



LEHIGH COUNTY AUTHORITY

May 27, 2014

BOARD MEETING AGENDA

1. Call to Order
2. Review of Agenda
 - *Public Participation Sign-In Request*
3. Executive Sessions
4. Approval of Minutes
 - *April 28, 2014 Regular Meeting Minutes*
 - *May 12, 2014 Workshop Meeting Minutes*
5. Public Comments
6. Action / Discussion Items

FINANCE AND ADMINISTRATION

- *None*

WATER

- *Allentown Division- Coagulation Chemical Conversion Study (Approval)*
- *Allentown 28th St. Elevated Tank Rehabilitation; and Multi Division Steel Tank Reservoir Maintenance Program (Approval)*

WASTEWATER

- *Allentown Wastewater Treatment Plant, Motor Control Center Replacements- Design Phase - Amendment 1 (Approval)*
- *Approval for Development of Test and Chemical Grouting Bid Documents for the WLI (Approval)*
- *Allentown Division – Sanitary Sewer Evaluation Study (SSES) Construction Phase (Approval)*

7. System Operations Overview
8. Staff Comments
9. Solicitor's Comments
10. Other Comments
11. Adjournment

JUNE MEETINGS

Workshop Meeting
Board Meeting

June 4 (Wednesday) – 12:00 p.m.
June 23 – 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.

FINANCE & ADMINISTRATION

ACTION ITEMS

1. *None.*

DISCUSSION ITEMS

- 1.

INFORMATION ITEMS

1. **CMMS Upgrade and Expansion Project**

GIS map identifying both Suburban and Allentown Division distribution and collection system assets has been developed and transmitted to RJN for review. Cityworks software installation and CASSWORKS data conversion is scheduled for June. Pilot phase is scheduled for Aug. – Oct. Verizon Wireless is willing to provide sample mobile devices ex. Ipad, Android tablet for evaluation during the pilot phase.

2. **Recently Purchased Investments – Certificates of Deposit (CDs)**

Fund	Bank	Location	Gross Amount	Date of Purchase	Date Due	Net Rate %
LLRI CR	Customers Bank	Phoenixville, PA	245,000.00	4/23/14	12/23/15	0.40
Cons Wtr (2)	First Merchants Bank National Assoc	Muncie, IN	90,000.00	4/30/14	10/30/15	0.35
Cons Wtr (2)	Apple Bank for Savings	Manhasset, NH	240,000.00	5/14/14	9/14/14	0.35

Fund Descriptions for Investments:

Cons Wtr (2)	Consolidated Water (2)
LLRI CR	Little Lehigh Relief Interceptor Capital Reserves

WATER

ACTION ITEMS

1. **Allentown Division- Coagulation Chemical Conversion Study** (Approval)

In 2010, DEP approved the City to change the primary coagulant from Aluminum Sulfate (Alum) to Polyaluminum Chloride (PACL). This change has not been implemented due to change over in City personnel and the leasing of the City water system. A review of the proposals received in January for professional services to evaluate options for the implementation of this changeover indicated that a further refinement of project scope and associated costs is necessary before recommending an award. Revised proposals were received on March 21, 2014. Gannett Fleming's proposal met the requirements of the RFP and they were also the lowest cost of four proposals received. Board approval for this Study is being requested including the award of the professional services contract to Gannett Fleming, Inc. Reference attached documentation (*green*).

2. **Allentown 28th St. Elevated Tank Rehabilitation; and Multi Division Steel Tank Reservoir Maintenance Program** (Approval)

Since December 2005, LCA has retained Utility Services Company, Inc. (USC) who for an annual fee has been responsible for the on-going maintenance and rehabilitation of four of our five suburban division welded steel reservoir tanks. Over the 8+ year period, the Authority's Capital and Operational staff have been very pleased with the performance of USC. Given our past experience with USC Steel Tank Maintenance Program we recommend adding the following tanks the program: Allentown 28th St. Elevated Tank Rehabilitation; 28th Street Standpipe; Halstead Elevated Steel Tank; Heidelberg Heights Tank, the latter being in the suburban division. This approval request addresses three separate projects each with a separate cost center. Two projects are in the Allentown Division, one of which is city funded; and one project in the Suburban Division. Reference the attached documentation (*pink*).

DISCUSSION ITEMS

1. *None.*

INFORMATION ITEMS

1. **Arcadia West Pumping Station Modifications**

The control panel for the new high service pump has been released for production. Layout drawings are being prepared for the station piping and bypass pumping. The general contractor's schedule has slipped by about three months due to difficulty in releasing all shop drawings. Setting the fuel tank, site cleanup and fencing installation are schedule for later this month. The electrical contractor has completed much of the conduit in the station. Electrical and SCADA tie-ins will be made as the work progresses.

2. **LCA Facilities Emergency Power Project**

As of March 26, 2014 all Project sites are now operable with a generator and transfer switch. The electrical contractor is currently working on all punch list items and providing all necessary close out documents. Delivery of the 100 KW generator for the Gary pump station in Buss Acres has been received and has passed all startup inspections from the manufacture's dealership.

3. **Allentown Division- Water Main Replacement Program**

City of Allentown has granted Conceptual Design approval of this Major Project. Preliminary meetings have taken place with Allentown Streets Department, PennDOT, UGI and other entities to introduce the program. 30% design has been completed and design comments have been received by our engineering consultant from both the LCA project team and the City of Allentown. Substantially complete design plans and specs have been reviewed by LCA and comments have been issued and corrected by our engineering consultant. As of April 30th 2014 LCA has formally submitted to the City of Allentown substantially complete plans and specs for their official review per the lease concession agreement. This project will be funded by LCA.

4. **Allentown Division- Schantz Spring Chlorination Issue**

Alternative options in lieu of a CL₂ Booster Station as originally scoped by the City are being fully evaluated based on cost and feasibility. Backup power supply, more reliable chemical feed pumps, and full-time data recording are all being considered in an effort to reduce the potential for unchlorinated slugs of water in the future. Barry Isett Inc. has provided a proposal to determine costs of the alternate plan vs the original booster station. City of Allentown has been agreed with the concept and has authorized to proceed with the evaluation. This Project is identified as Un-Completed Work and will be funded by the City.

5. **Allentown Division- WFP Chemical Building Roof Replacement**

The Project includes modifications to the roof of WFP chemical storage area (i.e. installation of hatches), removal and replacement of (2) 8,000 gallon chemical storage tanks; and replacement of the 20-year old rubber membrane roof system. The project has been bid by the City and a contract has been awarded. The replacement chemical feed tanks have been fabricated and are being stored by the vendor until we are ready for them. Construction has been underway since 3/31/2014. Water pipes, sprinklers, storm drains, etc. are being moved first. Steel and other construction materials are to start arriving on May 19, 2014. Dismantling of the existing roof is also scheduled to begin on May 19, 2014. Both replacement sodium hypochlorite tanks will be delivered on Thursday May 22, 2014. The anticipated completion date for the project has been revised to July 7, 2014. This Project is identified as Un-Completed Work and will be funded by the City.

6. **Developments**

Water system construction is occurring in the following developments:

Valley West Estates, Phases 4, 5 & 6, 46 residential lots (sfd), UMT

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 and residual lot for existing cemetery, LMT

Grant Street Townes, 18 residential lots (sfa), 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

Lehigh Hills, Lot 4, 1 commercial building, UMT

Liberty at Mill Creek, 2 industrial lots, UMT

Morgan Hills, 40 residential lots (sfd), WeisT, water and sewer

North Whitehall Commercial Center (Walmart), 5 commercial lots, NWT, water and sewer

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 Settlement Subdivision (formerly Spring Creek Properties Subdivision I), 16 commercial and industrial lots, LMT

Trexler Business Center, Lot 1, 1 commercial building, LMT

Weilers Road Twins, 82 residential lots (sfa), UMT

West Park, Lot 8, 1 industrial building, UMT

Woodmere Estates, 60 residential units (sfd), UMT

Woodmont at Upper Macungie (formerly Rabenold Farms II), 288 apartment units and clubhouse, (Portion north of I-78), UMT

WASTEWATER

ACTION ITEMS

1. **Allentown Wastewater Treatment Plant, Motor Control Center Replacements- Design Phase - Amendment 1** (Approval)

CDM Smith Inc. based their design proposal on a Preliminary Design report prepared by CMX, Inc. for the City of Allentown. The report called for the reuse of existing conduits from the existing MCCs to the individual loads. Subsequent investigations by CDM during the design process have found that the CMX report was in error and a vast majority of these conduits are not in good condition, and many are not reusable at all. CDM will provide additional design services to include removal and replacement of existing conduits for \$12,000 (negotiated down from \$40,000). The CMX report also indicated that the roof was capable of handling the loads of the proposed stainless steel MCC housing unit, but further structural analysis of the roof by CDM has indicated that small-scale structural reinforcements of the concrete cross-members are required, and their fee to design these changes is \$16,500. Board approval is being requested for a contract amendment that will allow for CDM to perform additional design services that were not part of the original specification. Reference the attached documentation (*blue*).

2. **Approval for Development of Test and Chemical Grouting Bid Documents for the WLI** (Approval)

A memo, Capital Project Authorization Amendment and Professional Services Authorization (*yellow*) for Arcadis (name change from Malcolm Pirnie) is being presented to the Board for consideration. The work is related to the I & I SCARP and is being developed as a result of the previous Physical Condition Assessment of the WLI System. This approval is for the devolvement of bidding documents and providing bidding support services for the testing and chemical grouting of leaking joints. This is a rehabilitation project expected to significantly reduce the leakage and infiltration into several branches of the WLI and is estimated to cost over \$800,000. Also included in the rehabilitation project is heavy cleaning of the lines and point repairs where previous CCTV indicated. A more detailed explanation of the project and the testing and chemical grouting process is attached in a memo and the Arcadis Proposal.

3. **Allentown Division – Sanitary Sewer Evaluation Study (SSES) Construction Phase** (Approval)

A Memo, Capital Project Authorization Amendment and Professional Services Authorization Amendment is being presented to the Board for consideration. This project involves field investigatory work to identify sources of inflow and infiltration (I/I) in the City's sanitary sewer system located in the Primary and Secondary basins as identified in the WR&A report. The work will include closed circuit television (CCTV) inspection of approximately 102,000 linear feet of sanitary sewer mains ranging in size from 8 to 36 inches in diameter. The work will include the inspection of approximately 550 manholes and sewer piping point repairs, joint repairs, smoke testing, and heavy cleaning. This project is identified as Administrative Order / Un-Completed Work and will be funded by the City. Reference the attached documentation (*salmon*).

DISCUSSION ITEMS

1. ***None.***

INFORMATION ITEMS

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

The following is work planned for 2014:

- Submission of reports to EPA and DEP.
- 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.
- WLI Manhole Inspections. This work is near completion.
- Test and Seal project for branches of the WLI that were CCTVed in 2011 – 2012.
- Long term flow meters will continue on a limited basis. Two rain gauges and meters remain in the system.
- 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.
- Preliminary Program Objectives Evaluation Report will be submitted to DEP by the end of 2014. 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.
- The City and LCA hydraulic models have been combined by Arcadis. A meeting was held with City representatives and the City Engineer and LCA representatives and our Engineer to discuss the combined model and to determine if additional flow monitoring is required to calibrate the models. Ten meters are being installed near the park Pump Station to collect flow data for three to four months. The flow data will help the two models work together. A proposal has been requested for updating the calibration with the new flow data.
- The LCA will be requesting an extension for the EPA Administration Order (AO) completion date before the end of the year. The AO issued in September 2009 stated “Respondents shall eliminate the discharges from the SSOs in the System no later than December 31, 2014.” A meeting is being held with the City and City Signatories to determine if there is an interest in making a joint request to EPA.

2. ***Wastewater Treatment Capacity***

The Memo of Understanding (MOU) regarding working together on a joint Act 537 Plan with the City was never executed with the City. The MOU was revised as a result of the Concession. The City revised the MOU and returned to LCA. We are in the process of continued negotiations.

A Stakeholder's Advisory Committee (SAC) Meeting will be scheduled for early 2014.

DEP has indicated that a Jordan Creek study must be submitted to DEP prior to the issuance of final effluent standards. If we want to avoid the study, then water quality standards would be imposed for effluent limitations. There is no work currently being done on the Jordan Creek discharge option.

A meeting was held with the DRBC to discuss updating the prospective effluent limits for the various alternatives. The model was refined and the grandfathered loads for Phosphorus and Ammonia have been updated based on the actual Kline's Island data. The new effluent limits have been developed and provided by the DRBC. The Engineering team held a meeting to discuss the revised effluent limits provided by the DRBC. A follow-up letter will be provided to the DRBC requesting back-up documentation and sources of data.

A meeting was held at the Pretreatment Plant with the DEP to discuss the land application option. Four individuals from DEP toured the area to see the various sites that are being investigated for land application of the plant effluent. DEP is still excited about this option but did present the requirement for total dissolved solids (TDS) which will be one of the challenges.

Effluent sampling was performed on the Pretreatment Plant effluent to determine the make-up of the TDS. The high TDS in the effluent will require a reverse osmosis process to treat the TDS to acceptable levels. The major industries and waste haulers are now being sampled to determine where the sources of the high plant TDS is coming from. The high TDS concentrations will present a challenge for the for the land application option as additional acreage will be needed to dilute the TDS.

The City has provided future population projections to be utilized in the hydraulic model.

No update.

3. **Northern Lehigh Wastewater System**

The project is composed of the following:

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

The North Whitehall Township (NWT) Board of Supervisors granted approval of the Conditional Use for the proposed WWTP. In late November 2012 the opposition, the Voice of the Jordan (Voice), appealed the NWT decision to Lehigh County Court of Common Pleas. On June 5, 2013 the Court ordered "that the decision of the NWT Board of Supervisors dated October 23, 2012 is hereby reaffirmed". On July 29, 2013 the Voice filed an appeal of the previous Court ruling to Commonwealth Court. Arguments in Harrisburg took place on December 11, 2013, a decision rendered by the Court on January 9, 2014 affirmed the lower Courts decision and Township approval. The Voice has filed a Petition with the Pennsylvania Supreme Court to hear the case. We are evaluating the timing of any legal action to request that the Court require the Voice to post a bond. **No Current Activity**

The total cost of the WTP including soft costs and KidsPeace acquisition costs is estimated at \$4.69 million.

Wal-Mart

Wal-Mart has put the proposed store on-hold indefinitely. Wal-Mart was a key financial contributor to the offsite 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 proposed wastewater treatment facilities at the Kids Peace site. Cost-sharing negotiations are on hold. **No Current Activity.**

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. Kids Peace has filed for Chapter 11 Bankruptcy. We have retained an attorney who specializes in bankruptcy to represent LCA in this matter. A listing of our terms has been provided to the bankruptcy attorney for Kids Peace

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 met with NWT on November 21, 2013 to discuss the status of their efforts. NWT has requested that LCA work their engineer to obtain the information necessary to secure conceptual pricing for the WTP and to develop high level capital and operating cost estimates. **No Current Activity.**

4. ***Arcadia West WWTP Improvements***

Construction is complete at the site. Full startup date was January 10, 2014. Demolition of the old facilities was completed in April. Commissioning of the plant continues to be challenging. Staff is working with the manufacturer to investigate and identify what is impacting the nitrifying bacteria growth. The project is still in budget.

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

Design work is complete and DEP has granted the permit. Staff has initiated an application to PENNVEST for construction funding. However, due to the timeframe for receiving the NPDES Permit, we will postpone our application until the August PENNVEST due date. A "Letter of No Prejudice" will be solicited, due to Sanitary Sewer Overflows in 2014, so that bidding can start in July and construction in August.

6. ***Park Pump Station Improvements***

Fuel Tank Replacement – Staff has reviewed specifications and plans for replacement of the fuel tank at the Park Pump Station. We expect to place the work to bid in June.

7. ***LCA WTP***

Digester Mixer Replacements:

The General contractor has completed the installation of mixers in the first digester and the digester is now operational. Although delayed by the extremely cold weather mixer installation in the 2nd digester is complete. Transfer of the contents and cleaning of the 3rd and final digester is underway and almost complete. Holes have been cut in the top of the digester and concrete installation curbs have been poured, both necessary to accommodate the new mixers. We expect the project will be completed by the end of the 2nd quarter of 2014.

PPL E-Power Customizable Energy Program:

PPL has accepted the E-power applications for energy savings rebates and verification methodologies for both the Digester Mixer Replacements and Truck Waste Receiving Station (TWRS). Monitoring of the electric usage of the remaining old mixers has been completed. Monitoring devices on the High Purity Oxygen system have been installed with monitoring extending to the end of May 2014.

8. ***Allentown Division- WWTP-New Bar Rack at Headworks***

The Project includes the replacement of the existing screen equipment with new coarse bar screens to minimize potential for jamming or mechanical malfunctions experienced by the existing screening equipment, resulting in discharges from Outfall 003 during high flow events. The project has been bid by the City and a contract in the amount of \$737,000 has been awarded to Blooming Glen Contractors. Given the long lead time for the equipment we expect the bulk of the work to start in June 2014. This Project is identified as Administrative Order / Un-Completed Work and will be funded by the City.

9. Allentown Division- WWTP-Replacement of Motor Control Centers

This Project will replace five aged motor control centers that provide power on a 24/7 basis to various parts of the WWTP. The motor control centers are located in areas where they are exposed to corrosive wastewater gas and have deteriorated considerably. Because of the age of the existing MCCs, replacement parts are nearly impossible to find. This equipment is critical for the daily operation of the WWTP. The design of the electrical upgrade has been awarded to CDM and kickoff meeting for project was held 2-12-14. Design is currently in-progress. A contract amendment with CDM is being requested that will allow for additional design services that were not part of the original specifications.

10. Allentown Division- WWTP-Other Work

PPL Combined Heat & Power (CH&P) Facility:

In October the City of Allentown issued PPL Renewable Energy the building and electrical permits required for the construction of the new Combined Heat and Power (CH&P) facility at the Kline's Island WWTP. Since then Millennium Builders and Albarell Electric have mobilized and begun the construction of the infrastructure required to install the digester gas powered generator. To date the excavation for electrical duct banks and grounding wires has been completed. The project is projected to produce 50% of the electricity required to operate the wastewater plant from digester gas produced in the anaerobic digestion process. The terms of the contract assigned to LCA through the concession call for PPL to construct and maintain CH&P facility at no cost to LCA. LCA will provide the digester gas required to fuel the facility and will purchase the power produced at a discounted rate. In November, the electrical duct banks were completed and the pad for the generator was poured. During the month of December Millennium Builders and Albarell Electric continued to make significant progress on the construction of the new Combined Heat and Power (CH&P) facility at the Kline's Island WWTP. During the month of March the CH&P facility was brought to the point of startup ready. However during the initial attempts to fire the converted diesel engine a major mechanical problem was discovered, the crankshaft had been installed backwards when the engine was refurbished. The engine had to be disconnected, removed and sent back to the Caterpillar Shop to correct the mistake. The new projected startup date for the facility is the week of April 21, 2014.

No.1 Intermediate Settling Tank Wire Failure

The wiring powering No.1 Intermediate Settling Tank clarifier drive mechanism failed on December 25, 2013, cause of the failure appears to be poor workmanship during the 1999 plant upgrade of the treatment plant. Temporary power has been supplied to the equipment through the use of 480 V insulated power cord. The plant staff is working with Crowder Jr to restore permanent power, control, and alarm wiring to this equipment. Pushbutton start/stop station has been received; installation of new switch and wiring will be completed when weather is more favorable for working on an outdoor elevated tank. The plant staff completed rewiring the settling tank on March 4th.

11. Lynn Township – WWTP Improvements, Phases 1 & 2

Gannett Fleming visited the plant on May 15th as part of their design effort. As a result of their visit, and on-going interaction on several design concepts, a revised scope of work will be developed and presented for LCA approval. Among the proposed changes will be to defer installation of UV light and continue to use chlorine to disinfect the waste discharge to the

creek. A revised Water Quality Management (WQM) Part II permit package will be submitted to DEP for approval and the specifications finalized for bidding the work. Application will be made for PennVEST funding after permits have been acquired. It appears that replacing the RAS pumps and blowers will be performed in-house. We are seeking to determine if the 55+ active adult community overlay district was approved by the township and what impact this will have on the timing to upgrade the 80,000 GPD plant to 160,000 GPD (Phase 3).

12. Allentown Division – Manhole Collars with Water Tight Frame and Covers

This project involves, where applicable, installing a 5-foot diameter, three to four foot deep concrete collar around 100 aged brick manholes identified by previous City staff. This technique will be used to secure a new water tight frame and cover onto the manhole. Where vehicular accesses to the manholes are problematic, alternative solutions will be investigated to secure new water tight frame and covers. This work will eliminate the potential for inflow and infiltration (I/I) entering these manholes, this eliminating the potential for sanitary sewer overflows (SSO's) from these manholes. The City has directed LCA to bring the project to a bid ready stage, but not to bid unless authorized to do so by the City. A RFP was issued and proposals were received on March 26, 2014 for engineering consulting services. The proposals are currently under evaluation and a selection of an engineering consultant is forthcoming. The project is anticipated to be bid ready by the end of June 2014. The project is identified as Administrative Order and will be funded by the City.

13. Allentown Division – Sanitary Sewer Manhole Lining

This project will install a lining system in 50 aged brick manholes identified by previous City staff. This lining system will eliminate infiltration and will provide additional structural reinforcement to the manholes. The City has directed LCA to bring the project to a bid ready stage, but not to bid unless authorized to do so by the City. A RFP was issued for engineering consulting services and proposals were received. A professional service agreement was approved administratively with Barry Isett & Associates on April 4, 2014. The project is anticipated to be bid ready by the middle of June 2014. The project is identified as Administrative Order Work and will be funded by the City.

14. Allentown Division – Belt Filter Presses

The wastewater treatment plant has three belt filter presses that are used to dewater both wastewater sludge and water plant chemical sludge. This project will install a remanufactured belt press for existing BFP #1, and will rehabilitate in-place existing BFP #2 and #3. Units #1 and #2 will also get a new control cabinet. Board approval has already been received to purchase of; the remanufactured unit for BFP #1, OEM parts for BFP #2 and #3 and also for D'Huy Engineering to design the construction work for the entire project. The project is planned for completion by the end of 2014 and will be funded by LCA.

MEMORANDUM

Date: May 27, 2014

To: Authority Board
From: John Parsons, Frank Leist
Subject: Allentown Water Treatment Plant
Coagulant Conversion Engineering Study

MOTIONS / APPROVALS REQUESTED:

No.	Item	Amount
1	Capital Project Authorization – Study, Coagulant Conversion	\$304,085
2	Professional Services Authorization – Study, Gannett Fleming Inc ⁽¹⁾	\$114,085

(1) Included in Capital Project Authorization

PROJECT OVERVIEW:

The Allentown Water Treatment Plant (WTP) was put into service in 1929. Major upgrades to the facility were completed in 1953 and again in 1998. The current maximum design capacity of the water plant is 30 MGD.

Ever since the water plant was put into service 84 years ago, aluminum sulfate (alum) has been the only coagulant that was ever used. During the plant retrofit project of the 1990's, plate settlers were installed and overall clarifier settling times and efficiencies compared to previous times and efficiencies were reduced. Allentown never experienced the anticipated settled water turbidities that were put onto the filters, particularly during storm events. Near the end of the very long and expensive retrofit project, the design engineer suggested that we consider changing from our accepted coagulant to polyaluminum chloride (PACl). Upper management of the water plant at that time rejected the suggestion and the plant has continued using alum ever since.

The water plant is currently permitted to use 9 MGD from Schantz Spring and 4 MGD from Crystal Spring. Neither of these sources flows through the chemical treatment portion of the water plant. This translates into the water plant being drastically oversized. With a daily water demand of approximately 16 MGD in 2012, and the springs accounting for 9.3 MGD of that amount, the treatment plant only produced a daily average of 6.6 MGD. With a small production demand combined with over 50 million gallons of storage in the distribution system, the water plant has been able to shut down during storm events.

With the City of Allentown's Water Supply Agreement with Lehigh County Authority dated January 7, 2009, plant production and demand in 2017 will increase by 50% compared to the time of the agreement. Accordingly, the ability of the plant to shutdown at will is rapidly disappearing. Alum coagulation has been problematic during cold temperatures and higher turbidities and higher color, so a conversion to a more versatile option for the plant's coagulant is at hand. LCA personnel wish to hire an engineering consultant to assist in the activities that will be required to change from the coagulant that the plant has used for 84 years. A more reliable and effective coagulant which works under adverse conditions is needed to improve day to day

operations of the plant. [The water plant is currently permitted to use polyaluminum chloride, and if the conversion from alum does not occur, the water plant must re-permit to continue using alum.](#)

This Project is an Engineering Study only, that will provide the necessary information and recommendations that will be utilized to implement the coagulant chemical changeover. If applicable a separate construction project will be developed

FINANCIAL:

This Project will be funded by LCA.

PROJECT STATUS:

The project will move forward as soon as board approval is received.

THIS APPROVAL-ENGINEERING STUDY

Lehigh County Authority (LCA) intends to retain the services of an engineering consulting firm to provide professional services as listed below. The following table summarizes the professional services to be performed:

Professional Services
1. Conduct coagulant screening to identify alternatives
2. Design and support a jar testing program to be run by LCA staff ⁽¹⁾
3. Provide permitting services with PaDEP
4. Design and support full-scale plant testing ⁽¹⁾
5. Complete a final project report

(1) Significant staff time is being allocated for jar testing and plant scale evaluations in order to keep the overall cost of the project to a minimum.

CONSULTANT SELECTION PROCESS:

Five engineering firms, CDM-Smith, ARCADIS, Jacobs, Gannett Fleming, and Whitman Requardt, all with experience in water treatment plants and chemical treatment, were provided Requests for Proposals (RFPs). Proposals were due on March 21, 2014 and the results are listed below:

Consultant	Cost	Man-hours
Gannett Fleming	\$114,085	969
Whitman Requardt	\$119,618	962
Jacobs	\$147,810	1,048
CDM-Smith	\$163,904	1,472
ARCADIS.	Did not submit	N/A

Based upon our review of all aspects of both the Technical and Cost Proposals submitted, we recommend award of the project to Gannett Fleming, Inc. Their proposal is on scope and

represents what we believe is the best overall value for the Authority. Gannett Fleming will perform the services outlined in their proposal dated March 21, 2014. .

GANNETT FLEMING INC -COMPANY INFORMATION

Gannett Fleming has previously provided services to-LCA for the Central Lehigh Division water system model and is currently working for LCA on the Allentown Division water main replacement program and the Lynn Township wastewater treatment plant phase 1 and 2 improvements.

PROJECT SCHEDULE: Once the Notice to Proceed (NTP) is given, the project schedule calls for completion within 18 months.

FUTURE AUTHORIZATIONS-

There are currently no additional authorizations that are foreseen as part of this Engineering Study

CAPITAL PROJECT AUTHORIZATION

PROJECT NO.:	AD-W-13-1	BUDGET FUND:	Allentown Division\Water\Capital
PROJECT TITLE:	Allentown Water Treatment Plant Coagulant Conversion – Engineering Study	PROJECT TYPE:	<input type="checkbox"/> Construction <input checked="" type="checkbox"/> Engineering Study <input type="checkbox"/> Equipment Purchase <input type="checkbox"/> Amendment
THIS AUTHORIZATION:	\$304,085		

DESCRIPTION AND BENEFITS:

The Water Plant went through a major upgrade and retrofit project in the mid 1990's. During that project, new sedimentation basins and plate settler clarifiers were constructed. After the construction phase was over, the city was never able to attain the performance criteria that were included in the design contract with CDM, Inc. The city eventually had to release CDM from all liability resulting from the inability of the plant to meet certain performance criteria.

Over the past twenty years, and with the water plant that is oversized based on its production needs, water plant staff has been able to run the facility around storm events. With over 50 million gallons in distribution storage, it was possible to shut the plant down for several days so expensive treatment of highly turbid and/or colored water could be avoided. As time has passed, and with water production demands growing, the ability to run around storm events is nearly gone. The retrofitted plant, in using alum as a coagulant, has always experienced difficulty in treating cold water and highly colored and turbid water. The city (Water Resources) had wished to convert the plant's primary coagulant from alum to polyaluminum chloride, but the finances were never provided by the city.

This project will implement the services of a consulting engineer that is experienced in water treatment projects. Gannett Fleming will guide LCA through the transition, will review raw data and laboratory data, and will assist LCA in PaDEP permit activities. Please reference the cover Memo for additional information.

Authorization Status:

REQUESTED THIS AUTHORIZATION	
Engineering Study	
Staff	\$160,000
Engineering Consultant	\$114,085
Miscellaneous	\$10,000
Contingencies	\$20,000
Total This Authorization	\$304,085

Future Authorization	
None anticipated for the Engineering Study	

Total Estimated Project	\$304,085
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REVIEW AND APPROVALS:

Project Manager	Date	Chief Executive Officer	Date
Chief Capital Works Officer	Date	Chairman	Date



Lehigh County Authority

1053 Spruce Street * P.O. Box 3348 * Allentown, PA 18106-0348
(610)398-2503 * FAX (610)398-8413 * Email: service@lehighcountyauthority.org

PROFESSIONAL SERVICES AUTHORIZATION

Professional: GANNETT FLEMING, INC.
PO Box 67100
Harrisburg, PA , 17106-7100

Date: May 27, 2014
Requested By: John Parsons

Approvals
Department Head: _____
Chief Executive Officer: _____

Allentown Water Treatment Plant, Coagulant Conversion Project

Gannett Fleming Inc. will assist LCA in the testing, permitting, and implementation that is needed to convert the Water Plant's primary coagulant from aluminum sulfate (alum) to polyaluminum chloride (PACl).

Professional Services
1. Conduct coagulant screening to identify alternatives
2. Design and support a jar testing program to be run by LCA staff
3. Provide permitting services with PaDEP
4. Design and support full-scale plant testing
5. Complete a final project report

Please reference the cover Memo for additional information.

Professional Services:

Cost Estimate (not to be exceeded without further authorization): *\$114,085*

Time Table and Completion Deadline: As required to meet various critical deadlines as set forth in the proposal.



(For Authority Use Only)

Authorization Completion:

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

**PROFESSIONAL SERVICES AUTHORIZATION
INDEMNIFICATION
Allentown Water Treatment Plant
Coagulant Conversion**

(To be signed by Professional and returned to the Authority)

I am or represent the Professional indicated above, and as such I am authorized to:

- Accept the terms of the professional services authorization dated _____ attached; and

- Agree to indemnify and hold harmless LCA, the City of Allentown, their employees, agents, officials, representatives, attorneys, and assigns from any and all liability, arising out of all activities conducted by the Consultant in connection with this contract and/or the Consultant's performance hereof, including but not limited to payment of all fees for its/their attorneys and all incidental litigation expenses in the event LCA or any of its employees, agents, officials, representatives, attorneys, and assigns are sued upon a claim emanating from the Consultant's performance thereof. Professional shall not, however, be liable for any portion of a judgment nor associated litigation expenses, including attorney's fees, ultimately determined to be the result of the negligence of the Authority.

Name (signature):

Name (printed)

Title: _____

MEMORANDUM

Date: May 16, 2014

To: Authority Board
From: Frank Leist
Subject: Professional Services- Steel Tank Reservoir Maintenance Program
Allentown Division: Three steel tanks
Suburban Division: One-steel tank

MOTIONS / APPROVALS REQUESTED:

Professional Services Authorization- Utility Service Company, Inc.

Allentown Division	
28th St. Elevated Tank	
<i>Rehabilitation</i> ⁽¹⁾	\$ 363,524
Maintenance Program ⁽²⁾	\$ 163,270
28th St. Standpipe- Maintenance Program ⁽³⁾	\$ 234,260
Halstead Tank- Maintenance Program ⁽³⁾	\$ 330,530
<u>Suburban Division</u>	
Heidelberg Heights Tank- Maintenance Program ⁽³⁾	\$ 203,495
Total Authorization	\$ 1,295,079
Total LCA Cost	\$ 931,555

- (1) Year 1, Funded by the City of Allentown
- (2) 9-year LCA costs
- (3) 10-year LCA cost

PROJECT BASIS- PAST EXPERIENCE:

In December of 2005 the LCA Board approved a Professional Services Authorization with Utility Service Company, Inc. (USC) to place four of our steel water storage tanks ranging from 200,000 gallons to 5-million gallons in a comprehensive, sustainable Reservoir Tank Maintenance Program which for a fixed annual fee guarantees that each tank will be maintained to industry standards thereby assuring extended service life. USC assumes all risks, except those excluded in the Agreement associated with maintaining the tank.

The Authority's Capital and Operational staffs have been very pleased with the performance of USC, they are organized, professional and complete their work in a timely manner. Over the 8+ year period, in addition to annual inspections, preventative maintenance on all four tanks, both the interior and exterior coatings have been done. The most recent in 2013 was the five-million gallon tank in the Central Lehigh Division.

The USC contract includes but is not limited; annual tank inspections for safety, sanitation, structure, security and coatings. Scheduled periodic interior inspections executed by remotely operated vehicles (ROV) while the tank is full and physically when the tank is drained. Detailed inspection and maintenance reports covering safety, sanitation, structure, security and coatings. Engineering and permitting services as needed. Interior and exterior tank cleaning including chemical disinfection when required; all future interior and exterior coatings; non foundation structural repairs ; preventive maintenance, and standby emergency services. In summary, The Contracts automatically renew on an annual basis. LCA has the ability to terminate the contract providing written notification is provided to USC 90-days prior to the renewal date.

USC is the largest tank service firm in the United States and developed this unique full service Reservoir Tank Maintenance Program in 1985 to providing tank owners with comprehensive sustainable solutions to manage steel storage tank assets. Currently USC has over 5,000 tanks in the program. In 2008 USC was by Acquired by Suez Environment the parent company of United Water.

THIS PROJECT OVERVIEW & FINANCIAL

Given our past experience with USC Steel Tank Maintenance Program we recommend adding the following tanks the program.

To simplify the approval process this memo addresses three separate projects each with a separate cost center. Two projects are in the Allentown Division and one in the Suburban Division

City Division:

1. Capital Plan Project CA-W-12- 28th Street Elevated Steel Tank Rehabilitation: A 2012 City inspection of this tank recommended numerous interior and exterior metal repairs /additions and a full blast with both interior and exterior painting. This work was to have been completed by the City prior to Lease closing however it was not and therefore is defined as un-completed work that will be funded by the City and executed by LCA.

The USC charges of \$363,524 for the rehabilitation work is reflected as the year -1 payment in the Tank Maintenance Contract for this facility. The remaining payments for this tank are part of the Tank Maintenance Program below.

2. Capital Plan Project CA-W-6-Steel Tank Reservoir Rehabilitation/ Maintenance Program: Includes the 28th Street Elevated, 28th Street Standpipe and Halstead Elevated Steel Tanks. Section 6.17.3 of the Operating Standards of the Lease Agreement requires LCA to establish a storage tank maintenance program that includes periodic inspections, cleaning and refurbishing of facilities in accordance with various AWWA standards. This work will be funded by LCA. The USC charges for these tanks for a period noted is as follows:

Tank	Capacity (gal)	Period (Yrs.)	LCA Total Cost
28 th St Elevated ⁽¹⁾	150,000	2-10	\$ 163,270
28 th St. Standpipe	125,000	1-10	\$ 234,260
Halstead Elevated	150,000	1-10	\$ 330,530

(1) The \$363,524 cost for the Year-1 rehabilitation is City funded and not shown on this table

Suburban Division

1. Capital Plan Project W-33 - Steel Tank Reservoir Rehabilitation/Maintenance Program - Heidelberg Heights (HH) Division Tank, 250,000 gallons: In June of 2002 LCA acquired the HH water system and soon afterward, utilizing traditional design/bid methodology fully rehabilitated the tank. The work included both interior /exterior blast and coatings; and numerous structural repairs and piping repairs. HH tank is now due for rehabilitation and will be the last of the five suburban welded steel tanks to be put in the program. The total USC charges for the first 10-years for this tank are \$203,495

COMPARATIVE COST ANALYSIS- INTERIOR /EXTERIOR COATINGS- SIMILAR TANKS

We asked our water consultant the ARRO Group to provide us some comparative construction contract costs for one recoating of both the interior and exterior surfaces of similar size tanks, the average cost was ~\$1.25 per gallon. This cost is does not include engineering design, inspection, project management and staff time which would typically add 30% -35% to the cost. It should also be noted that with the traditional method of design/bid the owner assumes all the risk for coating failure after the 18-month contract correction period. The analysis of the USC Steel Tank Maintenance Program costs when including the three tanks that will be funded by LCA indicated that a single interior /exterior recoating with all associated costs, including engineering design and inspection and with no risk to the owner for failed coatings is ~\$ 0.90 per/gallon.



Lehigh County Authority

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(610)398-2503 * FAX (610)398-8413 * Email: service@lehighcountyauthority.org

PROFESSIONAL SERVICES AUTHORIZATION

Professional: Utility Service Company, Inc.
1230 Peachtree Street
NE, Suite 1100
Atlanta, GA 30309

Date: May 19, 2014

Requested By: _____
FJL

Approvals
Department Head: _____
Chief Executive Officer: _____

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

Utility Services Company, Inc. (USC) will perform the following work:

City Division:

1. 28th Street Elevated Steel Tank Rehabilitation: This work was to have been completed by the City prior to Lease closing however it was not and therefore is defined as un-completed work that will be funded by the City and executed by LCA.
2. On-going Steel Tank Reservoir Rehabilitation/ Maintenance Program: Includes the 28th Street Elevated, 28th Street Standpipe and Halstead Elevated Steel Tanks. The Operating Standards of the Lease Agreement requires LCA to establish a storage tank maintenance program. Providing annual payments are made USC will be responsible for the on-going rehabilitation / maintenance of the aforementioned tanks. This work will be funded by LCA.

Suburban Division

3. On-going Steel Tank Reservoir Rehabilitation/ Maintenance Program: Add the Heidelberg Division steel tank to the program. This tank will be the last of the five suburban welded steel tanks to be put in the program. Providing annual payments are made USC will be responsible for the on-going rehabilitation / maintenance of the aforementioned tanks. This work will be funded by LCA.

Reference Memo for Additional Information

Cost Estimate (not to be exceeded without further authorization): \$ 1,295,079
LCA Cost: \$ 931,555

Time Table and Completion Deadline: As per agreed upon schedule.



(For Authority Use Only)

Authorization Completion:

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

CAPITAL PROJECT AUTHORIZATION

PROJECT NO.:	AD-S-13-1	BUDGET FUND:	Allentown Div\Wastewater\Capital
PROJECT TITLE:	Allentown Wastewater Treatment Plant Motor Control Center Replacements- Design Phase	PROJECT TYPE:	<input checked="" type="checkbox"/> Construction <input type="checkbox"/> Engineering Study <input type="checkbox"/> Equipment Purchase <input checked="" type="checkbox"/> Amendment No. 1
THIS AUTHORIZATION:	\$ 32,500		
TO DATE (W/ABOVE)	\$227,863		

DESCRIPTION AND BENEFITS:

The Project includes the replacement and relocation of five motor control centers (MCCs) which have reached the end of their useful life and are all highly corroded due to the corrosive nature of the local environment. LCA desires to relocate the five (5) existing MCCs outside to a Power Zone House, anticipated to be a pre-engineered structure that is identical in nature to the one used to replace MCCs 1 and 1A. The only exception to the existing MCC is that the proposed unit will be stainless steel due the locally corrosive atmosphere. The proposed MCC may not be identical in size to the existing MCC based on the design.

This Amendment addresses two design issues:

CDM Smith Inc. based their design proposal on a Preliminary Design report prepared by CMX, Inc. for the City of Allentown. The report called for the reuse of existing conduits from the existing MCCs to the individual loads. Subsequent investigations by CDM during the design process has found that the CMX report was in error and vast majority of these conduits are not in good condition, and many are not reusable at all. CDM will provide additional design services to include removal and replacement of existing conduits for \$12,000 (*negotiated down from \$40,000*). The CMX report also indicated that the roof was capable of handling the loads of the proposed stainless steel MCC housing unit, but further structural analysis of the roof by CDM has indicated that small-scale structural reinforcements of the concrete cross-members are required, and their fee to design these changes is \$16,500.

Authorization Status:

Authorizations			
Design Phase	Previous	This	Total
Staff	\$ 26,000	\$ 4,000	\$ 30,000
Engineering Consultant	\$ 144,363	\$ 28,500	\$ 172,863
Miscellaneous	\$ 5,000	\$ -	\$ 5,000
Contingencies	\$ 20,000	\$ -	\$ 20,000
Totals	\$ 195,363	\$ 32,500	\$ 227,863

Future Authorizations	
Construction Phase	\$ 2,326,637

Total Estimated Project	\$ 2,554,500
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REVIEW AND APPROVALS:

Project Manager	Date	Chief Executive Officer	Date
Chief Capital Works Officer	Date	Chairman	Date



Lehigh County Authority

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(610)398-2503 * FAX (610)398-8413 * Email: service@lehighcountyauthority.org

PROFESSIONAL SERVICES AUTHORIZATION

Professional: CDM SMITH INC.
Two Penn Plaza Center
1500 JFK Boulevard, Suite 624
Philadelphia, PA 19102

Date: May 8, 2014
Requested By: John Parsons
Approvals
Department Head: _____
Chief Executive Officer: _____

Allentown Wastewater Treatment Plant, Motor Control Center Replacements- Design Phase =

AMENDMENT No. 1

CDM Smith Inc. based their design proposal on a Preliminary Design report prepared by CMX, Inc. for the City of Allentown. The report called for the reuse of existing conduits from the existing MCCs to the individual loads. Subsequent investigations by CDM during the design process has found that the CMX report was in error and vast majority of these conduits are not in good condition, and many are not reusable at all. CDM will provide additional design services to include removal and replacement of existing conduits for \$12,000 (negotiated down from \$40,000). The CMX report also indicated that the roof was capable of handling the loads of the proposed stainless steel MCC housing unit, but further structural analysis of the roof by CDM has indicated that small-scale structural reinforcements of the concrete cross-members are required, and their fee to design these changes is \$16,500.

Professional Services – Amendment No.1
1. Design conduit replacements from new MCCs to individual loads
2. Design reinforcements needed for upper roof

Design Phase:

Previous Authorization: \$144,363
Amendment No. 1 28,500

Cost Estimate (not to be exceeded without further authorization): \$172,863

Time Table and Completion Deadline: As required to meet various critical deadlines as set forth in the proposal.

(For Authority Use Only)

Authorization Completion:

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

**PROFESSIONAL SERVICES AUTHORIZATION
INDEMNIFICATION
Allentown Wastewater Treatment Plant
Motor Control Center Replacements**

(To be signed by Professional and returned to the Authority)

I am or represent the Professional indicated above, and as such I am authorized to:

- Accept the terms of the professional services authorization dated May 8, 2014 attached; and

- Agree to indemnify and hold harmless the Authority, its employees, agents, officials, successors and assigns (hereinafter all jointly referred to as "Authority"), from any and all loss and liability for claims, demands, suits or causes of action at law or in equity for damages and injuries (including death of every kind and nature) to persons (including employees of the Professional) and property arising out of error, omission or negligent act of Professional, or any person under contract to it, in rendering professional services under this authorization. The indemnification shall include, but not be limited to, payment of all attorney fees and all incidental litigation expenses of the Authority, whether or not the Authority is held liable. Professional shall not, however, be liable for any portion of a judgment nor associated litigation expenses, including attorney's fees, ultimately determined to be the result of the negligence of the Authority.

Name (signature):

Name (printed)

Title: _____



Lehigh County Authority

1053 Spruce Street * P.O. Box 3348 * Allentown, PA 18106-0348
(610)398-2503 * FAX (610)398-8413 * Email: service@lehighcountyauthority.org

MEMORANDUM

Date: April 23, 2014

To: Board of Directors & Management Staff
From: Pat Mandes
Re: WLI Testing and Sealing Project

Approvals Requested

Approvals Requested	Brief Description	Amount
Professional Services Authorization (<i>1</i>)	Consulting Services Arcadis U.S., Inc.	\$103,000

Background:

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.

As part of the SCARP Program, a Physical Condition Assessment (PCA) of the Western Lehigh Interceptor System (WLI) has been ongoing. The PCA Program consists of in-pipe CCTV inspection of the pipe utilizing Pipeline Assessment Certification Program (PACP) ratings or inspection of manholes using Manhole Assessment Certification Program (MACP) and a review of the inspection records by Arcadis. The findings for the PCA work completed to date were presented in 2013 along with the recommended follow-up actions. The rehabilitation work described below is being recommended as the follow-up to the PCA completed in 2011 and 2012. Currently, all manholes in the WLI System are being inspected as part of the PCA Program. Remediation recommendations for the manhole inspections are expected to be presented later in 2014.

The findings of the 2011 and 2012 PCA indicate that the WLI pipe is structurally sound but the joints leak during periods when the ground water levels are high. This has been further confirmed through a demonstration of the Electro Scan technology. Leaks in sewer pipes are located by measuring the electricity flowing from a probe. As the probe is pulled through the pipe, electricity is used to scan the pipe indicating all defects – hence the term “Electro Scan”. Since electricity flows through the slightest crack and around corners, Electro Scan finds ALL defective pipe joints and sewer tap connections that CCTV cannot find. In addition to identifying the leak locations, the Electro Scan also indicates the size of the leak. The bigger the electrical flow, the bigger the defect and the bigger the leak potential. This technology is still very expensive but we were able to see the technology in our system as part of a demonstration. The results of the scan indicated that nearly every joint leaked, some greater than others.

Project Overview:

This is an amendment to the current Arcadis authorization for the WLI Infiltration and Inflow Project. The work covered by this amendment includes rehabilitation work including testing and chemical grout sealing of 44,256 LF of pipe, CCTV with T & S of 24,139' of pipe adjacent to 20 WLI manholes, cleaning sections of pipe that have been found to have heavy debris, and five point repairs. This work will be performed in the following sections of the WLI system: Albutis Macungie Trunkline, Brenigsville Trunkline, Upper Milford Trunkline, and the pipe upstream of Schantz Rd. This will actually be the first major project where actual rehabilitation and wet weather flows will be reduced in the system and will be beneficial to report this project to the EPA when requesting an extension of the Administrative Order.

The recommendation to rehabilitate the leaking joints by a Testing and Chemical Grout Sealing (T & S) is based on the results of the CCTV work and further confirmation of the leaking joints by the Electro Scan. T & S has been applied as a rehabilitation technology since 1955 and been used widespread since the 1970's. Since that time, the chemical grouts used have been significantly improved. The T & S technique will rehabilitate the sewers by stabilizing their structural condition and will eliminate rainfall derived infiltration and inflow and groundwater infiltration into the pipe system. The improvement in the structural condition of the pipe will promote long-term structural viability and sustainability of the system by stabilizing trench bedding.

This is a very cost effective defense against infiltration of groundwater compared to other rehabilitation technologies. Obviously, a longer term solution is to replace or line leaking pipe but the costs are considerably higher than T & S. Replacement of the pipe is certainly not warranted in this case because the pipe is in structurally good condition. The preliminary construction estimate for the T & S and associated work is \$835,000.

T & S consists of air testing each joint in a pipeline. If the air test fails (cannot reach the required test pressure), the joint will be sealed by injection of chemical grout using pumps, hoses, and sealing packers. The chemical grout forms a waterproof collar around leaking pipes and manholes and is also forced into the surrounding soil/stone bedding where the grout will gel into the soil into a waterproof mass which cannot be extruded back into the sewer system. The sealed joints are left flush with the existing pipe surface. Not only does the grout prevent leaking, it provides pipe stability.

Engineering Consulting Services:

A Professional Services Authorization is attached for Arcadis in the amount of \$103,000 for the development and bidding of documents and providing bidding support services related to the T & S of various branches of the WLI system to control leakage and to extend the service life of the pipe by stabilizing the pipe bedding.

The services that will be provided includes design, permitting support as needed, preparation of pre-qualification specifications, access acquisition support as needed, bid support, and preparation of agreements. The Arcadis proposal dated 4/25/2014 is attached for more details. The work is expected to be completed in 3 months with the bids for the construction work being accepted in mid-October. The actual construction work is expected to begin in December.

Arcadis was selected as the LCA I & I Engineer in 2008 through a selection process of pre-qualified consulting firms. They have significant experience with the T & S technology including preparation of bid packages.



Lehigh County Authority

1053 Spruce Street * P.O. Box 3348 * Allentown, PA 18106-0348
(610)398-2503 * FAX (610)398-8413

PROFESSIONAL SERVICES AUTHORIZATION

AMENDMENT NUMBER 18

Professional:

Arcadis U.S., Inc.
Jim Shelton
640 Freedom Business Center
Suite 310
King of Prussia, PA 19106

Date: 4/22/14

Requested By: Pat Mandes

Approvals
Department Head: _____

General Manager: _____

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

This is an amendment to the current Arcadis authorization for the WLI Infiltration and Inflow Project: The work covered by this amendment includes the development of bidding documents and providing bidding support services related to 44,256 LF of Testing and Chemical Grouting, heavy interceptor cleaning, 24,139 LF' of SAPR sewer work and point repairs. The project areas include: Macungie-Alburtis Trunkline, Brenigsville Trunkline, Upper Milford Trunkline, and portions of the UMT WLI upstream of Schantz Rd.

Tasks include design, permitting support, access acquisition support, and bid support.

Design: prepare bid documents, drawings, technical & prequalification specifications, cost estimate, and meet with LCA team.

Permitting Support: provide support in communications with Townships and PennDot.

Access Acquisition Support: provide support to locate access and confirm access rights.

Bid Support: prepare and distribute bid advertisement, conduct a pre-bid meeting, issue addendums, review prequalification, prepare bid tabulations, evaluate bids, prepare agreements.

The total "Not to Exceed" cost is \$103,000. The scope of work is described in more detail in the proposal dated November 26, 2013.

Cost Estimate (not to be exceeded without further authorization): This amendment is not to exceed \$103,000 for Design Package and Bidding Support. With this amendment the total authorization for the I&I Program consulting will be \$1,529,000.

Time Table and Completion Deadline:

Present through December 2014.

(For Authority Use Only)

Authorization Completion:

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

Capital Project S-08-05, Signatory I & I Investigation/Remediation Program



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

ARCADIS U.S., Inc.
640 Freedom Business Center
Suite 310
King of Prussia
Pennsylvania 19106
Tel 610.768.5813
Fax 610.768.5817
www.arcadis-us.com

Subject:

Sewer Capacity and Rehabilitation Program (SCARP)
Revised Scope and Budget for Design Package Preparation and Bidding Support for
the Testing and Sealing of WLI and WLSP Sewers and Trunklines

Dear Ms. Mandes:

ARCADIS is pleased to provide Lehigh County Authority (LCA) with this scope and budget for the development of bidding documents and providing bidding support services related to testing and chemical grouting for leakage control of various aspects of the Western Lehigh Interceptor sewer system, specifically including the Alburdis-Macungie Trunkline, Brenigsville Trunkline, Upper Milford Trunkline, and portions of the WLI north of Schantz Road (collectively known as the AMB for the purposes of this scope). This proposal also offers additional scope and budget to include the test and seal work needed for the SAPR sewers (SCARP sewers owned by Macungie Borough, Alburdis Borough, Upper Macungie Township, and Lower Macungie Township) that are directly connected to the WLI and subject to the same benefits from the test and seal process as the adjacent WLI pipes.

Date:

April 25, 2014

Contact:

Jim Shelton

Phone:

484.688.0367

Email:

James.Shelton@arcadis-us.com

Our ref:

0247-511

OBJECTIVES

The primary goal of this work is to eliminate infiltration leakage into portions of the sewer system that are suspected of or are known to contribute significant leakage and to extend the service life of the pipes by stabilizing the pipe bedding around the sewers and laterals. For the SAPR pipes, a secondary goal is identifying where structural repairs may be additionally warranted.

SCOPE OF WORK

Task 1 – Design

ARCADIS will prepare bid ready documents for the cleaning and testing and grouting of sewer joints, laterals connected to the sewer (LCS), and laterals connected to manholes (LCM). Drawings will be prepared using existing GIS presentations

prepared during previous physical condition assessment work, developing these GIS figures to show the work and access to the various work sites. Access for all work sites will be reviewed using aerial photography and, where needed, field walks. For the purposes of this scope and budget, one day of field work has been allocated for each of the three areas.

ARCADIS will prepare a set of front-end and technical specifications complementary to the construction drawings. These specifications will detail work to be completed, materials of construction, performance requirements, and execution requirements. These will be organized in standard CSI three part specification format. Technical specifications will use ARCADIS's master technical specifications as a basis. Front end bidding and contracting documents will be prepared using LCA's EJCDC format documents, including integrated General/Supplemental Conditions formats.

Experience has shown that quality of construction varies widely between trenchless technology construction firms. ARCADIS will include the pre-qualification specification and process that we have successfully used for buried infrastructure projects for nearly a decade to ensure that only qualified firms bid the work; this will be similar to the approach successfully used for LCA's 2009 WLI Rehab project.

ARCADIS will prepare the Engineer's Opinion of Probable Construction Cost (EOPCC) based on the design drawings, specifications, and our experience bidding and building similar work. Final EOPCCs will be developed in a format to mirror the Bid Form developed for each construction project. Construction duration schedules will be provided based on the sequence of work developed as part of the technical specifications.

ARCADIS will provide draft plans and specifications and EOPCCs for LCA review at 90% completion and at completion of design. A single review meeting to reconcile comments will be held at LCA's offices.

The work areas total 13 miles of sewer. The below table lists the pertinent features of the three different work areas.

Area	Anticipated Construction Cost	Footage	Segments	LCS	LCM
AMB	\$430,000	44,256	192	29	29
SAPR	\$205,000	24,139	88	88	18
Total	\$835,000	68,395	280	117	47

Task 2 – Permitting Support

ARCADIS will provide permitting support to LCA to complete the required communications with PennDOT. Per discussions with Keystone Engineering, a formal highway occupancy permit application has not recently been required for this type of work, so for the purposes of this scope and budget, we have assumed nominal support will be necessary. Should PennDot requirements change necessitating the completion of a formal highway occupancy permit application, ARCADIS will provide a separate cost estimate for performing that service.

Task 3 – Access Acquisition Support

ARCADIS will provide support to LCA to confirm access rights to the various sites of the work. For the purposes of this scope and budget, we have assumed nominal support will be necessary.

Task 4 – Bid Support

ARCADIS will prepare the advertisement for bidders in accordance with LCA practices. Advertising costs will be paid by LCA. We will distribute Bid Documents to prospective bidders by paper; payments by prospective bidders for Bid Documents will be set and retained by ARCADIS. LCA and ARCADIS will maintain viewing rooms for bidders to review the documents. ARCADIS will issue email blasts to inform potential bidders of the work.

We will maintain a list of bidders, addresses, email, and contact information in Microsoft Excel format, respond to questions by prospective bidders and equipment suppliers concerning information in the Contract Documents, schedule and conduct pre-bid meeting to cover the project, prepare and distribute minutes to attendees and other appropriate parties from the pre-bid meeting, prepare and issue addenda as appropriate to interpret, clarify, or expand upon the Contract Documents, and attend the bid opening.

ARCADIS will review all prequalification submittals and determine which bidders are qualified to submit bids.

Once bids are received, ARCADIS will prepare bid tabulation sheets in Microsoft Excel format, evaluate the bids received for compliance with the bidding requirements and bid balance, review bid bonds, insurance, and other information provided for general conformance with Contract Documents, and provide recommendations with respect to acceptance of bids and award of construction contracts.

Once LCA has determined the successful bidder, ARCADIS will prepare necessary agreements and performance and payment bonds in an editable electronic version for execution by LCA and the successful bidder. ARCADIS will coordinate receipt of bonds, insurance certificates, signed Agreements, and other documents both in paper and scanned electronic version from successful bidders. We have assumed LCA will furnish the editable templates for the required form of the bonds and Agreement.

DELIVERABLES AND WORKSHOP

1. 90% design package and construction cost estimate
2. 90% design review workshop
3. Bidding documents
4. Advertisement for bidders
5. Prequalification determination letters
6. Bid tabulation and recommendation
7. Draft award and agreement documents

BUDGET ESTIMATE

We offer a budget that is based on a base scope built around the AMB work, with additional line costs for the SAPR work, as shown in the below table.

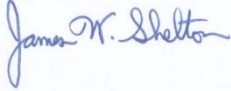
Area	AMB (8 miles)	Adder for SAPR (5 miles)	Total for all 16 miles
Task 1 – Design	\$63,000	\$19,000	\$82,000
Task 2 – Permit Support	\$5,000		\$5,000
Task 3 – Access Support	\$5,000		\$5,000
Task 4 – Bidding Support	\$11,000		\$11,000
Total	\$84,000	\$19,000	\$103,000

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.

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 484-688-0367.

Sincerely,

ARCADIS U.S., Inc.



James W. Shelton, PE
Vice President

C: Tony Dill, ARCADIS
Tanya McCoy-Caretti, ARCADIS



MEMORANDUM

Date: May 20, 2014

To: Authority Board

From: Phil DePoe, Frank Leist

Subject: Lehigh County Authority: Allentown Division – SSES Work
(Sewer and Manhole Inspection) - Construction Phase

MOTIONS /APPROVALS REQUESTED:

No.	Item	Amount
1	<u>Capital Project Authorization – Amendment No. 1</u> Construction Phase	\$844,337
2 **	<u>Professional Services Amendment No. 1- Construction Phase – Whitman,</u> <i>Requardt and Associates, LLP (WR&A)</i>	\$54,930
3 **	<u>Contract Awards: Construction Phase</u> <ul style="list-style-type: none"> • General Construction: <i>Video Pipe Services, Inc.</i> 	\$654,407

(**) *Included in the Capital Project Authorization*

PROJECT OVERVIEW:

This project involves field investigatory work to identify sources of inflow and infiltration (I/I) in the City’s sanitary sewer system located in the Primary and Secondary basins as identified in a WR&A Report dated January 2013. The work will include closed circuit television (CCTV) inspection of approximately 102,000 linear feet of sanitary sewer mains ranging in size from 8 to 36 inches in diameter. The work will include the inspection of approximately 550 manholes and sewer piping point repairs, joint repairs, smoke testing, and heavy cleaning. Upon completion of the SSES work, WR&A will summarize the findings and conclusions of the review in a technical memorandum.

FINANCIAL:

This project is identified as Administrative Order / Un-Completed Work and will be funded by the City.

PROJECT STATUS:

In accordance with the Lease Agreement, the City is responsible for determining what Administrative Order (AO) work is to take place, and LCA is responsible to execute said work. The City was interested in starting with the SSES work; however, the costs of continuing the professional services contract with WR&A would necessitate a change order in excess of what City policy would allow. Since draft technical specifications were already developed by WR&A, to expedite the project the City and LCA agreed that LCA could negotiate a professional services contract with WR&A. The design phase of this project was authorized by LCA administratively on February 10, 2014.

The project was advertised for bid on March 19, 2014. A mandatory pre-bid meeting was held on April 10, 2014. Bids were received on April 28, 2014.

THIS APPROVAL: CONSTRUCTION PHASE

BIDDING SUMMARY: CONSTRUCTION CONTRACT

This project requires a General Construction Contract. The bid documents were e-mailed electronically to eight (8) contractors. Two contractors attended the mandatory pre-bid meeting. The bidding results, which reflect the Base Bid (along with Contingent Bid Items), are as follows:

General Construction	
Bidder	Amount
<i>Video Pipe Services, Inc.</i>	<i>\$654,406.60</i>
Utility Services Group, Inc.	\$783,228.00

Reference checks for the low bidder, Video Pipe Services Inc., have identified no issues. In fact, Video Pipe Services, Inc. has completed pipe cleaning, pipe inspection, joint grouting and trenchless spot repairs for Allentown and surrounding areas for over 15-years. Therefore, we recommend awarding the General Construction Contract to Video Pipe Services, Inc. subject to the receipt of the necessary Performance Bonds, Insurance and other required documentation.

PROFESSIONAL SERVICES:

WR&A will provide project management and inspection of the SSES work for the construction phase of the project. The work will generally include:

1. One inspector for a maximum of 3-month, 12-week period of CCTV inspection.
2. Continual coordination with the SSES contractor- including answering requests for information, mapping and review of the information, determinations of necessity of point repairs and other contingent contractor services.
3. Necessary coordination with LCA on the status of SSES efforts.

WR&A will review the results of the SSES studies. The work will generally include:

1. Review of the CCTV inspections, manhole inspections, and smoke testing results as performed by others.
2. Point repairs will be reviewed as they relate to RDII removal and the modeled preferred alternative – based upon the results of the SSES investigations, a refined RDII removal value will be developed.

3. SSES study review will be summarized in a technical memorandum of findings and conclusions of the review, and will include associated calculations and figures.

SCHEDULE

Assuming approval of the Construction Phase at the May 27, 2014 Board meeting, Notice to Proceed will be issued mid to late June with an estimated completion date of mid to late October. WR&A's technical memorandum is expected four (4) weeks after the SSES work has concluded.

FUTURE AUTHORIZATIONS

None Anticipated.

CAPITAL PROJECT AUTHORIZATION

PROJECT NO.:	CA-S-9	BUDGET FUND:	Allentown Division – Wastewater Fund
PROJECT TITLE:	Lehigh County Authority: Allentown Division SSES Work (Sewer and Manhole Inspection) – Construction Phase	PROJECT TYPE:	
THIS AUTHORIZATION TO DATE (W/ ABOVE)	<u>\$844,337</u> <u>\$865,667</u>	<input checked="" type="checkbox"/> Construction <input type="checkbox"/> Engineering Study <input type="checkbox"/> Equipment Purchase <input checked="" type="checkbox"/> Amendment No. 1	

DESCRIPTION AND BENEFITS:

Field investigatory work to identify sources of infiltration and inflow in the City sanitary sewer system located in the Primary and Secondary basins as identified in the WR&A report. The work will include CCTV if ~102,000 linear feet of sanitary sewer mains, manhole inspections, smoke testing, joint testing and sealing, point repairs and heavy cleaning.

The design phase of this project was previously authorized administratively. This project is identified as Administrative Order / Un-Completed Work and will be funded by the City. Upon completion of the SSES work, WR&A will summarize the findings and conclusions of the review in a technical memorandum.

THIS AMENDMENT –Construction Phase

Includes staff time, professional services, general construction contract, miscellaneous cost, and contingencies for the construction of the aforementioned facilities

Please reference the cover Memo for additional information.

Authorization Status:

Previous Authorizations	
Design Phase	\$21,330
REQUESTED THIS AUTHORIZATION	
Construction Phase	
Staff	\$25,000
Professional Services	\$54,930
General Construction Contract	\$654,407
Miscellaneous	\$10,000
Contingency	\$100,000
Total This Authorization	\$844,337
Future Authorization	
Non Anticipated	
Total Estimated Project	\$865,667

REVIEW AND APPROVALS:

Project Manager	Date	Chief Executive Officer	Date
Chief Capital Works Officer	Date	Chairman	Date



Lehigh County Authority

1053 Spruce Street * P.O. Box 3348 * Allentown, PA 18106-0348
(610)398-2503 * FAX (610)398-8413 * Email: service@lehighcountyauthority.org

**PROFESSIONAL SERVICES AUTHORIZATION
Amendment No. 1**

Professional: Whitman, Requardt and Associates, LLP
801 South Caroline Street
Baltimore, MD 21231

Date: May 20, 2014

Requested By: Phil DePoe
Approvals
Department Head: _____
Chief Executive Officer: _____

Allentown Division – Wastewater Fund

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

Previous Authorizations- Design Phase: \$8,8330.00

This Authorization- Construction Phase: \$54,930.00

Whitman, Requardt and Associates, LLP (WR&A) will provide project management of the SSES work, which will include one inspector for a maximum 3-month/12-week period of CCTV inspection. WR&A will then review the results of the SSES studies, including a review of the CCTV inspections, manholes inspections, and smoke testing results as performed by others. The SSES study review will be summarized in a technical memorandum of findings and conclusions of the review, and will include associated calculations and figures.

For additional information please reference the cover Memo.

Cost Estimate (not to be exceeded without further authorization): \$63,260.00

Time Table and Completion Deadline: As per agreed upon schedule

(For Authority Use Only)

Authorization Completion:

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