin Soil and Water and the City of Columbus' intergovernmental working agreement will continue to have the following goals for the 2017 Program:

1. Increase awareness among City of Columbus residents on behaviors and practices that influence local environment including residential flooding, water quality, and habitat. Information and resources are provided through a website, written materials, and workshops.

2. Engage as many City of Columbus households in implementing backyard conservation practices as resources allow. Rebates are provided for approved rain barrels, compost bins, native plants, and trees. Additional assistance will be made available through emails, phone calls and site visits.

3. To coordinate with the following partner initiatives and programs: GreenSpot Columbus, Branch Out Columbus, Blueprint Columbus, Gardening for Clean Water, Get Grassy, and Backyard Habitats with Grange insurance Audubon Center. Outreach and education are additionally extended via watershed groups Friends of the Lower Olentangy Watershed (FLOW) and Friends of Alum Creek and Tributaries (FACT).

Franklin Soil and Water will provide the following services to the City of Columbus:

1. Implement the Community Backyards Rebate Program.
   (a) Interested residents within City of Columbus service area must complete an educational course to receive the rebate in one of two ways: attendance at a free in-person workshop facilitated by Franklin Soil and Water and partnering organizations;

or completion of the online backyard conservation course and quiz through www.communitybackyards.org.

(b) All in-person workshops will focus on providing the same stormwater education and information that is provided online in addition to providing information on rain barrels, rain gardens, lawn care, native plants, or compost bins.

(c) Participants will be required to register as a GreenSpot member after passing the online quiz or attend an in-person workshop.

(d) Vouchers will be created individually for each participant after their information is verified through ArcGIS or County Auditors information. Vouchers will include eligible rebate items for each participant.

(e) Voucher is valid for 60 days with limited extensions upon request. Vouchers and rebates will not be accepted after December 31, 2017.

(f) In-person workshop attendees will receive a voucher of attendance at the end of the workshop. Their information will be verified prior to the workshop. Attendees who did not register for the workshop will receive an attendance slip which they can send in to request a voucher.

(g) Online course and quiz participants will receive a voucher through email or mail after passing the quiz (70% or better).

2. Original receipt or copy, certificate, and photo of item will be submitted to Franklin Soil and Water in exchange for a reimbursement rebate check for no more than $50 for rain barrels, compost bins, or native plants. In support of Branch Out Columbus, city residents may use up to $100 towards a tree purchase. Refund will be limited to **$100 per household per year**.

(a) Reimbursements will be available on a first come, first serve basis. Once reimbursement dollars are expended for each item, reimbursements will not be available for the remainder of 2017. Available vouchers and their corresponding expiration date will be tracked to ensure that the largest number of potential rebates is available at any given time.

(b) In the interest of convenience, program growth, and support of local retailors that carry appropriate items, Franklin Soil and Water has approached our more heavily utilized retailors (Rain Brothers LLC, City Folks Farm Shop, Scioto Gardens, and

Oakland Nurseries Columbus branch) about the possibility of immediate discounts at point-of-sale. Vendors may invoice Franklin Soil and Water monthly or more frequently for the amount of vouchers claimed. To be paid vendors must be able to verify voucher numbers and products sold. Because an approved item will have been purchased, it will not be necessary to send in receipts, photos, and voucher/certificates to Franklin Soil and Water for pre-approval.

(c) "Approved" items are rain barrels with diverters to avoid overflow; fully enclosed composting units (including bottom); and perennials, shrubs, or trees. No vegetables, annuals, or invasive plants (as per Ohio Invasive Plants Council, ODNR, and Midwest Invasive Plant Network) are permitted. Though native plant use is highly encouraged, non-natives are eligible for reimbursement.

3. Reach out to developers, contractors and stormwater professionals in City of Columbus with education on stormwater management on developing lands, construction sites as well as long-term management of post construction. This will include seeking advice from City of Columbus Stormwater staff on education needs as well as providing up to 20 free registrations for City staff for 2017 for events where we manage the registration. This includes local OSWA education events and the Central Ohio Stormwater Expo. Franklin Soil and Water will work with Neighborhood Pride coordinators to offer information to homeowners on the Low Income Water and Sewer program offered through the Department of Utilities. We will provide information on how qualified low-income residents may receive free rain barrel after completion of workshop or online course. Fifteen low-income rain barrels are currently available.

4. Franklin Soil and Water will continue to advertise availability of free rain sensors to homeowners with automated sprinklers. Sensors save water by measuring precipitation amounts and suspend irrigation cycles when water is unnecessary.

5. Rain garden assistance and education:

(a) Guidance from Franklin Soil and Water and onsite evaluations will be available to help ensure proper planning and placement of rain gardens. Efforts will be made to avoid placement over lateral lines in SSO and CSO area.

(b) City of Columbus will be recognized as a Gardening for Clean Water program supporter to provide backyard conservation and rain garden information to garden center customers.

Overview of Grant Revenue

Grant Revenue Detail	Cost	Item(s)	Budget
Columbus Grant -- Sewer and Drains			$30,000
Columbus Grant -- Water			$24,000
Columbus Mayor's Office			$20,000
Total Columbus Funding Request			**$74,000**
FSWCD Funding Match			$17,000
Total Program Cost			**$91,000**
280 unused rebates from 2016 roll over for 2017 season			
Remaining Rain barrel: 100 (out of 300)	100	50	$5,000
Remaining Compost bins: 160 (out of 200)	160	50	$8,000
Remaining Plants: 135 (out of 200)	135	50	$6,750
Remaining Trees: 100 (out of 200)	100	100	$10,000
Total Grant Revenue			**$120,750**

Estimated Expenditures

Conservation Education Detail	Cost	Item(s)	Budget
Workshops and Classes: approximately 8 classes throughout year.			
Franklin Soil and Water	500	2	$1,000
Partner Organization: full class	350	4	$1,400
Partner Organization: with FSWCD assistance requested	200	3	$600
Grange Insurance Audubon Center (facilities cost)	600	2	$1,200
Total Conservation Education			**$4,200**

Rebate Dollars Detail	Cost	Item(s)	Budget
175 Rain Barrels	50	175	$8,750
75 Compost Bins	50	75	$3,750
150 Plants	50	150	$7,500
200 Trees	100	200	$20,000
Total Rebate Dollars			**$40,000**

Additional Expenses Detail	Cost	Item(s)	Budget
"Train the Trainer" workshop			$500
Paid Advertising (Magazines, Newspapers, Prints)			$2,000
Public Relations/Outreach and Advertisements/ (PR Staff)			$5,000
Gardening for Clean Water Outreach and Support			$5,000
Outreach and Education to Stormwater Professionals – City of Columbus			$4,000
Video/power point/ quiz/ website updates, educational material development, printing			$6,000
Registration, Ordering, Pick-up, Customer Service (Admin Staff)			$50,550
10 Site Visits for Rain Gardens (x 150/ea)			$1,500
GIS Mapping Assistance			$2,000
Total Additional Expense			**$76,550**
Total Estimated Expenditures			**$120,750**

Franklin Soil and Water Conservation District

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Attachment C

2017 Stormwater and Conservation Education in Schools within the City of Columbus

Scope of Services

The purpose of these services are to provide environmental education on topics related to storm water pollution including water quality, soils and soil erosion in relation to Ohio State Science Standards.

Franklin SWCD will provide the following services for the City of Columbus Division of Utilities:

1. Provide targeted programming to an estimated 3,000 Students by providing classroom activities and presentations.

2. Maintain a variety of programs and hands on displays available to teachers and adaptable to meet specific needs.

3. Franklin Soil and Water Conservation District will give a full account of programming types and numbers twice a year and upon request.

4. Franklin Soil and Water Conservation District will recognize City of Columbus as a supporter and partner and incorporate materials from Columbus G*reenSpot ,KNOW Your Stream and Blueprint Columbus* into education programs.

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Funding

The City of Columbus shall compensate the SWCD in the amount of $10,500.

Franklin Soil and Water Conservation District

Creating Conservation Solutions for Over 60 Years

Attachment D

2017 Scope of Services for the Franklin County Stream Resource Geodatabase to manage stormwater and improve water quality

The purpose of this agreement is to provide support and coordination for the benefit of the Franklin County Stream Resource Geodatabase and the City of Columbus, Division of Sewerage and Drainage in managing stormwater and improving water quality.

Franklin SWCD will provide the following services for the City of Columbus:

1. Staff will perform maintenance and quality control on Columbus data in the Stream Resource Geodatabase which was modified after its inclusion in the Stream Resource Geodatabase. This will include adjustment of geometry if necessary, or adjustment of attributes if necessary. Maintenance and quality control will be provided against the most recent copy of the Columbus stormwater database as provided by Columbus in October of 2016 as part of our data exchange.

2. Staff will add new existing Columbus stormwater data to the Stream Resource Geodatabase as provided from the most recent copy of the Columbus stormwater database. Staff will modify existing surface drainage in the stream resource geodatabase as needed to connect new stormwater data from the City or reflect modification or elimination of surface drainage.

3. Staff will begin to include unincorporated stormwater data into the stream resource geodatabase. Staff will review connections between Columbus stormwater data and unincorporated stormwater data and make adjustments as necessary. Changes that affect Columbus stormwater data will be tracked in an excel spreadsheet and provided to Columbus during the subsequent data exchange.

4. Franklin Soil and Water Conservation District will recognize the City of Columbus as a partner and supporter on programming and communication materials.

5. Franklin Soil and Water will seek City of Columbus staff participation in the exchange of data for updating the Stream Resource Geodatabase and incorporating changes into their stormwater dataset as feasible.

Funding

The City of Columbus shall compensate Franklin SWCD in the amount of $20,000.

Franklin Soil and Water Conservation District

Creating Conservation Solutions for Over 60 Years

Attachment E

2017 Scope of Services to Develop Urban Watershed Delineations

Contents

1.0 Introduction

Franklin Soil and Water Conservation District is pleased to offer the following proposal for providing continued assistance to the City of Columbus with developing urban delineations and associated services to assist with the Blueprint Columbus effort currently underway and projects supporting the results of the study. The focus of this effort is eliminating sanitary sewer overflows while also investing in Columbus neighborhoods and the local economy by using means other than gray infrastructure. The following provides an overview of our organization, elaborates on our understanding of the scope of services required for this project, and outlines a proposal for undertaking the project.

Franklin Soil and Water Conservation District

Franklin Soil and Water Conservation District (FSWCD) is the natural resource agency in Franklin County with the sole purpose of promoting conservation and responsible land use for better water quality and natural resource management. This is accomplished through establishing partnerships, providing technical guidance, and engaging communities. All of our programs are focused on protecting or improving water quality and natural resources for the benefit of Central Ohio residents.

With a staff of 19 experienced and highly qualified individuals, we have been developing and implementing conservation solutions for nearly 70 years in Franklin County and are excited to continue this challenging effort. Stormwater management is central to our work, and we continually strive to develop new ideas, tools, and approaches to increase the visibility and implementation of stormwater management approaches and practices. This project aligns very well with our organization's mission and we believe it is a responsible and worthwhile endeavor continuing to promote and pursue.

FSWCD has intergovernmental working agreements with a majority of the municipalities in Franklin County, Franklin County, all 17 townships, and the Mid Ohio Regional Planning Commission. Included in these partnerships is the City of Columbus (City), which has been a supporter and beneficiary of our stormwater management efforts for many years. Starting in 2001, FSWCD and the City initiated a partnership for the mapping of stormwater infrastructure and surface water resources. These efforts include refinement of surface water flow routes, in-field verification and mapping of outfalls and connectivity of stormwater lines throughout Columbus as well as a majority of the municipalities within Franklin County.

2.0 Project Understanding

By means of meetings, correspondence, and discussions with City staff and employees of Arcadis, the following is FSWCD's understanding of the services being requested by the City of Columbus for this ongoing effort. Note that some of the following are excerpts from The City of Columbus Department of Public Utilities website.

In recent years, the US Environmental Protection Agency started encouraging the adoption of an integrated planning approach to address Clean Water Act (CWA) requirements. This approach is intended to be an option to help municipalities meet their CWA obligations by optimizing the benefits of their infrastructure improvement investments through the appropriate prioritization and sequencing of work. This policy encourages cities to integrate the work needed to comply with both stormwater regulations and elimination of sewer overflows, and strongly promotes the use of green infrastructure to meet these challenges.

The City submitted a proposal (titled: Blueprint Columbus) to Ohio EPA as an alternative to the City's 2005 Wet Weather Management Plan in September of 2015. On December 1, 2015 the City received an official approval letter from Ohio EPA granting the City to proceed with Blueprint Columbus. We

were very pleased to hear of the approval and are grateful that we have been able to contribute to this new comprehensive approach to managing stormwater!

Core to implementing an integrated plan is a having a thorough understanding of the municipal separate storm sewer system (MS4) including, but not limited to: the extents of the system, system components and system connectivity, as well as land cover, land use, and land ownership across the landscape contributing flows to the MS4. However, when evaluating urban watersheds in an environment such as Columbus, understanding the makeup of watersheds is complicated by the fact that subsurface drainage changes the configuration of watersheds from boundaries which originally corresponded to naturally occurring surface drainage to configurations dictated by the extensive network of stormwater pipes and appurtenances.

The intent of this project is to continue the process of developing and refining urban watershed delineations throughout most of the Columbus service area and summarizing a variety of statistics for the delineations. The approach to this project will be to utilize 'best available data' from the City and FSWCD using a GIS. This data will then be provided to the City in file geodatabase format for review, comment and use.

At this time, FSWCD has completed, to the maximum extent practical, inlet level delineations for the Adena Brook, Franklinton, Linden, Miller-Kelton, a modified area for the Hilltop and the Fifth-by-Northwest priority areas. In addition, phase II delineations for the remainder of the Columbus service area (with the exception of the downtown area) has been completed providing a reliable resolution and accuracy for use in planning and prioritization purposes at a small scale.

After a trial run, starting in 2016, FSWCD has, and will continue to produce preliminary base maps for the project areas. This mapping includes impervious surfaces, stormwater related structures, and non-stormwater related structures. Additional priority areas and associated needs will be identified by the City in conjunction with Arcadis as this effort continues to develop during the upcoming years. (See Section 6.3 below)

This effort is being undertaken with the understanding that priorities and emphasis my change. For the City, Jason Sanson is to be the point of contact and Fang Cheng will assist in coordination with the delineations. The following sections describe in more detail the approach to this effort.

3.0 Technical Expertise

This urban watershed delineation project is GIS-based, utilizing data provided by the City and developed by FSWCD. The GIS software used in this project will predominantly be ESRI's ArcMap package and associated ArcInfo level geoprocessing tools.

Core to FSWCD's current operations is the use of GIS and associated mapping, and core to this effort is the district's Geomatics program. FSWCD has made extensive use of GIS supported by thirteen years of field data acquired by district staff using GPS equipment. This combination of customized, accurate field data, supplemented by substantial amounts of base data throughout Franklin County, is central for the day-to-day operations of the organization and has improved the services and products that the district is able to provide to the central Ohio community. The ability to use GIS has established ongoing partnerships, has allowed FSWCD to expand services, and further organizational goals by producing more comprehensive, accurate products.

Work directly related to urban watershed delineations include the following efforts developed and maintained by FSWCD: Stream Resource Mapping, Stream Resource Geodatabase and Urban SubH20shed (Subwatershed) Initiative.

- **Stream Resource Mapping**
  Initiated in 2001, FSWCD, in partnership with the City of Columbus and Franklin County Commissioners, started an effort to create a high-resolution dataset of surface drainage throughout Franklin County. This effort was predominantly completed in 2007 and resulted

in over 1,600 miles of streams being walked by staff members and over 40,000 features identified, documented with pictures, and managed with a GIS.

- **Stream Resource GeoDatabase**
  Started in 1998 prior to the Stream Resource Mapping effort, a comprehensive database of surface water drainage and subsurface stormwater infrastructure was created and is continually updated and improved for the extents of Franklin County as an ongoing effort. Over the past 17 years, FSWCD has mapped almost all the surface drainage in the county, including previously unmapped headwater streams and outfalls into streams. This information has been reconciled with existing storm sewer data in most communities, including the City of Columbus. Features include an array of information including historical data and directionality of flow. This dataset consists of over 8,000 miles of drainage and over 313,000 features.

- **Urban SubH20shed (Subwatershed) Initiative**
  Through the District's watershed coordinator program, the Urban SubH20shed Initiative was conceived to develop a process to delineate urban watershed, and use the delineations to prioritize and better manage water quality projects.

  The Urban SubH20shed Initiative is a Geodesign (GIS) based watershed management methodology that can be used to amend State approved watershed action plans, manage TMDL attainment goals, implement MS4 minimum control measures, employ balanced growth plan recommendations, and aid in completing community visions; prioritized watershed by prioritized watershed. Geodesign provides a design framework and supporting technology for professionals to leverage geographic information, resulting in mitigation plans and designs that more closely follow natural systems. Mitigation plans are expected to provide a comprehensive review of the watershed, its land use characteristics, watershed hydro-modifications, and to develop a strategy that will aid in assuring funding for application where projects with the highest ecological and economical cost- benefit can be pursued for implementation.

4.0 Proposed Staffing

FSWCD is prepared to continue this project upon execution of applicable contracts. FSWCD has a seasoned staff with many project staff members employed at FSWCD for over five years. FSWCD is a dynamic and flexible organization capable of engaging and managing additional staff if workload and available funding permit. For this urban subwatershed project, oversight and coordination of the project will be conducted by Josh Garver. Day-to-day planning, coordination, and delineations and creation of basemaps will be conducted by Ryan Pilewski, Katie Phillips, and Kyle Sohner. Coordination of updating GIS layers for stormwater lines and surface drainage to be conducted by Jeff Pierce. Additional GIS support will be provided by Aaron Hebert.

Josh Garver, GISP, Assistant Director

Josh Garver is assistant director at FSWCD. Josh has been with FSWCD for eight years where he has also been employed as the GIS natural resources specialist and member of the geomatics team. He provides technology guidance and support to staff, maintains GIS data layers, and is involved in a variety of projects providing GIS expertise and support. Josh also coordinates GIS-based projects with various Franklin County agencies and local municipalities, which focus on improving water quality and meeting requirements of the NPDES permit held by Franklin County and its townships. Josh has a Master's Certificate in GIS from North Carolina State University, a minor in City and Regional Planning from The Ohio State University and a BS in Landscape Architecture from The Ohio State University. Prior to joining FSWCD, Josh worked several years in landscape architecture and planning firms as a project landscape architect, designing and managing a variety of urban, park and GIS-centric projects.

Ryan Pilewski, MCRP, Watershed Coordinator

Ryan Pilewski is a watershed coordinator and a member of the geomatics and conservation implementation team at FSWCD. Ryan works with local stakeholders on implementing watershed actions plans and Total Maximum Daily Load reports, including coordinating GIS-based projects with a focus on improving water quality. Ryan also works with municipalities on developing and implementing stormwater management plans as part of the NPDES Phase II permit. Ryan is an appointed member of Mayor Coleman's Green Team, sitting on the Growth & Development Working Group to assist with guiding efforts of Get Green Columbus. Ryan received a BS in Natural Resources Management with a specialization in open space planning from Slippery Rock University of Pennsylvania and a Masters in City and Regional Planning, specializing in watershed management from The Ohio State University. Prior to joining FSWCD, Ryan gained experience evaluating recreational lands with the National Forest Service within the Allegheny National Forest and providing planning and zoning compliance support at the City of Dublin.

Jeff Pierce, GIS Natural Resources Coordinator

Jeff Pierce is GIS natural resources coordinator and a member of the geomatics team at FSWCD. Jeff graduated from Wilmington College (OH) with a BA in English and Communications. He also holds a MS in Educational Leadership and a Master of Environmental Sciences in Applied Ecology and Resource Analysis from Miami University. Jeff has served as a past member of the NRCS statewide GIS committee, as the Chair of the Ohio Geographically Referenced Information Program's statewide hydrology committee, and as a voting member of the Heart of Ohio RC&D Council. He has been with FSWCD since 1995 and founded the first soil and water conservation district GIS program in Ohio.

Katie Phillips, GIS Technician

Katie Phillips is a GIS technician and a member of the geomatics team at FSWCD, where her responsibilities lie predominantly with various aspects of the Columbus Watershed Delineation Project. She is assisting with the development and maintenance of district GIS data. Her emphasis is on developing urban subwatershed delineations within the county to be incorporated into the stormwater management initiative. Katie graduated from Bowling Green State University, with an MS in geology focused in hydrology and paleoclimate studies. Katie also received a BS in geology from Ashland University.

Kyle Sohner, GIS Intern

Kyle Sohner is a GIS intern and a member of the geomatics team at Franklin Soil and Water Conservation District, where his responsibilities include coordination with GIS staff in assisting with the development and maintenance of district GIS programs and watershed implementation initiatives related to current programs and projects. Kyle graduated from Ohio University, with a BA in environmental geography where he focused on environmental and urban planning, cartography, computer mapping and environmental legislation. He received the 2015 Outstanding Graduating Senior award for the Geography Department. Prior to joining Franklin Soil and Water, Kyle directed company affairs for cycling events nationwide

Aaron Hebert, GIS Specialist

Aaron Hebert is GIS specialist and a member of the geomatics team at FSWCD, where his responsibilities include coordination with GIS staff in managing hardware and data related to current programs and projects. Aaron graduated from Western State College of Colorado, with a BA in history with a geography minor. He has also completed a GIS-certificate program at Columbus State Community College. Prior to joining FSWCD, Aaron interned with the Ohio Department of Natural Resources, editing land parcel data in eastern Ohio.

5.0 Primary Office Location

It is expected that all production work related to this project will be conducted on-site at the FSWCD office. Various meetings and coordination will take place with City and Arcadis staff as necessary at locations agreed to by both parties on an as-needed basis. To support the desktop production work, it is expected that occasional, but minimal, field investigations will be necessary. These investigations will be conducted by district staff and will be coordinated from the FSWCD office.

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Jennifer Fish, CMS4S, Director
Josh Garver, GISP, Assistant Director

6.0 Project Approach

The intent of this project is to continue with the development of urban watershed delineations with currently available data. The intent is not to create or otherwise locate additional data outside of what is addressed in this proposal. The bulk of the time and effort related to the watershed delineations will be spent in a GIS desktop capacity. The process will be an iterative process that will focus on deriving delineations by evaluating the relationship between surface elevations, the locations of inlet structures, the flow direction of surface water, and the flow within stormwater infrastructure. Surface elevations will be obtained through data layers provided by the City and the locations and flow direction of stormsewer components will be obtained from the Stream Resource Geodatabase (SRG) maintained by FSWCD as well as updates from the City.

At this state of the project, FSWCD expects to be primarily coordinating with the City by means of Fang Cheng as the individual areas for the pilot projects are designed.

An interactive, collaborative team environment internal to FSWCD will be used for the delineations and creation of basemap features. The City and Arcadis will provide an additional quality control component to the delineations with feedback to FSWCD for revisions and refinements of the delineations. Open and timely dialogue between FSWCD, and the City will be required to facilitate efficient production of the delineations.

The delineation of each of the various scales of watersheds are completed in various phases/passes. The initial phase, (which has been completed to the originally stated extent with the exception of the downtown area) involved a delineation based primarily off of surface elevations, and to some extent, stormwater infrastructure. This first pass provided an estimated extent of a watershed.

The second phase (which has been completed to the originally stated extent, with the exception of the downtown area) refined the initial delineation to accurately take into account the stormsewer components and more precise placement of the delineation boundary based on DEM values. It clearly accommodates any cross-boundary drainage conditions (i.e. drainage coming from and completely surrounded by adjacent watersheds) and accommodates rooftop drainage to adhere to the agreed-to assumption that all housing drains to the street.

The Third phase of delineations has been completed for several areas identified by the City as priority and/or pilot project areas are identified. Additional areas are being developed currently and will be developed as part of this working agreement. This third phase of delineations segments the phase II delineations based on catch basins (stormsewer inlets). To this end, for each priority area,

there are delineations defined for each catch basin and if/as requested by the City, each of these delineations also contains take-off calculations for defined land cover conditions. This level of delineation requires dedicated communication and review by the City to provide and/or confirm current stormsewer components and locations.

The approach to this project is adaptive with priorities, accommodations, and products reviewed, discussed and agreed to periodically by FSWCD, and the City. This project will be reviewed at least on an annual basis to assess the current state of the project, evaluate developing priorities and plan for further efforts. In addition to the larger project reviews, progress and delineation reviews will be conducted as outlines in section '6.1 Delineation Review' below.

6.1 Delineation Review

Planned, periodic updates on the delineations will continue to be provided to the City at the City's request. The intent of these updates will be to promote dialogue between Arcadis, the City and FSWCD and allow all parties to make needed adjustments in the process. The updates are to include:

A review of the delineations developed

The most recent GIS files of the delineations

Questions and concerns encountered during the delineation process which need addressed

At this time, questions and concerns arising during the delineation process will continue to be tracked within a GIS feature class maintained by FSWCD. This feature class will designate the location of the question or concern by means of a point feature and will have associated notes in the attribute table elaborating on the situation encountered. This file will be reviewable by Arcadis and/or Columbus staff at the regularly scheduled meetings or as needed using their GIS. Comments from City staff will be logged in the attribute table and returned to FSWCD for use with the delineations.

In addition, during the creation of stomwater and non-stormwater features associated with the base maps, notes are placed in the attribute table elaborating on questions or clarifications for the features created and how they relate to the most recent data provided by the City.

6.2 Primary Data for Deriving Watershed Delineations and Source

The following are the primary GIS layers used in the urban watershed delineations. These data are currently available, are derived from currently available data and/or include data that may be provided as updates by the City or other local municipalities.

1' Contours (City)

Terrain model (City)

City stormwater infrastructure (City)

Stormwater infrastructure in county and surrounding municipalities (Stream Resource Geodatabase: FSWCD)

Digital Elevation Model (derived from terrain: FSWCD)

Building/Structure Layer (Auditor data; needs processing)

Most recent aerial photography (City/State)

Drainage mapping data and photos (FSWCD)

Digital copy of engineering plans (City)

Online aerial photography to assist in evaluating 'on the ground' conditions (Various)

6.3 Basemaps

To assist with the development of pilot projects for implementation of portions of Blueprint Columbus, FSWD will be compiling basemaps for use in the planning process. Components of these basemaps will include: impervious services (buildings, roads, driveways, parking lots, sidewalks, and

alleys), tree canopy, stormsewer structures (catch basins, crossover inlets & outlets, curb inlets, manholes, pipe inlets, and pipe outlets/outfalls), and other utility structures (fire hydrants, light posts, traffic lights poles, traffic signs, and other utility poles). In addition, DTMs and associated contours will be provided for the study areas.

The basemap production will be conducted using GIS in a heads-up digitizing capacity. Newly acquired aerial imagery, LiDAR point sets and a terrain model provided by the City will be used for deriving elevations and the locations of the various base map components. A combination of the City's current sewer layers, google streetview and other aerial imagery will be used to make the best determination of the types and locations of structures.

6.4 Project Adaptation

This project is being undertaken in conjunction with the City to implement components of Blueprint Columbus, and as such, this project is continuing with some needs and parameters undefined. FSWCD and the City are undertaking this work in a 'cooperative approach' capacity with the intent of maintaining a "one team" culture for the project to encourage a spirit of cooperation, mutual trust and respect. This approach is to play an important role in the continuation of this project as both FSWCD and the City refine the parameters of the project and better define the formatting of the resulting GIS data.

At this point in time, it is expected that the following items will be undertaken as part of this working agreement in accordance with Colubmbus' anticipated project timeline: base map work and inlet delineations will be completed for Clintonville 3, a team approach to refining boundaries and defining project extents for the Near South area will be conducted, subsequent base map work and inlet delineations will then be completed for the Near South project areas, and initial efforts will be made with close collaboration with Columbus employees to network and define subwatersheds in the 'downtown' Columbus region. This area has a very complex stormsewer network which includes combined lines and overflow structures. This is currently the only area that has not been addressed with 'Phase I' or 'Phase II' delineations as part of this multi-year effort.

6.5 Project Constraints

The primary constraining aspects of this project with respect to completing watershed delineations are a lack of data, errant data, and incomplete data. Due to the nature of watersheds not corresponding to political boundaries, the accurate delineation of the watersheds will be limited by the availability and completeness of surface drainage and stormsewer infrastructure data. While the City and FSWCD maintain extensive stormwater datasets which are used for the delineations, the watersheds will encompass areas outside of the Columbus service area and Franklin County. To the maximum extent practical, delineations will be completed with the data available and/or provided to FSWCD during the course of the project. The intent of this project is to develop urban watershed delineations and basemaps with currently available data. The intent is not to create or otherwise locate additional data outside of what is addressed in this proposal.

In addition to the lack and completeness of data, errors in existing data may cause inaccuracies in the delineations. Examples of these errors have been explored by all parties and their possible impacts have been noted and accepted as part of this project. Elevation data obtained from the City will be used to determine surface water flow direction. As such, the accuracy of the delineations will be directly tied to the accuracy of the elevation information received from the City. It is expected that occasional, but minimal, field verification of features will be undertaken by the City, Arcadis, or consulting firms when uncertainty during the desktop work is encountered to verify the existence of features and/or the direction of flow within the stormwater network.

An additional known barrier to accurate delineations involves multiple flow directions within the stormwater network and the inclusion of combined sewers, sewer overflows and current construction projects related to stormwater management. The primary known area of concern for these conditions is the downtown area of Columbus. This area will likely require more of a combined effort between City staff and FSWCD to arrive at agreed to delineations and will be addressed late in this process, or under separate contract.

6.6 Data Format

All delineations and associated attribution will be provided to the City in ESRI's file geodatabase format. Upon request and in coordination with City staff, an overview exhibit will be produced and maintained for the watershed delineation project showing areas of completion, areas to be completed, areas of concern/interest, and additional supporting information relevant to the continuation and support of the project.

7.0 Funding

Urban Watershed Delineations for the City of Columbus: 2017		
Project	**Time Frame**	**Working Agreement Amount**
Undertake urban watershed delineations for the City of Columbus and develop associated basemaps as described herein.	Through March 31, 2018	**$110,000.00**