



LEHIGH COUNTY AUTHORITY

April 22, 2013

BOARD MEETING AGENDA

1. Call to Order
2. Review of Agenda
 - *Public Participation Sign-In Request*
3. Executive Sessions
4. Approval of Minutes
 - *February 25, 2013 Regular Meeting Minutes*
 - *March 8, 2013 Special Meeting Minutes*
 - *March 26, 2013 Board Meeting Minutes (to be sent under separate cover prior to the meeting)*
 - *April 1, 2013 Special Meeting Minutes (to be sent under separate cover prior to the meeting)*
5. Public Comments
6. Action / Discussion Items

FINANCE AND ADMINISTRATION

- *None*

WATER

- *None*

WASTEWATER

- *2013 Signatory CCTV Physical Condition Assessment (Approval)*
 - *Lehigh County Authority Wastewater Treatment Plant Annual Report Presentation*
7. System Operations Overview
 8. Staff Comments
 9. Solicitor's Comments
 10. Other Comments
 11. Adjournment

MAY MEETINGS

Workshop Meeting
Board Meeting

May 13 – 12:00 p.m.
May 28 (Tuesday) – 12:00 p.m.

PUBLIC PARTICIPATION POLICY

In accordance with Authority policy, members of the public shall record their name, address, and discussion item on the sign-in sheet at the start of each meeting; this information shall also be stated when addressing the meeting. Members of the public will be allowed 5 minutes to make comments/ask questions regarding non-agenda items, but time may be extended at the discretion of the Chair; comments/questions regarding agenda items may be addressed after the presentation of the agenda item. Members of the public may not request that specific items or language be included in the meeting minutes.

REGULAR MEETING MINUTES
February 25, 2013

The Regular Meeting of the Lehigh County Authority was called to order at 12:24 p.m. on Monday, February 25, 2013, Chairman Asa Hughes presiding. Other Members present at the commencement of the meeting were: Richard Bohner, Emrich Stellar, Tom Muller, Scott Bieber, and Norma Cusick. Authority Staff present were: Aurel Arndt, Joseph McMahon, Frank Leist, Bradford Landon, Liesel Adam, Pat Mandes, Ed Bielarski, and Cristin Garger.

REVIEW OF AGENDA

Mr. Arndt noted the election of Board officers will occur prior to the listed agenda items.

EXECUTIVE SESSION

Mr. Arndt stated there would be an executive session to discuss potential lease of real estate.

PUBLIC COMMENTS

None.

APPROVAL OF MINUTES

January 14, 2013, Board Meeting Minutes

On a motion by Mr. Bohner, seconded by Ms. Cusick, the Board unanimously approved the minutes of the January 14, 2013 Board Meeting (6-0).

ELECTION OF OFFICERS

Mr. Muller, serving as the Nominating Committee, indicated he had polled the Board officers to determine if they are willing to serve in the same capacity as in 2012, to which they agreed. He then offered the following slate of nominations for 2012; noting that Mr. Bohner's position is conditional upon his reappointment by the Lehigh County Commissioners:

Asa M. Hughes, Chairman	Emrich M. Stellar, Jr., Treasurer
Thomas S. Muller, Vice Chairman	Richard H. Bohner, Secretary
Brian C. Nagle, Assistant Treasurer	Norma A. Cusick, Assistant Secretary

Mr. Hughes asked if there were any nominations from the floor, which there were not. Mr. Muller made a motion to close the nominations, which was seconded by Ms. Cusick. By a vote of 6-0, the nominations were closed. Mr. Bohner made a motion to elect the slate of officers as listed, which was seconded by Mr. Muller, and by unanimous vote of 6-0 the officers for 2012 were elected as nominated.

ACTION AND DISCUSSION ITEMS

Trading Authorization for Brokerage Accounts with JP Morgan Securities (Approval)

Mr. Landon noted that this Resolution reflects some changes that the Board requested at the February Workshop meeting. He explained that the resolution reflects trading authorization for brokerage accounts with JP Morgan Securities and its affiliates and designates the Authority CFO to execute transactions on behalf of the authority.

On a motion from Mr. Muller, seconded by Ms. Cusick, the Board unanimously approved Resolution 2-2013-2 (6-0).

Route 309 Crossing at Sand Spring Road (Approval)

Mr. Leist referred to the previously distributed memorandum explaining that the 24 inch casing across Route 309 was installed by the Pennsylvania Department of Transportation (PennDOT) on January 28, 2013. The installation of this casing was incorporated into the PennDOT plans for this project for future connections for the Authority. He noted that the project authorization must be amended to cover the expenses for the construction effort.

On a motion from Mr. Bohner, seconded by Mr. Stellar, the Board unanimously approved the Capital Project Authorization Amendment in the amount of \$34,300 (6-0).

Sand Spring Road Waterline Relocation (Approval)

Mr. Leist referred to the memorandum, explaining that the waterline relocation installed by PennDOT's contractor was completed on February 16, 2013 and an amendment to the existing Project Authorization is needed to cover expenses for this construction effort. The relocation effort is cost shared with PennDOT.

On a motion from Mr. Muller, seconded by Ms. Cusick, the Board unanimously approved the Capital Project Authorization Amendment for construction work in the amount of \$82,700 (6-0).

Western Weisenberg Wastewater Treatment Plant - PennVEST Resolution (Approval)

Mr. Landon stated the Board has taken action authorizing a PennVEST loan for this project in the past, but there have been delays in getting to closing for various reasons. He explained settlement is now scheduled for March 27, 2013 and it is necessary for new resolution(s) to be approved prior to that, although the language is very similar to what has been reviewed with the Board previously.

On a motion from Mr. Muller, seconded by Ms. Cusick, the Board unanimously approved Resolution 2-2013-3 for PennVEST to provide no more than \$2,931,170 to finance the cost of the Western Weisenberg Wastewater Treatment Plant under the terms and conditions of the funding agreement and authorized the execution of all documents related to the funding by the General Manager (6-0).

SYSTEM OPERATIONS OVERVIEW

None.

STAFF COMMENTS

None.

SOLICITOR'S COMMENTS

No additional comments.

OTHER COMMENTS

Mr. Hughes congratulated the Authority and Douglas Young as he read a letter from the Government Finance Officers Association noting the achievement for Excellence in Financial Reporting for the 2011 Comprehensive Annual Financial Report.

EXECUTIVE SESSION

The Chairman called for an Executive Session at 12:58 p.m. to discuss potential lease of property.

The session ended at 2:17 p.m.

ADJOURNMENT

There being no further business, the Chairman adjourned the meeting at 2:18 p.m.

Richard H. Bohner
Secretary

SPECIAL MEETING MINUTES
March 8, 2013

A Special Meeting of the Lehigh County Authority was called to order at 8:35 a.m. on Friday, March 8, 2013, Chairman Asa Hughes presiding. Other Members present at the commencement of the meeting were: Richard Bohner, Brian Nagle (via phone), Emrich Stellar, Tom Muller (via phone), and Norma Cusick. Authority Staff present were: Aurel Arndt, Joseph McMahon, Frank Leist, Liesel Adam, Pat Mandes, Ed Bielarski, Emily Gerber, and Cristin Garger.

Elliot Wheeler of CH2M Hill and Michael Jarman of McNees, Wallace and Nurick were also in attendance.

REVIEW OF AGENDA

None.

EXECUTIVE SESSION

Mr. Arndt stated there would be an executive session to discuss potential lease of real property.

PUBLIC COMMENTS

None.

Scott Bieber entered the meeting at 8:50 a.m.

ACTION AND DISCUSSION ITEMS

Bond Counsel – Professional Services – City of Allentown Concession (Approval)

Mr. Arndt explained that McNees, Wallace and Nurick (MWN) has been hired as special counsel to the Authority for the City of Allentown Concession project and the Authority would now like to also engage MWN as bond counsel for the project.

On a motion from Mr. Bohner, seconded by Mr. Stellar, the Board unanimously approved the Professional Services Authorization for MWN as Bond Counsel not to exceed the amount \$92,500 (7-0).

Zach Efron of Goldman Sachs entered the meeting via telephone conferencing at 8:52 a.m.

EXECUTIVE SESSION

The Chairman called for an Executive Session at 8:52 p.m. to discuss potential lease of property.

The session ended at 1:03 p.m.

During the Executive Session, Jill Toporek of Goldman Sachs entered the meeting via telephone conferencing at 10:38 a.m., at which time Zach Efron left the meeting.

ADJOURNMENT

There being no further business, the Chairman adjourned the meeting at 1:04 p.m.

Richard H. Bohner
Secretary

FINANCE & ADMINISTRATION

ACTION ITEMS

1. *None.*

DISCUSSION ITEMS

1. *None.*

INFORMATION ITEMS

1. *None.*

WATER

ACTION ITEMS

1. *None*

DISCUSSION ITEMS

1. *None.*

INFORMATION ITEMS

1. **Phase 2 Interconnection with Allentown**

Livengood Excavators continues to address the remaining punch-list items.

2. **Water Main Replacement Project – Oakland Park**

Water main construction work and temporary restoration was completed on January 17, though substantial completion of the project was not reached as final paving constitutes more than 10% of the contract. Final paving, lawn and driveway restoration will be starting within the next week and completed by May 15. Final project closeout will occur by June 30.

3. **Arcadia West Pumping Station Modifications**

T&M Associates has submitted pre-final plans and specification for review. They estimate that total construction costs associated with the general and electrical contracts will be \$863,000. Public Water Supply Construction Permit No. 3912505 was issued by the Department of Environmental Protection (DEP) on March 18, 2013.

4. **Upper Milford Central Division Radon Mitigation Study**

Board authorized this project in June and our consultant Cowan Associates (CA) is currently evaluating the existing wells in Buss Acres. A Draft report was received in late December and a Draft Final report was received last week. The final report is currently being reviewed by LCA staff. The report findings will be presented to the Board as early as May.

5. **LCA Facilities Emergency Power Project**

The Board authorized the construction phase of this project at the April 8, 2013, Work Shop meeting. Notices of Award were issued on April 9, 2013 to Barry J. Hoffman Co., Inc. – Electrical Construction and Lisbon Buildings & Infrastructures, Inc. - General Construction. Upon receipt of the required documentation Notices to Proceed (NTP) will be issued. The Agreement requires substantial completion of the project no later than 180- days from the date of the NTP.

6. **Developments**

Water system construction is occurring at the following developments:

- Trexler Fields, Phases 2, 3, 4 & 5 (Partial), 28 residential lots (sfa & sfd), UMT
- Valley West Estates, Phases 4, 5 & 6, 46 residential lots (sfd), UMT *(There has not been any construction activity at this development in over four years.)*

Water system plans are being reviewed for the following developments:

- Above & Beyond (personal care facility), 2 commercial lots, UMT
- Diocesan Pastoral Center, 2 commercial lots, 3 additional lots, & residual lot for existing cemetery, LMT

Grant Street Townes, 18 sfa residential lots, WashT
Hamilton Crossings, 2 commercial lots with 20 buildings having retail, financial, convenience and restaurant uses, LMT
Hickory Park Estates, 3 residential lots (sfd), UMT
Hillview Farms, 31 residential lots (sfd), LMT/SWT
Indian Creek Industrial Park, 6 commercial lots, UMiIT, water and sewer
Lehigh Hills, 247 residential lots (sfa/sfd), UMT
Liberty at Mill Creek, 2 industrial lots, UMT
Morgan Hills, 40 residential lots (sfd), Water & Sewer, WeisT
North Whitehall Commercial Center (Walmart), 5 commercial lots, NWT, water & sewer
Rabenold Farms II, 288 apartment units and clubhouse, (Portion north of I-78), UMT
Route 100 Bypass & Cetronia Road Proposed Commercial Development, 1 commercial lot with 4 buildings having auto, convenience, financial and day care uses, UMT
Shepherd's Corner, 1 commercial lot, LMT
Spring Creek Properties Subdivision I, 14 commercial and industrial lots, LMT
Trexler Business Center, Lot 1, 1 commercial building, LMT
Trexler Senior Living Center, 1 commercial lot, LMT
Weilers Road Twins, 82 residential lots (sfa), UMT
West Hills Business Center, 8 industrial lots, WeisT
Woodmere Estates, 60 residential units (sfd), UMT

WASTEWATER

ACTION ITEMS

1. **2013 Signatory CCTV Physical Condition Assessment, Malcolm Pirnie** (Approval)

A Memo, Capital Project Authorization Amendment and Professional Services Authorization (*pink*) for Malcolm Pirnie is being presented to the Board for consideration. The work is for the SCARP Alternatives Evaluation – Primary Screening of Alternatives. The primary goal of this task is to narrow down the many different combinations of rehabilitation methods to address the current and future peak and dry weather flows. A more detailed explanation of the project is attached in a memo and the Malcolm Pirnie Proposal.

DISCUSSION ITEMS

1. **LCA WTP Annual Report Presentation**

The 2012 Annual Report for the LCA Wastewater Treatment Plant will be presented. The Report will highlight the financials, plant operation, hauler program and maintenance activities.

INFORMATION ITEMS

1. **Infiltration and Inflow (I&I) Program Update**

The following is work planned for 2013:

- Submission of reports to EPA and DEP.
- CCTV work in areas identified as have high leakage to determine the extent of the leakage. Malcolm Pirnie will review the CCTV video and determine a Basis of Rehab.
- Keystone Consulting Engineers (KCE) is generating the population projections for the LCA service area to be used in the Level of Service modeling.
- Completion of the Level of Service Modeling for future growth.
- Rehab effectiveness metering in Phase 1 pipe lining project areas to determine the reduction in peak flows as a result of the rehab work.
- Phase 2 of Signatory pipe lining projects as determined by KCE.
- Rehab effectiveness metering in Phase 2 pipe lining project areas.
- Alternative Modeling and feasibility analysis to evaluate the various alternatives to achieve the preliminary objectives. The alternatives will include various combinations of I & I elimination, storage and capacity increases.
- Long term flow meters will continue on a limited basis. Two rain gauges and meters remain in the system.
- Preliminary Program Objectives Evaluation Report will be submitted to DEP by the end of 2013. This document will define the current system performance and assess what it will take to achieve the system preliminary objectives. The report will include a discussion of the investigation and evaluation work completed including flow evaluation, SSES prioritization, modeling, current and future level of service, current and future system sizing requirements, and will propose the Level of Control for system operation.

- The development of the Capital Improvements Plan is scheduled to begin by the end of the year. This will identify the rehab needs, replacement needs, expansion requirements, costs of improvements and schedule for implementation to achieve the program objectives. **No Current Activity.**

2. **Wastewater Treatment Capacity**

The Memo of Understanding (MOU) regarding working together on a joint Act 537 Plan with the City has not been received to date.

A kick-off meeting with the City and LCA 537 Plan team was held in late October. The team also had a meeting with the DEP to discuss the requirements of the Study. DEP is pleased that the City and LCA are working together.

The Task Activity Report was submitted to DEP. The Report shows the anticipated costs of the study for each City Signatory and must be approved by DEP. A fifty percent reimbursement from the State is possible if the State budgets reimbursement monies (the funds have not been available for several years).

A Communications Plan was developed by the consultant with input from LCA and the City. A stakeholder's group has been formed and the kick-off meeting was held in mid-January at the Lehigh County Administration Building. The stakeholders Advisory Committee (SAC) consists of either Municipal Managers or Municipal Officials from each of the City and LCA Signatories. It is expected that there will be 5 meetings with the SAC during the Study to keep the Committee up to date on Plan with the expectation that the adoption of the plan with the various Signatories will be completed in a short period of time.

Talks continue with DEP on the effluent standards applicable to a discharge to the Jordan Creek.

Talks with Coplay-Whitehall Sewer Authority and Salisbury Townships may result in the sale and/or lease of allocation. An offer was presented to Salisbury for consideration and after several months of negotiating, Salisbury Township has agreed to sell LCA 100,000 gallons of allocation.

3. **Northern Lehigh Wastewater System**

The project is composed of the following:

Wastewater Treatment Plant (on a 5-acre tract at KidsPeace)

In March, LCA representatives met with North Whitehall Township (NTW) Supervisor, Steve Pany; Solicitor, Lisa Young; and Township Manager, Jeff Bartlett to discuss the Act 537 Plan. In summary, for the westside of Rt. 309 (the 1-5 year service area) LCA has agreed to limit the size of the Wastewater Treatment Plant (WTP) to 200,000 GPD which in essence reflects the need for this area. Any expansion beyond 200,000 GPD would require NWT approval.

September 18, 2012, after six months of hearings, the Supervisors granted approval of the Conditional Use for the proposed WTP with nine conditions. We have received the written decision from the Township and have accepted all conditions. In late November 2012 the opposition, the Friends of the Jordan, appealed the Township decision to Lehigh County Court of Common Pleas. Arguments are scheduled to take place on Wednesday May 29, 2013 with Judge Edward Reibman presiding. The Township will bear the burden of defending their decision; however LCA support may be necessary.

The total cost of the WTP including soft costs and KidsPeace acquisition costs is estimated at \$4.69 million. **No current activity**

Offsite Conveyance Facilities (OSCF)

Wal-Mart has stopped design of the necessary conveyance facilities, which includes gravity sewers, a pump station and force main to deliver the wastewater from their proposed development and other future wastewater customers to the wastewater treatment facilities until a cost sharing agreement is reached with LCA. Wal-Mart has proposed that LCA assume the responsibility of designing, permitting and constructing the OSCF, which is a change from the previous plan where Wal-Mart had the responsibility. Ongoing cost-sharing negotiations are still on hold while Wal-Mart internally reevaluates the proposed store's financial viability. **No current activity.**

The construction cost of the conveyance facilities is estimated at \$1.354 million.

Kids Peace Agreement

A revised amendment to the Agreement has been sent to KidsPeace. It primarily focuses the financial impact on the Jordan Creek Wastewater system because of KidsPeace's sale of the 101 Acre parcel to Lehigh Carbon-Community College (LCCC). The 101 Acre parcel was an integral economic component for LCA in the 2006 Agreement. We hope to resolve this issue by the end of December 2012. **No current activity.**

Act 537 Plan (Plan) Revision

NWT continues to work on developing an alternate a solution for the wastewater treatment needs for a revised 1-5 year service area which would include a WTP located on the eastside of Route 309 that would discharge to the Coplay Creek. LCA has agreed to provide support and expertise. Recent discussions with NWT indicate that the Pennsylvania Department of Environmental Resources (PADEP) has agreed to allow data from the on-site sewer system evaluations and water testing conducted for the current Plan to be used for any Plan revisions. NWT has requested preliminary wastewater effluent discharge standards from DEP and has met with the Delaware River Basin Commission (DRBC) to discuss water quality modeling requirements for a discharge on the Coplay Creek. A conceptual short term service area collector system layout has also been developed.

4. *Arcadia West WWTP Improvements*

All Contracts have been awarded and work is proceeding with shop drawing submittals and equipment manufacturing. Activity at the site is anticipated for Mid-April. Staff is working toward PennVest Settlement, currently scheduled for April 30. The total project cost estimate is \$3,502,300.

5. *Wynnewood Terrace Pump Station & Force Main Replacement*

Staff has reviewed the Preliminary Technical Memorandum and returned comments to our consultant Cowan Associates, Incorporated (CA). Of the pump station types evaluated a below grade self contained pump station was determined to be the best option. CA also evaluated the existing aged force main which was constructed by the developer of different types and pressure classifications of pipe. They have recommended that it should be replaced to; mitigate the potential for continued failure; increase hydraulic capacity; and with a change in location provide future ease of maintenance. The pump station design and force main evaluation was previously authorized by the Board. A Project Authorization Amendment for force main design is anticipated for action at the in May.

6. *Park Pump Station Improvements*

Fuel Tank Replacement – Staff has received and is reviewing the plans for replacement of the fuel tank at the Park Pump Station. Additional easement area from the City of Allentown (COA) has finally been acquired. The project team is reviewing schedules in anticipation to going to bid in June.

7. **LCA WTP- Truck Waste Receiving Station**

Truck Waste Receiving Station (TWRS):

The Board awarded the General and Electrical construction contracts at the January workshop meeting. The contractors have returned the construction Agreements for our execution. Notices to Proceed (NTP) to the respective contractors were issued on February 26, 2013 and a pre-construction meeting was held on March 7, 2013. We expect construction to start late April or early May. The Agreement requires substantial completion of the facility no later than 270 days from the date of the NTP.

Digester Mixer Replacements:

Notice to Proceed for the Construction Phase of the project was issued to both the General and Electrical contractors on October 8, 2012. Electrical construction work is approximately 75% complete, as most of it could be accomplished without draining the digesters. OMI our WTP contract operator has finally completed draining the contents of the first digester which is necessary to facilitate mixer installation. The General contractor started the installation of mixers in the first digester on April 8th. Mixers will be installed one digester at a time, as it is necessary to always have two digesters operating. Assuming no major difficulty in draining the remaining digesters we expect the project will be completed in the 1st quarter of 2014

PPL E-Power Customizable Energy Program:

Applications have been submitted for energy savings rebates and verification methodologies for both the Digester Mixer Replacements and Truck Waste Receiving Station. We are awaiting PPL approval of the methodologies for verifying electrical savings. **No current activity.**

8. **Vera Cruz Area Sewer Project**

All construction for this project was completed in 2012. Staff is working with contractors, suppliers and professional services, to close out all documentation required by the funding agencies. Out of 261 potential new connections, 248 have been completed as of the end of March.



Lehigh County Authority

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MEMORANDUM

Date: April 18, 2013

To: Board of Directors & Management Staff
From: Pat Mandes / Frank Leist
Re: SCARP Alternatives Evaluation – Preliminary Screening of Alternatives

Motions/Approvals Requested

Approvals Requested	Brief Description	Amount
Capital Project Authorization Amendment (16) Professional Services Authorization (15)	Consulting Services Malcolm Pirnie	\$225,000

Background

In 2008, the Department of Environmental Protection (DEP) required LCA and the Signatories to generate a Corrective Action Plan for the areas identified as having significant infiltration and inflow (I&I) conditions. In addition, EPA has issued a Compliance Order to the City of Allentown, LCA and all municipalities tributary to the City WWTP to eliminate all SSOs within a five year period (2014).

The LCA 2009-2017 Signatory I&I Investigation & Remediation Project Capital Plan was developed so that LCA could take the lead in working with the Signatories to address the overload and SSO issues. A Sewer Capacity Assurance & Rehabilitation Program (SCARP) Outline was drafted by Malcolm Pirnie that provides a formalized and planned method of evaluating the LCA and Signatory systems, prioritizing and conducting sewer rehabilitation by all the LCA Signatory Partners.

Project Scope

A Professional Services Agreement and Capital Project Authorization Amendment is attached in the “Not to Exceed” amount of \$225,000 for SCARP Alternatives Evaluation – Primary Screening of Alternatives.

The ultimate rehabilitation of the system to comply with the EPA Order and DEP Corrective Action Plan and to meet the desired level of service goals will be a combination of several rehabilitation solutions including storage within the system (such as the flow equalization basin (FEB)), I & I removal, and conveyance expansion. The primary goal of this task is to narrow down the many different combinations of the above methods of rehabilitation to address the current and future peak and dry weather flows.

The hydraulic model will be utilized to evaluate what combination of the three rehabilitation methods have the best potential for I & I removal and will best meet the future flow conditions. The alternative scenarios will be costed for both capital and operating costs to determine the cost effectiveness of each of the alternatives. The alternatives will be ranked based on effectiveness, constructability, timeliness, capital cost, and lifecycle cost.

As part of this work, subtasks include:

- Adjust the hydraulic model to include future I & I and unused allocated industrial flows
- Adjust the model for future FEB operation
- Define hydraulic grade line for 2020, 203, 2040
- Adjust the hydraulic model to show the leakiest neighborhoods and estimate the source removal
- Identify potential storage tank locations
- Develop costing tool for capital and life cycle costs
- Define and cost the treatment plant options for discharge
- Define the combinations of rehabilitation alternatives and provide analysis
- Determine the final alternatives to be studied in greater detail
- Present results in workshops

The 15 different combinations are included in the attached Malcolm Pirnie Scope of Work dated March 22, 2013 as well as greater detail on each of the tasks.



Lehigh County Authority

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PROFESSIONAL SERVICES AUTHORIZATION

AMENDMENT NUMBER 15

Professional:

Malcolm Pirnie, Inc.
Jim Shelton
824 Market St., Suite 820
Wilmington, DE

Date: 04/01/13

Requested By: Pat Mandes

Approvals

Department Head: _____

General Manager: _____

Description of Services (Work Scope, Steps, Check Points, etc.):

SCARP Alternatives Evaluation – Preliminary Screening of Alternatives

Provide a preliminary screening of 15 discrete alternatives for reduction of sanitary sewer overflows in the WLI utilizing the previously constructed and calibrated hydraulic model as detailed in the March 22, 2013 Arcadis proposal.

All work products and modeling run results will be presented at six workshops and will include tables, graphs, model runs and cost estimates.

Cost Estimate (not to be exceeded without further authorization): Not to exceed \$225,000.

Time Table and Completion Deadline:

It is anticipated that this work will be completed by the end of 2013.

(For Authority Use Only)

Authorization Completion:

Approval: _____ **Actual Cost:** _____ **Date:** _____

**CAPITAL PROJECT AUTHORIZATION
AMENDMENT NUMBER 16**

PROJECT No.: S-08-5 **BUDGET FUND:** WLI Sewer Capital

PROJECT TITLE: Signatory I & I Investigation/Remediation Program **PROJECT TYPE:**

TOTAL PROJECT THIS AUTHORIZATION **Prior:** \$3,318,031 **Current:** \$225,000

Construction
 Engineering Study
 Equipment Purchase
 Amendment

DESCRIPTION AND BENEFITS:

Full Project Overview:

Based on the EPA Compliance Order and the PADEP Chapter 94 requirements, LCA and the LCA Signatories are required to reduce infiltration and inflow from the system and eliminate SSOs from the LCA and Signatory sewer systems within a five year period (2014). The SCARP Program has been developed to investigate the sources of I & I and to remediate areas identified as having excessive I & I. The SCARP Program consists of engineering tasks necessary to define and quantify the problems, to evaluate methods of redress and to determine the corrective actions required to meet the regulatory requirements.

SCARP Alternatives Evaluation – Preliminary Screening of Alternatives

To achieve the desired system level of service and reductions in peak flows, an analysis of the feasibility of various alternatives must be completed. The alternatives will include various combinations of I & I source removal, storage, and conveyance expansion. The hydraulic model will be utilized to evaluate what combinations of I & I source removal, storage, and conveyance expansion best meet future flow conditions for various storms. Each alternative will be costed for both capital and operating costs.

The work includes: input into the hydraulic model for I & I creep, future flows, adjusted FEB operating logic; determine wet and dry weather hydraulic grade lines; develop costing tool; define 15 alternatives to meet the 2014 future flow demands at a predetermined level of service; and develop costs. The findings will be presented in a series of six workshops meetings. This analysis will be used to determine the rehabilitation, replacement, expansion requirements and lead to the eventual definition of capital improvements to be proposed.

The 2013 budget for the I & I Program includes funds for this work.

Previously Approved		This Amendment	Total Approval
Flow Monitoring Temporary	\$ 1,280,950		\$ 1,280,950
Purchase of Flow Meters (9)	\$63,000		\$63,000
Long Term Metering	\$431,081		\$431,081
Engineering Consulting	\$1,260,700	\$225,000	\$1,485,700
Staff	\$300,000		\$300,000
Contingencies	\$10,000		\$10,000
Totals	\$ 3,288,731	\$225,000	\$ 3,570,731

REVIEW AND APPROVALS:

Pat Mandes 04/01/13

Project Manager Date General Manager Date

Capital Works Manager Date Chairman Date



Ms. Pat Mandes
Wastewater Services Director
Lehigh County Authority
P.O. Box 3348
Allentown, PA 18106

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Fax 610.768.5817
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Subject:

SCARP Alternatives Evaluation – Preliminary Screening of Alternatives (PSOA)

Dear Ms. Mandes:

ARCADIS is pleased to provide Lehigh County Authority (LCA) with this scope and budget for the preliminary screening of alternatives to reduce sanitary sewer overflows in the Western Lehigh Interceptor (WLI) system. This work is being done as the first step of the Sewer Capacity Assurance and Rehabilitation Program (SCARP) alternatives evaluation, which will provide the eventual definition of capital improvements to be proposed to the Western Lehigh Sewer Partnership (WLSLP) and, subsequent to their adoption of the draft plan, to PADEP as part of the required response to their Chapter 94 actions and to USEPA as part of the required response to their Administrative Order. This work accords with Section 3.8.1 of the SCARP Program Approach Outline.

Date:
March 22, 2013

Contact:
Tony Dill

Phone:
484.688.0380

Email:
Anthony.Dill@arcadis-us.com

Our ref:
0247-532

OBJECTIVES

The primary goal of this work is to narrow down the universe of potential alternatives to address the current and future peak and dry weather flow conditions in the WLI system¹. The main goal of this culling is to eliminate, via cost analysis, the viability of one or more of the treatment plant destination variables (Kline's Island Wastewater Treatment Plant (KI WWTP), Wastewater Pretreatment Plant (WWPTP) direct discharge, and WWPTP direct discharge with new force main from Spring Creek Road Pump Station to WWPTP). Secondary goals are to provide initial cost insights into the base storage, conveyance, and source removal options. The results of this work will be used to scope the alternatives analysis.

¹ For the purposes of the SCARP, the WLI system is defined as all sewer components upstream of the Park Pump Station, inclusive of the interconnected portions of the Allentown-Emmaus Interceptor, but exclusive of non-WSLP partner sewers.

SCOPE OF WORK

Task 1 – Adjust the model to account for I&I creep and allocated but not used industrial flows

Using data of increase predictions provided by LCA, allocated but unused industrial flow will be added to the model. Using predictions of development provided by Keystone Consulting Engineers (KCE) and LCA, the Level of Control modeling predicts base dry and wet weather flows in the WLI system for the 2040 planning horizon. As required by the SCARP, the alternatives analysis needs to additionally account for the gradual increase in inflow and infiltration (I&I) expected as the system ages. Per section 3.8.1 of the SCARP Program Approach Outline, this I&I creep rate is set at 0.5%. The first task will be to program these additional flows into the InfoWorks model, program in the flow projections for the interim planning horizons (2020 and 2030) and determine final dry and wet weather flows at the three planning horizons.

Task 2 – Adjust the WWOL for FEB to prevent dry weather use during future flow scenarios

Current model instructions for triggering the operation of the Flow Equalization Basin (FEB) activate the FEB during dry weather diurnal peaks in 2040. Therefore, the Wet Weather Operating Logic (WWOL) flow triggers programmed into the model for the FEB will need to be adjusted to accurately represent intended operation of the FEB as a wet-weather relief facility. (This will not result in any changes to the current, existing conditions WWOL, but will certainly inform needed wet weather operating changes dictated by higher flows in the future).

Task 3 – Define dry and wet weather hydraulic grade lines at 2020, 2030, and 2040 planning horizons

While the WLI is currently operated at near full pipe levels in many segments during dry weather, as reported in the LOC modeling findings workshops, future flows are expected to diurnally surcharge many portions of the WLI and portions of the trunk lines and spur lines connected to the WLI. Absent any modifications to the WLI system, the extent of this dry weather diurnal surcharge needs to be defined in order to evaluate if dry weather Level of Service operating depths at various portions of the system need to be determined. Similarly, the 2040 wet and dry weather hydraulic grade line (HGL) needs to be determined to allow an evaluation by KCE-provided

maximum HGLs for potential basement backup issues in spur and trunk lines connected to the WLI. For the purposes of this scope and budget, it is assumed that KCE will evaluate dry and wet weather impacts on sewers connected to the WLI.

Task 4 – Identify the leakiest collector sewers, define the nature and extent of their leakage, and prioritize them based on their usefulness in reducing impacts of wet weather flows in the WLI

The results of the flow metering and SSES work will be used to identify which neighborhoods contribute the most leakage into the WLI system.

Then, the nature of the leakage emanating from these neighborhoods will be defined qualitatively [e.g, what portions of the leakage that are inflow and direct connections (fast responding leakage), rainfall induced infiltration (medium-slow responding leakage), sump pumps (medium-slow responding leakage)] using the previously conducted SSES work. The extent of leakage from these neighborhoods will also be defined so that the benefit of source removal efforts can be estimated. These definitions will be used to adjust the InfoWorks model for I&I source reduction efforts.

Finally, the locations of these leaky neighborhoods will be evaluated to determine the value of removing said leakage from flow limited segments of the WLI.

Task 5 – Identify potential storage tank locations

In an Engineers' workshop with KCE and LCA, potential locations for storage tanks that provide flow benefit to the WLI will be identified. For the purposes of this scope and budget, we have assumed that KCE or LCA will provide likely land purchase costs. This task will also be used to prepare the model to accept additional storage tank logic.

Task 6 – Develop costing tool

The alternative cost analysis will require estimate of initial capital cost. It will also require the development of a net present cost analysis for capital alternatives that take place in the future. As various scenarios are expected to have significant operating and maintenance costs (electricity for pumping, labor costs for tank cleaning, mechanical/electrical component replacement and maintenance, treatment plant operation costs), the cost of these will need to be defined, and this work will be done under this task. Additionally, unit price costs for rehabilitation, conveyance upgrades, storage tanks, pump station expansions, etc. will also be determined. As

all alternatives will be evaluated in terms of both net present cost and cash flow periods, a spreadsheet tool specific to this work will be developed and unit costs populated. It is expected that LCA will provide operating costs/estimates for current units.

Task 7 – Define and cost treatment plant options

The capital and operating costs of treating and discharging 2040 dry and wet weather flows at three options will be considered: KI WWTP, WWPTP direct discharge, and WWPTP direct discharge with new force main from Spring Creek Road Pump Station to WWPTP. For the purposes of this scope and budget, this effort will build on previous treatment plant alternative analysis work conducted by Malcolm Pirnie, with the bulk of the new work being in the confirmation of 2040 peak flow capacity evaluations for previously evaluated options. This analysis will also include breakpoint flow evaluations to define when a change from the current mode of discharge will be required or optimal.

Task 8 – Preliminary alternatives definition and costing

Define 15 discrete alternatives capable of meeting the 2040 future flow demands while maintaining the more conservative of either the draft level of service goal of HGL of no higher than 3 feet below the rim elevation or the maximum HGL allowed at specific locations as provided by KCE in Task 1. The following constraints were used to define these preliminary alternatives:

- A maximum of 3 new storage tanks, with a preference for no more than 2
- FEB and Spring Creek Road Pump Station (SCRPS) are operated only as wet weather facilities -- unless specifically called out in an Alternative description.
- Capacity and storage solutions will be analyzed down to Park Pump Station. Solutions to address downstream of Park Pump Station need to be evaluated with an integrated model.
- Park Pump Station will be assumed to have a capacity of 40 MGD to eliminate any end of model restrictions.

The alternatives to be modeled are generally described below.

Alternative	Treatment/ Discharge Location	I/I Removal	Conveyance	Storage	Comments
1	KI WWTP	X			I&I removal through sewer rehabilitation only
2	KI WWTP		X		Conveyance only
3	KI WWTP			X	Storage only.
4	KI WWTP	X	X		30% I&I removal, with additional conveyance as needed
5	KI WWTP	X	X		30% I&I removal, with additional conveyance as needed, using SCRPS for daily flow
6	KI WWTP	X		X	Tanks, with additional I&I removal as needed
7	KI WWTP		X	X	1 tank, with additional conveyance as needed
8	KI WWTP	X		X	15% I&I removal, with additional storage as needed

Alternative	Treatment/ Discharge Location	I/I Removal	Conveyance	Storage	Comments
9	KI WWTP	X		X	40% I&I removal, with additional storage as needed
10	WWPTP		X	X	1 tank, with additional conveyance as needed
11	WWPTP	X	X		30% I&I removal, with additional conveyance as needed
12	WWPTP	X		X	30% I&I removal, with additional storage as needed
13	WWPTP with SCPS dry and wet flow diverted back to WWPTP		X	X	1 tank, with additional conveyance as needed
14	WWPTP with SCPS dry and wet flow diverted back to WWPTP	X	X		30% I&I removal, with additional conveyance as needed

Alternative	Treatment/ Discharge Location	I/I Removal	Conveyance	Storage	Comments
15	WWPTP with SCPS dry and wet flow diverted back to WWPTP	X		X	30% I&I removal, with additional storage as needed

For these alternatives, pipe diameters and depths, storage tank sizes, pump station capacities, and miles of pipe rehabilitated will be defined.

For each alternative, an estimate of capital costs, an estimate of year of capital cost incursion, operating costs over time, and total life-cycle cost as net present worth, will be prepared using the costing tool developed in Task 6. Cost estimates will include costs to convey and treat dry weather flow, land costs, clearwater elimination costs, private lateral rehabilitation costs, and the cost of eventual sewer system rehabilitation.

Task 9 – Final or intermediate alternative analysis scoping

Once the preliminary screening of alternatives is completed and the results reviewed with both the engineering and WLSP partners, the next round of alternatives will be determined. This scoping effort will define what alternatives to model and cost, decide if multiple planning horizons (e.g., 2020, 2030, 2040) should be evaluated as part of this round of work or if that should wait until an intermediate round is completed, potentially make changes to the cost methodology, evaluate synchronization with City of Allentown efforts, and evaluate concession impacts on the SCARP alternative evaluation process.

As part of this effort, the City of Allentown’s System Assessment and Phase 1 Corrective Action Plan Report to evaluate the potential impact of their likely solutions on the alternatives being considered by the WLSP.

DELIVERABLES AND WORKSHOP

No reports will be developed during this work. Except for the Task 10 work, all work products will be presented in workshops in the form of PowerPoint presentations, tables, graphs, model runs, and cost estimates.

For the purposes of this scope and budget, we have assumed the following workshops:

1. Workshop 1 – This will be a 3-5 hour engineers' meeting to review work conducted in Tasks 1, 2, 3, to review KCE's analysis of proposed HGL impacts on spur lines, and to define the treatment plant options (Task 7).
2. Workshop 2 – This will be a 4-5 hour engineers' meeting to review the work conducted as part of Task 4 and finalize selection of neighborhoods for rehabilitation, review and select likely locations for storage tanks (Task 5), review the draft cost estimating tool (Task 6), and review the treatment plant capital and O&M costs (Task 7).
3. Workshop 3 – This will be a 4-6 hour engineers' meeting to present the Preliminary Screening of Alternatives results (Task 8).
4. Workshop 4 – This will be a 3-4 hour WLSP meeting to communicate the likeliest of the PSOA alternatives, their locations and costs, and to seek input from the Partners.
5. Workshop 5 – This will be a 2-3 hour LCA meeting to review scoping for the next phase of the SCARP alternative analysis (Tasks 10).
6. Workshop 6 – This will be a 2 hour LCA meeting to finalize the scope, budget, and schedule for next phase of the SCARP alternative analysis (Tasks 10). Prior to this workshop meeting, a written draft scope and budget proposal will be submitted for LCA review.

BUDGET ESTIMATE

We estimate that the cost of these services will be \$225,000.00. We propose to complete these services on a time and materials basis in accordance with the Agreement between LCA and Malcolm Pirnie, Inc., dated June 17, 1997, and the current Summary of Standard Charges for Lehigh County Authority. We will not exceed this budget without prior authorization from LCA. Payment for services will be based upon the actual labor and expenses incurred.

Ms. Pat Mandes
March 22, 2013

Please contact me with your authorization to proceed if this scope and budget are acceptable to you. If you have any questions please do not hesitate to call me at 484-688-0380 or 610-761-3253 (mobile).

Sincerely,

ARCADIS U.S., Inc.

A handwritten signature in blue ink that reads "Tony Dill". The signature is written in a cursive style with a large, stylized "D" and "I".

Tony Dill, PE, BCEE
Program Manager – Buried Infrastructure Team

C: Jim Shelton, ARCADIS
Tanya McCoy-Caretti, ARCADIS