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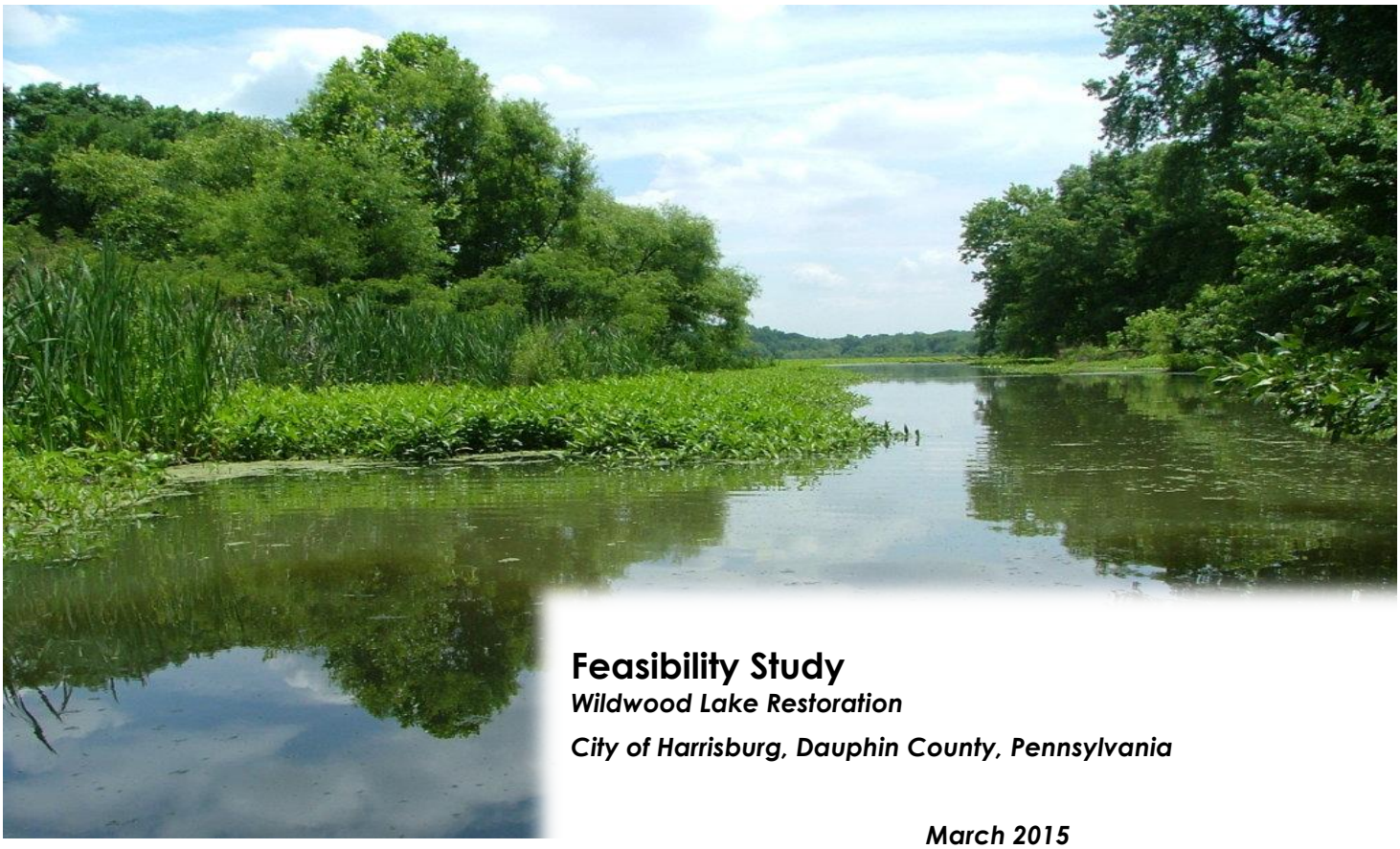
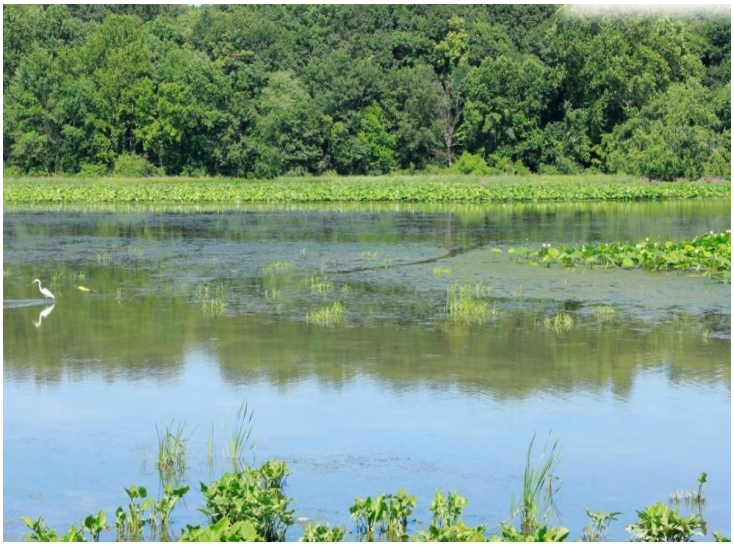


Feasibility Study

Wildwood Lake Restoration

City of Harrisburg, Dauphin County, Pennsylvania

March 2015



369 East Park Drive · Harrisburg, PA 17111 · 717.564.1121 [phone] · 717.564.1158 [fax]

Client: **Dauphin County Commissioners**

Mr. Jeff Haste, Chairman
Mr. Mike Pries, Vice Chairman
Mr. George P. Hartwick, III, Secretary

Dauphin County Parks and Recreation Department

Mr. Carl Dickson, Director
Mr. Chris Rebert, Wildwood Park Manager

HRG: **Mr. Matthew S. Bonanno, P.E., Project Manager**

R001222.0428, HRG Project Number

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Feasibility Study – Wildwood Lake Restoration

INTRODUCTION

Herbert, Rowland & Grubic, Inc. (HRG) was contracted on October 22, 2014 by the Dauphin County Commissioners to complete a Feasibility Study of Wildwood Lake. The work entailed completing due diligence and providing this narrative for the restoration of Wildwood Lake in terms of flood control impoundment capacity at Wildwood Park in the City of Harrisburg, Dauphin County, Pennsylvania.

BACKGROUND

During an August 28, 2014 meeting, Mr. Chris Rebert, Mr. Carl Dickson, and Mr. Matt Bonanno, P.E. discussed the challenges and recommendations contained within the '*Management Plan for Wildwood Lake'* dated April 2011, updated August 11, 2014 and subsequently updated on January 27, 2015. The primary focus of this Feasibility Study is to address the accumulation of sediment that has been deposited in Wildwood Lake over the last century due to upstream disturbance and development within the Paxton Creek Watershed.

The flood control impoundment capacity of Wildwood Lake to manage stormwater runoff has been significantly decreased with the sediment deposition. Per the Management Plan, a once average depth of water of four (4) feet in Wildwood Lake is now approximately six (6) inches.

This Study explores the feasibility of removing some of the accumulated sediment by means of dredging. The scope of this study included: (1) a file review; (2) field view; (3) determining outside agency permitting requirements; (4) performing outside agency reviews (PNHP & PHMC); (5) determining need for topographic and/or bathymetric survey; (6) obtaining a sediment soil core sample; (6) approximate hydrologic and hydraulic modeling; (7) cost opinion; (8) funding research; and (9) a meeting to discuss the findings of the Feasibility Study with the Friends of Wildwood.

HISTORY OF WILDWOOD PARK

Wildwood Park was originally known as Wetzel's Swamp. In 1901, the City of Harrisburg established Wildwood Lake as part of the City Beautiful movement. Wildwood's first paths were opened in 1907, a baseball field was created in 1908, and a boating concession was started in 1909. Other uses throughout the park included a zoo, riding stables and boating operations. In 1976, the Dauphin County Commissioners and Harrisburg City Council agreed to the Wildwood Park transfer agreement for a fee of $1, which gave ownership of Wildwood Park to Dauphin County. The Friends of Wildwood group was organized in 1987 to promote the enhancement of the park. In 1999, the Olewine Nature Center was opened as an educational facility. In 2010, modifications to the Morning Glory outlet were made. Today, Wildwood Park attracts 85,000 visitors per year.

OBJECTIVES OF POTENTIALLY DREDGING WILDWOOD LAKE

- Improve Wildwood Lake's flood control impoundment capacity by systemically dredging at coordinated locations throughout Wildwood Lake
- Provide downstream flood protection for the City of Harrisburg
- Reduce flood damage (in downstream watershed and on-site)
- Improve water quality to Paxton Creek, the Susquehanna River, and the Chesapeake Bay by having Wildwood Lake act as a stormwater best management practice, trapping sediments and pollutants
- Create diverse aquatic ecosystems and habitats for both plants and animals to thrive

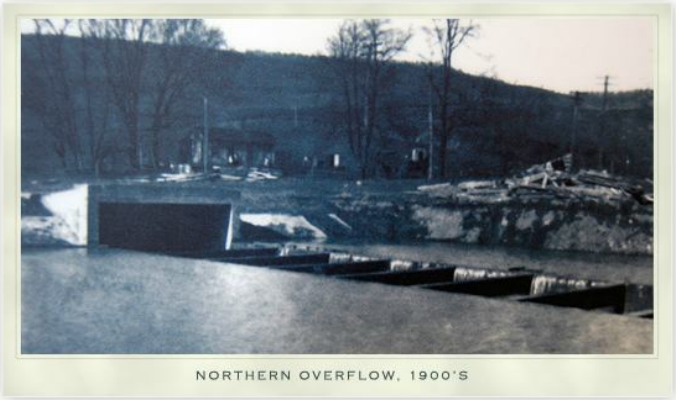
❖ PERFORM FILE REVIEW

HRG made the following contacts in an attempt to obtain original design or as-built plans for the lake and dam:

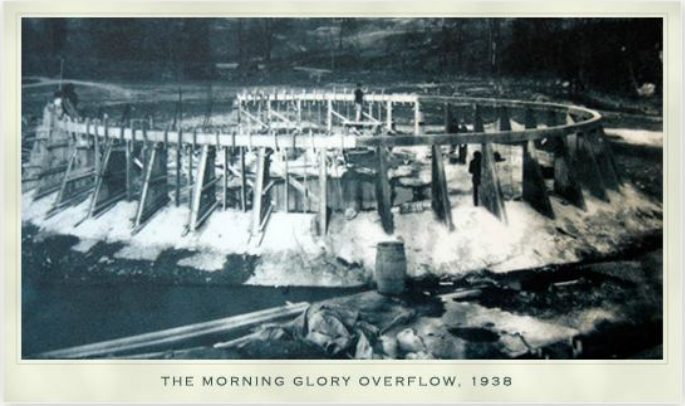
- December 17, 2014 – Pennsylvania Department of Environmental Protection
- December 17, 2014 – Historical Society of Dauphin County, Ken Frew
  - MG 399 – 1978 Flood Protection Project
  - MG 063 – Maintenance from 1901-1992
  - Warren Manning – Landscape designer who laid out park system in 1901
- December 19, 2014 – Pennsylvania State Archives, Online State Archive Search
  - MG 85 – J. Horace McFarland Papers 1859-1866, 1898-1951
- December 19, 2014 – Benjamin Olewine Nature Center at Wildwood Lake Sanctuary
- January 20, 2015 – City of Harrisburg, City Engineer Office

Photos:

DAM BREAST CONSTRUCTION AT WILDWOOD, 1900'S



NORTHERN OVERFLOW, 1900'S



THE MORNING GLORY OVERFLOW, 1938

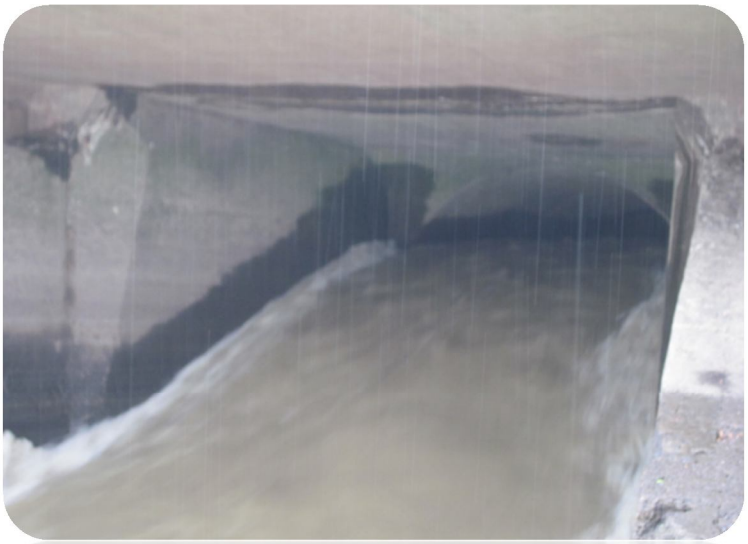
Historical Aerial Photos:

1937 ***1958*** ***1970***

Wildwood Lake – 1993

August 8, 2011 – Only rain event known to overtop Wildwood Way (6.92 inches of rain)

Susquehanna Spillway – Intake and Outlet



February 1909 Map - Figures give depth in feet at Low Water Level

❖ PERFORM FIELD VIEW

HRG performed a field view of Wildwood Lake on January 20, 2015 and February 2, 2015 to view the salient features and take photos of the outlet structures.

❖ DETERMINE OUTSIDE AGENCY PERMITTING REQUIREMENTS (PADEP, ACOE & DCCD)

HRG requested a meeting with the Pennsylvania Department of Environmental Protection (PADEP), Army Corps of Engineers (ACOE), and Dauphin County Conservation District (DCCD) to review the potential project, discuss environmental impacts, and outline the required regulatory approvals needed to be obtained prior to construction.

A meeting was held on February 2, 2015 at the Benjamin Olewine III Nature Center at Wildwood Park. See Appendix B for Meeting Minutes.

Wildwood Lake is considered a Jurisdictional Dam (Dam ID 22-008) and is classified as a C-4 dam. As such and pursuant to Section 105.131.(c) of PADEP's Rules and Regulations, removal of accumulated sediments from the reservoir of a jurisdictional dam is considered maintenance and does not require a permit or Environmental Assessment under the Dam Safety and Encroachments Act. However, if modifications to the Morning Glory outlet or Susquehanna Spillway are proposed, a Letter of Amendment would be required by PADEP.

Because the reservoir impounded by a dam is considered Waters of the United States, Federal authorization may be required from the ACOE under the provision of Section 404 of the Clean Water Act, as amended, and/or Section 10 of the Rivers and Harbors Act of 1899 as follows:

- Not Regulated
  - If all work was completed, in the dry, from the lake banks shore (infeasible)
  - If the work area is dewatered, and tracked equipment such as a track hoe is used to scoop up the sediment and the sediment is placed into a dump truck and the material is immediately hauled away. The only discharge would be considered incidental fallback (i.e. redeposit of small volumes of dredged material that is incidental to excavation activities in Waters of the United States). ACOE review of this information is estimated at 60 days.

- Regulated
    - If the work area is dewatered, and tracked equipment such as a bulldozer is used to push the sediment, or stockpile the sediment. This type of activity is considered a discharge of dredged material and fill above the ordinary high water mark, and therefore an Individual Permit would be required by ACOE. This permit takes approximately 6 months to obtain from ACOE and needs to go through tribal review (30-45 days) and a public notice period (30 days).

A submittal is required to both PADEP and ACOE for their determination prior to the start of any work. The submittal needs to include the detailed methods and type of equipment proposed to be used to dewater, dredged, and transport the material. Even if the proposed dredging were to take place in steps, the submittal would need to include all steps and it would be reviewed by the regulatory agencies as one single project.

A plan for controlling erosion and sediment must be developed and implemented during sediment removal. This plan may require a permit or prior approval. Contact the DCCD concerning erosion and sedimentation control requirements. It should be noted that the dredged area does not count towards the limit of disturbance in regards to NPDES calculations. In addition, DCCD would need to approve the final off-site dump site.

If the completion of the proposed work necessitates the partial or complete draining of the pool behind the dam, the Pennsylvania Fish and Boat Commission may require a Drawdown Permit.

❖ PERFORM PRELIMINARY OUTSIDE AGENCY REVIEWS (PNHP & PHMC)

On December 11, 2014, HRG submitted a Pennsylvania Natural Heritage Program (PNHP) (formerly PNDI) review request to determine if species of concern exist within the potential project area [Project Search ID: 20141211477629].

The search resulted in three (3) Potential Impacts as follows:

- ✓ PA Game Commission
  - o (Great Egret)
  - o PA Game Commission Response Letter received on February 23, 2015
  - o It should be noted that foraging of the Great Egret occurs on Wildwood Lake, however nesting occurs on the islands of the nearby Susquehanna River.

Scientific Name	Common Name	PA Status
Casmerodius albus	Great Egret	ENDANGERED

The following seasonal restriction should be performed for above listed species:

- Installation of cofferdams and dewatering should occur outside of the great egret nesting season, April 1 to July 31 to protect essential feeding areas. To the greatest extent possible, all other work associated with dredging should occur outside of the great egret nesting season.

- ✓ PA Department of Conservation and Natural Resources
  - o DCNR Response Letter received on February 17, 2015
  - o Prior to dredging operations, DCNR requests a qualified Botanist should be retained to complete a plant survey in the spring/summertime to locate the following plants. If the plants are located within an area to be disturbed, they should be transplanted prior to construction activities occurring and be monitored to ensure survivability.

Scientific Name	Common Name	PA Current Status	PA Proposed Status
Cuscuta polygonorum	Smartweed Dodder	Undetermined	Threatened
Ellisia nyctelea	Ellisia	Threatened	Threatened
Magnolia tripetala	Umbrella Magnolia	Threatened	Rare

Conservation Measure—Voluntary Action

The following species is vulnerable in PA/not listed in PA, but is under review due to suspected rarity. Therefore, it is not a target for a survey. However, because of its ecological significance, please note if this species is identified during the required survey.

- ***Eupatorium leucolepis* (White-bracted Thoroughwort):** locally documented rare in a moist gravel pit; flowers in August

- ✓ PA Fish and Boat Commission
  - o (Yellow Lampmussel)
  - o Clearance Letter received on January 21, 2015 – An element occurrence of a rare, candidate, threatened, or endangered species is known in the vicinity of the project, however given the nature of the project, no adverse impacts are expected to the species of special concern.

On December 31, 2014, HRG submitted a project review request to Pennsylvania Historical & Museum Commission (PHMC), to determine if historically or archaeologically significant features are suspected in the potential project area [File No. ER 2015-0557-043-A].

On January 8, 2015, a letter from PHMC was received indicating the following:

- ✓ Archaeology
  - o "There is a high probability that archaeological resources are located in this project area. In our opinion, the activity described in your proposal should have no effect on such resources. Should the scope of the project be amended to include additional ground disturbing activity this office should be contacted immediately and a Phase I Archaeological Survey may be necessary to locate all potentially significant archaeological resources".

- ✓ Historic Structures
  - o "The properties listed below, listed in or eligible for the National Register of Historic Places, are located near the project area. In our opinion, the activity described in your proposal will have no effect on such resources. Should the scope and/or nature of the project activities change, the Bureau for Historic Preservation should be contacted immediately".

Harrisburg City Parks 7 Parkway Plan

❖ DETERMINE THE NEED FOR A TOPOGRAPHIC AND/OR BATHYMETRIC SURVEY

It is HRG's opinion that it would be very beneficial to the overall project to obtain topographic information relevant to permitting, construction, and access to Wildwood Lake.

Due to the shallow water depths contained within Wildwood Lake, HRG evaluated the need for a bathymetric survey and determined that a hydrographic survey would be more appropriate in this situation.

It is recommended that a topographic and hydrographic survey be performed to develop a composite topographic existing conditions map for the area of Wildwood Lake as follows:

- ✓ Dauphin County could utilize Capital Region Water (CRW) base mapping layers through the execution of the CRW Agreement of Release.
- ✓ Obtain photogrammetric mapping services.
- ✓ Perform Aerial Ground Control to facilitate the photogrammetric services.
- ✓ The survey would horizontally reference the North American Datum of 1983 (NAD83) Pennsylvania State Plane Coordinate System, South Zone and vertically reference the North American Vertical Datum of 1988 (NAVD88).
- ✓ Perform topographic existing conditions, supplemental survey employing conventional and hydrographic survey methods to complement the photogrammetric services. Sub-aqueous topographic existing conditions would illustrate top of existing sediment surface.
- ✓ Compile existing conditions base mapping at 1 foot contour intervals.

Although a detailed dredging plan was not included within the purview of this Feasibility Study, the following recommended steps are provided:

Step #1 – Restore the historic Paxton Creek channel and create a series of passive debris and sediment floodplain storage areas. This step will accomplish:

- Removal of sediment and debris
- Provide a flow-path north to the Susquehanna Spillway
- Reduce the frequency of boardwalk flooding
- Relocates the mouth of Paxton Creek away from toe of dam (Wildwood Way)
- Creates multiple storage areas for large volume of sediment and debris

Estimated Dredged Sediment
18,000 – cubic yards
- Assumes 4' of Dredging -

Step #2 – Dredge the area between the Middle Lot and the Susquehanna Spillway. This step will accomplish:

- Widen the remaining open water channel
- Increase the stormwater flood storage capacity
- Provide deep pools for aquatic habitat

Estimated Dredged Sediment
97,000 – cubic yards
- Assumes 8' of Dredging -

Step #3 – Dredge the main open water area. This step will accomplish:

- Increase the stormwater flood storage capacity
- Provide deep pools for aquatic habitat

Estimated Dredged Sediment
185,000 – cubic yards
- Assumes 4' of Dredging -

Step #4 – Maintain the toe of dam area. This step will accomplish:

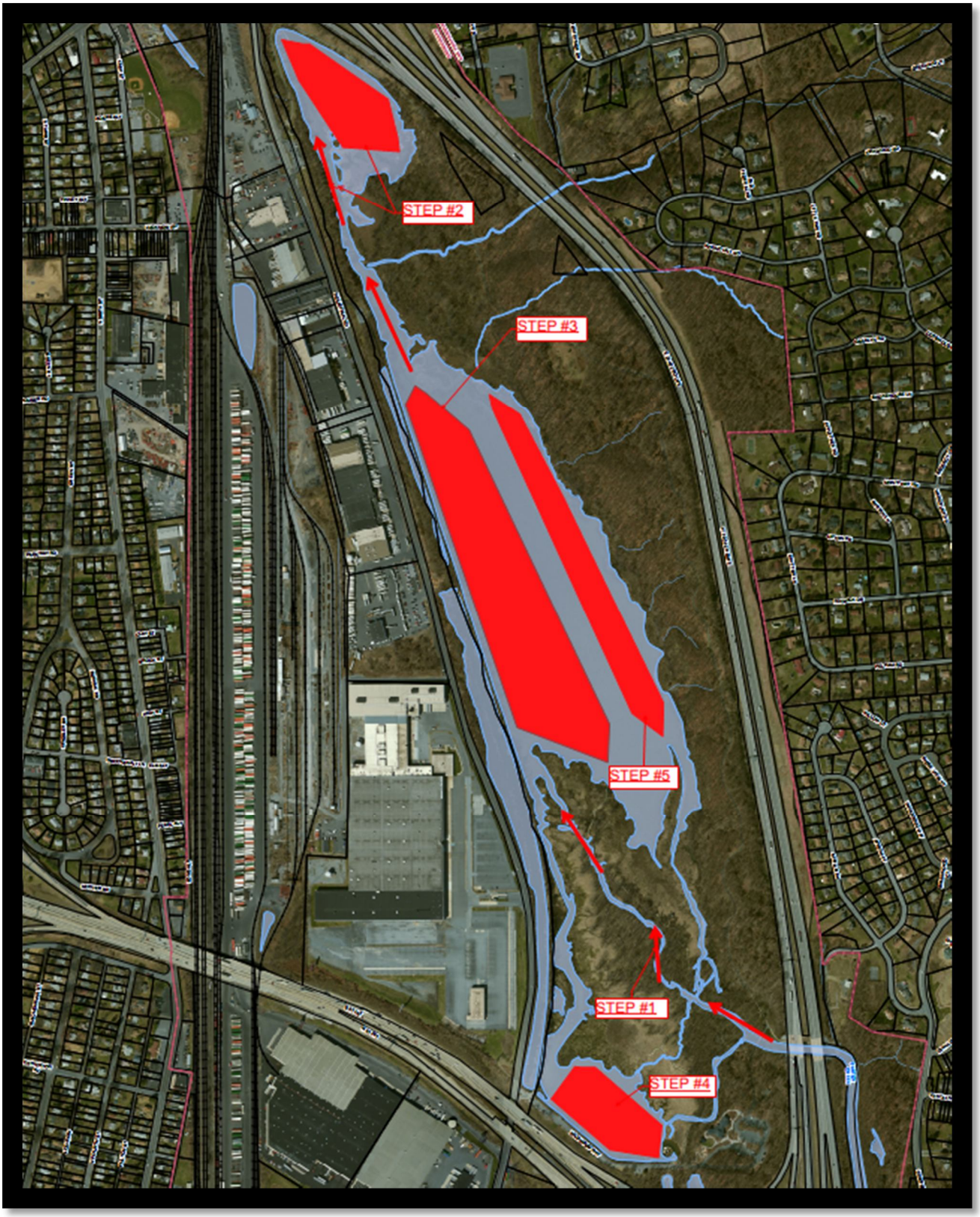
- Areas of minimal disturbance to be managed as marsh, emergent vegetation and mudflat habitat; shallow marsh habitats will not be navigable
- Provide seasonal aquatic habitat
- Allows for a wetland successional area

Estimated Dredged Sediment
12,000 – cubic yards
- Assumes 2' of Dredging -

Step #5 – Maintain the east side of the open water area. This step will accomplish:

- Areas of minimal disturbance to be managed as marsh, emergent vegetation and mudflat habitat; shallow marsh habitats will not be navigable
- Provide/maintains shallow marsh area
- Allows for a wetland successional area

Estimated Dredged Sediment
42,000 – cubic yards
- Assumes 2' of Dredging -


STEP #2
STEP #3
STEP #5
STEP #1
STEP #4

❖ SEDIMENT SOIL CORE SAMPLE FOR PRELIMINARY CHEMICAL EVALUATION

Introduction - One element in the evaluation of the feasibility of dredging Wildwood Lake is an assessment of the chemical quality of the sediment. To support both the scope of this evaluation and the budget, HRG collected one (1) composite sediment sample for laboratory analysis to identify gross scale concentrations of parameters indicative of the activities in the watershed tributary to Wildwood Lake. The data showed that the sediment meets PADEP's definition of 'clean fill'. However, for a water body of this size, a more comprehensive sampling and analytical plan is needed to gather representative data to meet design and permitting requirements.

Sampling - The composite sample was collected on December 18, 2014 from four (4) locations around Wildwood Lake (G1, G2, G3 & G4). A hand auger was used to sample the sediment profile over a four (4) foot depth interval. The four locations were safely accessed using hip waders. The individual grab samples were combined to prepare a single composite sample for laboratory analysis. All four grab samples were clay sediments with some silt and organic debris from decaying vegetation.

Historical photographs of Wildwood Lake guided the selection of the grab sample locations. Two grab samples (G2 & G3), one composed of older sediment and one composed of newer sediment were collected in the large delta formed in Wildwood Lake by Paxton Creek. A third sample (G1) was collected on the west central side of Wildwood Lake, east of the canal path. The fourth sample (G4) was collected along the northern section of Wildwood Lake, a short distance from the northern overflow.

Workorder Number - 2045831

Lab ID - 2045831001

Analytical - The composite sample was submitted to ALS Environmental Laboratory, at 34 Dogwood Lane, Middletown, Pennsylvania a National Environmental Laboratory Accreditation Program (NELAP), certified laboratory. It was analyzed for the eight (8) Resource Conservation and Recovery Act (RCRA) heavy metals, polychlorinated biphenyls (PCBs), and polynuclear aromatic hydrocarbons (PAHs) that are indicative of environmentally persistent hydrocarbons found in motors fuels and the by-products of combustion.

Findings - Fourteen (14) of the sixteen (16) PAHs and four (4) of the eight (8) RCRA heavy metals analyzed were detected, but at low concentrations. The detected analytes did not exceed the PADEP Clean Fill Standards [PADEP Document 258-2182-773, Management of Fill, Tables FP-1a and FP-1b]. No PCBs were detected. The data are summarized on the table to the right. Laboratory data are attached in Appendix C.

Recommendations - An appropriate sampling and analytical plan should be prepared as part of the development of any dredging plan. Various options for the end use of the dredge spoil will in part determine the scope of sampling. For example, several PADEP Residual Waste Beneficial Use General Permits allow for the use of dredge spoil in manufactured soil, soil amendments, roadway construction, mine reclamation and blending with other materials for use as aggregate in roadways and landscape block. Each use has unique analytical requirements. Geotechnical testing may be required to determine if the material's physical properties are suitable for its intended end use.

Analyte	Result	Clean Fill Standard
PCBs		
Aroclor-1260	<0.058	30
Aroclor-1254	<0.058	4.4
Aroclor-1221	<0.058	0.63
Aroclor-1232	<0.058	0.5
Aroclor-1248	<0.058	9.9
Aroclor-1016	<0.058	15
Aroclor-1242	<0.058	16
PAHs		
Acenaphthene	<0.0058	2,700
Acenaphthylene	**0.0148**	2,500
Anthracene	**0.0103**	350
Benzo(a)anthracene	**0.0579**	25
Benzo(a)pyrene	**0.072**	2.5
Benzo(b)fluoranthene	**0.0796**	25
Benzo(g,h,i)perylene	**0.043**	180
Benzo(k)fluoranthene	**0.0306**	250
Chrysene	**0.0726**	230
Dibenzo(a,h)anthracene	**0.0109**	2.5
Fluoranthene	**0.101**	3,200
Fluorene	<0.0058	3,000
Indeno(1,2,3-cd)pyrene	**0.048**	25
Naphthalene	**0.0085**	25
Phenanthrene	**0.0425**	10,000
Pyrene	**0.112**	2,200
Total Metals		
Arsenic	**5.0**	12
Barium	**152**	8,200
Cadmium	<0.90	38
Chromium	**17.6**	94
Lead	**35.1**	450
Mercury	<0.085	10
Selenium	<4.5	26
Silver	<1.8	84

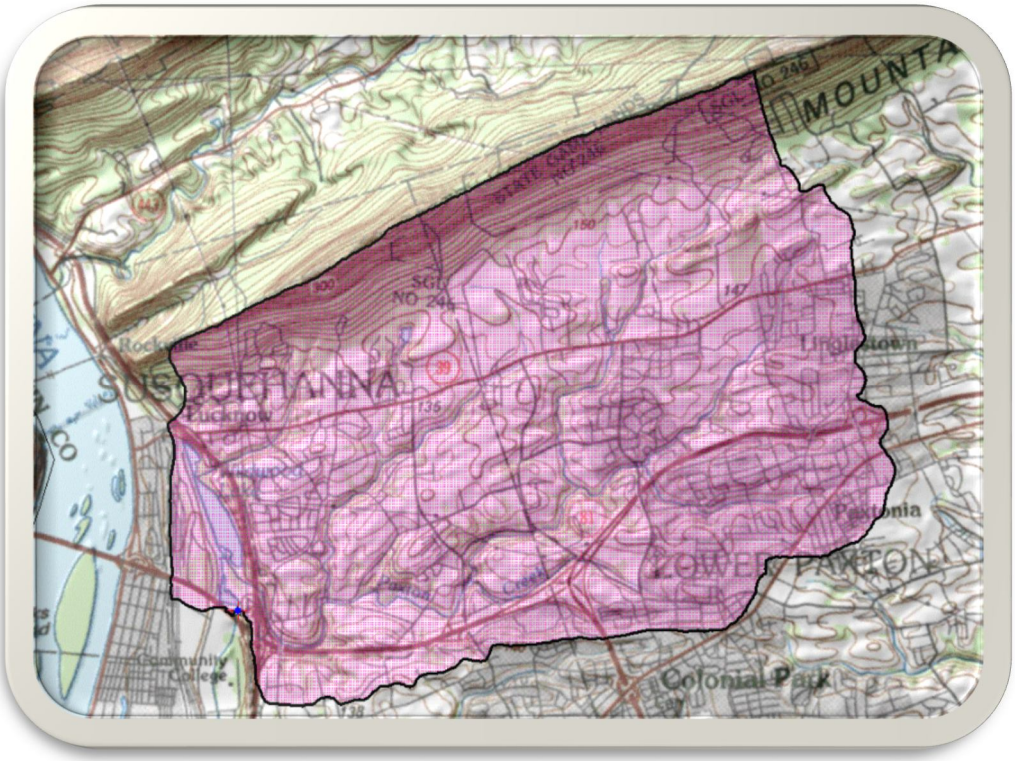
Table -- Notes and Abbreviations:

PCBs-Polychlorinated biphenyls
PAHs- Polycyclic aromatic hydrocarbons
Clean Fill standards are from PADEP Document 258-2182-773, Management of Fill, Tables FP-1a and FP-1b
All results and standards in mg/kg
Bold- laboratory detection
Composite sample was comprised of four grab samples throughout the Lake

❖ PERFORM HYDROLOGIC AND HYDRAULIC (THEORETICAL) MODELING

HRG has determined the peak flow rate to Wildwood Lake for the 1-year through 100-year storm events based on the upstream contributing watershed and current land cover conditions according to USGS Pennsylvania StreamStats website:

- Drainage Area = approximately 19 square miles (shown below)



- Peak Rate of Flow:
  - 2-year – 905-cfs
  - 5-year – 1,620-cfs
  - 10-year – 2,210-cfs
  - 50-year – 3,800-cfs
  - 100-year – 4,600-cfs
  - 500-year – 6,860-cfs
- Hydraulic Modeling Information:
  - Assumed Normal Water Surface Elevation at 321.2'
  - Assumed Wildwood Lake Bottom at 317'
  - Assume approximately 3' – 6" of accumulated sediment
  - Crest of Dam -- Wildwood Way at 329.0'

- Morning Glory Spillway
  - 18’ diameter concrete insert at 327.5’
  - 1’ x 1’ orifice at 316.8’
  - 4’ (rise) x 5’ (wide) box culvert at 311.2’
- Susquehanna Spillway
  - 328’ drop spillway at 321.2’
  - 11’ (rise) x 14’ (wide) box culvert (2,325’ long) at 310.2’
- LiDAR information was used to provide stage-storage of Wildwood Lake
  - 320’ 3,332-ft^2
  - 322’ 4,762,720-ft^2
  - 324’ 6,431,765-ft^2
  - 326’ 6,991,641-ft^2
  - 328’ 7,474,300-ft^2
  - 330’ 8,118,059-ft^2

➢ Results:

HydroCAD software was used to model existing and proposed conditions for the 100-year storm event

- Existing 100-year WSEL at 327.83’
- Dredged 2’-6” (to 318’) - Proposed 100-year WSEL at 327.48’
- Dredged 2’-6” (to 318’) and add a 60’ x 2’ rectangle orifice at the Susquehanna Spillway at 318’ - Proposed 100-year WSEL at 327.20’

The Susquehanna Spillway culvert conveying flow to the Susquehanna River controls the amount of flow that discharges from Wildwood Lake (approximately 2,500 cfs).

A determination will need to be made to establish the normal depth of water desired within Wildwood Lake if modifications to the outlet structures are proposed.

❖ PROBABLE OPINION OF COSTS

HRG developed a program-level probable opinion of costs, assuming the entire Wildwood Lake (Step #1 – Step #5) was dredged at one-time (assuming 354,000 cubic yards).

Further consideration should be given to locating or purchasing a parcel of land and obtaining approval as a dump site for the dredged sediment.

Additionally, the County should consider options to re-use the dredged material and even consider selling the product as a revenue generator.

Probable Opinion of Costs – STEP #1 – STEP #5	
Pre-Construction Costs:	
Survey -	$30,000
Engineering -	$50,000
Permitting -	$30,000
Erosion and Sedimentation Control Plan -	$10,000
Soil Core Samples -	$10,000
Botanist Survey -	$20,000
Total Pre-Construction Costs:	**$150,000**
Construction Costs:	
Mobilization -	$55,000
Erosion Controls -	$75,000
Demolition (Clearing and Grubbing) -	$45,000
Layout -	$30,000
Temporary Cofferdam -	$80,000
Access Road Construction -	$375,000
Fish/Animal Recovery -	$80,000
Pumping Operations/Control of Water -	$630,000
Excavate -	$4,200,000
Haul Off-Site -	$3,500,000
Dumping Fee -	$2,000,000
Restoration -	$60,000
Total Construction Costs:	**$11,130,000**
Bidding, Contract Administration, Observation Costs:	
Bidding -	$20,000
Contract Administration -	$60,000
Construction Observation -	$150,000
Total Bidding, Admin, Observation Costs:	**$230,000**
Total Project Costs (Step #1 – Step #5):	**$11,510,000**

Additionally, HRG developed a program-level probable opinion of costs, assuming only the first two steps of Wildwood Lake (Step #1 & Step #2) were dredged at one-time (assuming 115,000 cubic yards).

Probable Opinion of Costs –– STEP# 1 & STEP #2 ONLY	
Pre-Construction Costs:	
Survey -	$30,000
Engineering -	$50,000
Permitting -	$30,000
Erosion and Sedimentation Control Plan -	$10,000
Soil Core Samples -	$10,000
Botanist Survey -	$20,000
Total Pre-Construction Costs:	**$150,000**
Construction Costs:	
Mobilization -	$55,000
Erosion Controls -	$30,000
Demolition (Clearing and Grubbing) -	$20,000
Layout -	$10,000
Temporary Cofferdam -	$40,000
Access Road Construction -	$300,000
Fish/Animal Recovery -	$30,000
Pumping Operations/Control of Water -	$300,000
Excavate -	$1,700,000
Haul Off-Site -	$1,400,000
Dumping Fee -	$800,000
Restoration -	$25,000
Total Construction Costs:	**$4,710,000**
Bidding, Contract Administration, Observation Costs:	
Bidding -	$20,000
Contract Administration -	$25,000
Construction Observation -	$60,000
Total Bidding, Admin, Observation Costs:	**$105,000**
Total Project Costs (Step #1 & Step #2 Only) :	**$4,965,000**

❖ FUNDING RESEARCH

Through initial discussions with federal, state and local funding agencies, HRG has identified the following programs which may fully or partially fund the proposed dredging of Wildwood Lake:

- ✓ Community Development Block Grant (CDBG) – Disaster Relief (DR) Funding

  Dauphin County could consider directing unobligated Round 1 and/or Round 2 CDBG – Disaster Relief (DR) funding towards the Wildwood Lake Restoration Project. The County could also consider including this work as part of their CDBG – National Disaster Resiliency Application for Round 3 funding. Since the County will be competing nationally for these funds, it may be worthwhile to consider including this project as part of a regional Paxton Creek Watershed Improvements project, which would also include upstream flood mitigation, stream bank restoration, home buyouts and other recommendations of the Paxton Creek Rivers Conservation Plan. CDBG Disaster Relief funding could potentially finance the full extent of project related costs.

- ✓ United States Army Corps of Engineers (ACOE) Continuing Authorities Program (CAP)

  The Continuing Authorities Program enables the U.S. Army Corps of Engineers to solve water resource, flood risk mitigation, and environmental restoration problems in partnership with local sponsors.

  Under the CAP, ACOE is authorized to construct small projects within specific federal funding limits. The total cost of a project (including studies, design and construction) is shared among the federal government and a non-federal sponsor. CDBG Disaster Relief Funding can be used for the local share contribution.

  A local project sponsor must be a municipality or a legally constituted public body empowered under state laws to give assurances and be financially capable of fulfilling all measures of local cooperation. The CAP Program is broken down into separate sub programs, of which the Wildwood Lake Restoration project may be eligible for the following:

Section 204: Ecosystem Restoration in Connection with Dredging, No maximum limit, *(Need to find beneficial uses of dredge material in order to be eligible under this Section.)*

Section 205: Flood Control, Maximum Federal Cost Share = $10,000,000

Section 206: Aquatic Ecosystem Restoration, Maximum Federal Cost Share = $10,000,000

Each program has a cost share of 65% federal / 35% local. ACOE has requested to review a copy of this completed Feasibility Study. Once received they will provide a recommendation as to which Section is the best fit in terms of eligibility and likelihood of financing. Use of the CAP program involves submission of a Letter of Intent from the local sponsor. When funding is available through ACOE, the Corps would proceed with an initial preliminary feasibility study and project development plan which is fully funded by ACOE, followed by a feasibility study which is funded through a 50/50 split with the local sponsor. Prior feasibility study work completed to date may be considered in-kind services which would reduce the local share portion. Design and implementation would then involve the 65% federal / 35% local cost share.

The program has the ability to fund a large portion of the project, but due to timelines and milestones associated with Program, the project may take longer to complete using ACOE assistance.

- ✓ Commonwealth Financing Authority (CFA) Act 13 Flood Mitigation Program

The Commonwealth Financing Authority (CFA) awards grant funds of up to $500,000 through its Act 13 Flood Mitigation Program (FMP). Eligible projects include construction, improvement, expansion, and repair or rehabilitation of flood control projects. Construction as well as engineering costs; inspection costs; and permitting fees can be funded through the grant.

Project cost must be between $50,000 and $1,000,000. A 15% match of the total project cost is required. Match may be cash or non-cash and must be directly related to the approved scope of work.

The program is administered jointly by the Department of Community and Economic Development, the Department of Conservation and Natural Resources, and the Department of Environmental Protection, under the direction of the CFA and DCNR.

Applications are generally accepted June/July of each year for consideration at CFA meeting(s) held each Fall.

✓ Commonwealth Financing Authority (CFA) Act 13 Greenways, Trails and Recreation Program

The Commonwealth Financing Authority (CFA) awards grant funds of up to $250,000 through its Act 13 Greenways, Trails and Recreation Program. Eligible projects include development, rehabilitation and improvement of public parks, recreation and/or conservation areas, river or lake restoration, greenways and trails. Construction as well as engineering costs; inspection costs; and permitting fees can be funded through the grant.

Similar to the CFA Flood Mitigation Program, a 15% match of the total project cost is required. Match may be cash or non-cash and must be directly related to the approved scope of work.

The program is administered jointly by the Department of Community and Economic Development, the Department of Conservation and Natural Resources, and the Department of Environmental Protection, under the direction of the CFA and DCNR.

Applications are generally accepted June/July of each year for consideration at CFA meeting held each Fall.

✓ Dauphin County Gaming Grant

Dauphin County could consider using a portion of its share of gaming revenue to partially fund the Wildwood Lake Restoration project. The project appears to meet the eligibility criteria of improving local infrastructure and aiding in public safety and/or public interest initiatives.

✓ PADEP Growing Greener Watershed Protection Grant

The Watershed Protection Program provides funding for watershed assessments and development of watershed restoration or protection plans; implementation of watershed restoration or protection projects (stormwater management wetlands, riparian buffer fencing and planting, streambank restoration, and related activities).

PADEP's Grant Representative for the Southcentral PADEP Region noted that nutrient and sediment removal from Wildwood Lake appears to be an eligible project, and dredging activities have been funded through the grant program in the past, although the lake is not located in a priority watershed therefore the overall competitiveness of an application from Dauphin County is uncertain. Awards generally range between $10,000 and $700,000.

The application period is currently closed but is expected to open in April 2015 for an application deadline in June 2015, with potential award in Fall 2015/Winter 2016.

There were a number of funding agencies who determined dredging activities did not fit the eligibility requirements for their program, however they would be interested in funding related improvements to trails and facilities in Wildwood Park or stream bank restoration, best management practices improvements or similar upstream projects as part of a larger initiative focused on improving water quality in the Paxton Creek Watershed.

These agencies include:

- Pennsylvania Infrastructure Investment Authority (PENNVEST)
- Department of Conservation and Natural Resources (DCNR) Community Conservation and Partnership's Program (C2P2)
- Commonwealth Financing Authority through their Watershed Restoration Protection Program

USDA considered this project for funding via their Community Facilities Program and determined that due to population statistics, projects within Harrisburg City limits are not eligible for direct financing through their program. USDA may be able to provide a guarantee through their Business & Industry Program for use by Dauphin County in securing a loan or bond issue. The guarantee would be based upon the full faith and credit of the federal government which may act to lower interest rates and/or extend the term of what Dauphin County could secure through a General Obligation loan or bond. However, these benefits would need to be further weighed against any additional time and expense associated with securing the guarantee to determine if this would provide any overall benefit to Dauphin County.

❖ MEETING

On April 2, 2015, HRG presented the findings of this Feasibility Study to the Dauphin County Parks and Recreation Department and Friends of Wildwood. The list of attendees at that meeting can be found in Appendix D.

APPENDIX A

WILDWOOD PARK MAP

Wildwood Park Map

Look for:

Bull Frog

Credit: Dale Bicksler

Eastern Painted Turtle

Credit: Larry Imes

Great Egret

Credit: Joe Kosack/PGC Photo

Legend

- Nature Center
- Parking
- Emergency Call Box
- Bird Blind
- Morning Glory Overflow
- Restrooms
- Drinking Water
- Pavilion
- Mini Amphitheater

Habitats

- Forested
- Cattail Marsh
- Meadow
- Open Marsh

Trails

- Wildwood Way Trail (macadam) 2.1 miles
- Towpath Trail (unpaved) 1 mile
- Delta Boardwalk (wood) .4 mile
- North Boardwalk (wood) .4 mile
- East Shore Trail (primitive) .9 mile
- Tall Timbers Trail (primitive) .25 mile
- Fox Run Trail (primitive) .25 mile
- Meadow Trail (grass) .2 mile

The trail loop around Wildwood Park, including Wildwood Way and the Towpath Trail, is 3.1 miles

DAUPHIN COUNTY
PENNSYLVANIA
PARKS & RECREATION

WILDWOOD PARK

100 Wildwood Way
Harrisburg, PA 17110

BENJAMIN OLEWINE III
NATURE CENTER
AT WILDWOOD PARK

APPENDIX B

FEBRUARY 2, 2015
MEETING MINUTES

MEETING MINUTES

DATE: February 17, 2015

MTG DATE: February 2, 2015

SUBJECT: Feasibility Study – Wildwood Lake Restoration

LOCATION: Benjamin Olewine III Nature Creek Center at Wildwood Park
100 Wildwood Way, Harrisburg, PA 17110

ATTENDEES:

NAME	COMPANY	PHONE	EMAIL
Matt Bonanno	HRG, Inc.	717-564-1121	mbonanno@hrg-inc.com
Lindsay Taylor	HRG, Inc.	717-564-1121	ltaylor@hrg-inc.com
Carl Dickson	Dauphin County P&R	717-599-5188	CDickson@dauphinc.org
Chris Rebert	Dauphin County P&R	717-221-0292	CRebert@dauphinc.org
Paul Wentz	DCCD	717-921-8100	pwentz@dauphinc.org
Josh Fair	PADEP	717-772-5988	josfair@pa.gov
Su Ann Shupp	PA DCNR	717-783-7990	c-sushupp@pa.gov
John Taucher	PA Game Commission	717-787-4250	jotaucher@pa.gov

- Matt Bonanno opened the meeting and introductions were made.
- A representative from the PA Fish and Boat Commission was not in attendance. Matt Bonanno spoke to Nevin Welte on the phone prior to the meeting and he is going to send a PNDI clearance letter.
- A representative from the Army Corps of Engineers was not in attendance. Matt Bonanno spoke with Brittany Seguin and will set up a later conference call (held on February 17, 2015).
- Dauphin County owns Wildwood Lake; however the City of Harrisburg retains the right to control the water level of Wildwood Lake.
- Dauphin County Parks & Rec. – Their goal is to establish varying water level depths throughout Wildwood Lake. According to PADEP, the lake cannot be made deeper than the historic depth without required permitting. The intention of Dauphin County Parks & Rec. is not to make the lake deeper but to restore it to the historic depth (i.e. restoration and maintenance). Ideally, the water level depth would vary from marshy areas to a 12-feet depth at the Susquehanna Spillway.

- Dauphin County Parks & Rec. project goals are to improve the water quality discharged to Paxton Creek and the Susquehanna River, maintain wetland vegetation, increase habitat by maintaining a shallow lake, add recreation at the north end, and control downstream flooding.

- Game Commission – Noted that Great Egret foraging occurs on Wildwood Lake, however nesting occurs on the islands of the nearby Susquehanna River. Therefore, an ideal time to dredge Wildwood Lake would be in the fall/winter.

- DCNR – Would request a plant survey be conducted, with any species of concern found being transplanted, along with a few years of monitoring to ensure survivability. The time of year the project takes place should not matter. The DCNR requested surveys would require a botanist. The botanist would create an inventory of species of concern around Wildwood Lake. Recently, the Smartweed Dodder was found at the lake and this is known to be threatened or endangered.

- PADEP – Wildwood Lake is considered a Jurisdictional Dam (Dam ID 22-008) and is classified as a C-4 dam. As such and pursuant to Section 105.131.(c) of PADEP's Rules and Regulations, removal of accumulated sediments from the reservoir of a jurisdictional dam is considered maintenance and does not require a permit or Environmental Assessment under the Dam Safety and Encroachments Act, only notification to PADEP. However, if modifications to the Morning Glory or Susquehanna Spillway are proposed, a Letter of Amendment would be required by PADEP.

- ACOE (Per 2/17/15 Conference Call) – The reservoir impounded by the dam is considered Waters of the United States and Federal authorization may be required under the provision of Section 404 of the Clean Water Act, as amended, and/or Section 10 of the Rivers and Harbors Act of 1899 as follows:

    - Not regulated
        - If all work was completed from the bank (infeasible)
        - If the work area is dewatered, tracked equipment such as a backhoe is used to scoop up the sediment, the sediment is placed into a dump truck and the material is immediately hauled away. The only discharge would be considered incidental fallback (i.e. redeposit of small volumes of dredged material that is incidental to excavation activities in Waters of the United States). ACOE review of this information is estimated at 60 days.

    - Regulated
        - If the work area is dewatered, tracked equipment such as a bulldozer is used to push the sediment, or stockpile the sediment, that is considered a discharge of dredged material and fill above the ordinary high water mark – An Individual Permit would be required by ACOE. This permit takes approximately 6 months to obtain from ACOE and needs to go through tribal review (30-45 days) and a public notice period (30 days).

- A submittal is required to both PADEP and ACOE for their determination prior to the start of any work. Submittal needs to include the detailed methods and type of equipment proposed to be used to dewater, dredged, and transport the material.

- PADEP – Josh Fair mentioned that in past years a similar study to remove the sediment from the bottom of the lake took place. Jack Kraeuter from PADEP may have some more information on this. Josh is going to search files and drawings for more information. (Per 2/17/15 conference call, Josh believed that a lack of funding was the reason the project did not move forward, no plans were ever submitted, and there is no regulatory reason why the project was not pursued).

- It was agreed that the adjacent PA Canal cannot be used as a place to deposit dredged material.

- Matt Bonanno listed different options to dredge Wildwood Lake – 1. Barge (not feasible due to shallow existing water depths); 2. Mechanically pump silt to a temporary staging area to dewater, and then haul offsite; 3. Create a temporary cofferdam using stone, dewater the area, dredge sediment and haul out of the lake.

- Ideally, it would be left up to the selected contractor to decide the method of removal; however PADEP/ACOE would need to see the selected operation upfront in their application review.

- Matt Bonanno suggested to help control cost, Dauphin County Parks & Rec. may want to look into purchasing an offsite property to use for staging area of material dredge from Wildwood Lake. Carl Dickson said the idea of acquiring a property is not out of the question. The county could use the material for a variety of uses and could turn it into a revenue generator.

- DCCD – Would need to approve any offsite dump site.

- Dauphin County Parks & Rec. plan of action would be to restore Paxton Creek channel first, and then conduct sediment removal at the north end of Wildwood Lake next to the Susquehanna Spillway. The intention is not to dredge all at once. This project will take place over a long period of time.

- If different dredging phases were to take place to remove the sediment, PADEP/ACOE would need to see all the phases up front and review it all as one project.

- Chris Rebert mentioned that flooding from a local storm on August 7, 2011 that lasted approximately 12 hours, and had 6.92 inches of rain, overtopped Wildwood Way. Wildwood Way did not flood during Tropical Storm Lee. Chris has photos to support this.

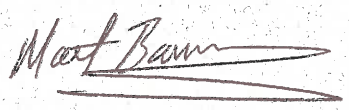
- It was decided at the close of the meeting that all agencies in attendance were going to send PNDI response letters.

- After the meeting Matt Bonanno was going to set up a conference call with Brittany Seguin and Josh Fair to discuss requirements from the Corps. This conference call took place on February 17, 2015.

We believe these minutes accurately reflect the items discussed at the subject meeting. If there are any revisions or corrections to these minutes, please contact the undersigned within ten (10) days of receipt of these minutes. If no revisions or corrections are requested, the minutes will stand approved as submitted.

Respectfully submitted,

Herbert, Rowland & Grubic, Inc.



Matthew S. Bonanno, P.E.
Regional Service Group Manager

MSB/MSB/lt
R001222.0428
P:\0012\001222_0428\Admin\Corres\2015.02.17 - Meeting Minutes.doc

c: All Attendees

Enclosure: Meeting Agenda

AGENDA
PERMITTING AGENCIES

PROJECT:	**FEASIBILITY STUDY – WILDWOOD LAKE RESTORATION**
HRG PROJECT NUMBER:	**R001222.0428**
PROJECT MANAGER:	**MATTHEW S. BONANNO, P.E.**
MEETING DATE:	**FEBRUARY 2, 2015**
MEETING TIME:	**10:00 A.M.**
MEETING LOCATION:	**BENJAMIN OLEWINE III NATURE CENTER AT WILDWOOD PARK 100 WILDWOOD WAY, HARRISBURG, PA 17110**

1. INTRODUCTIONS:

NAME	*COMPANY*	*PHONE*	*EMAIL*
Matt Bonanno	**HRG, Inc.**	**717-564-1121**	**mbonanno@hrg-inc.com**
Chris Rebert	**Dauphin County P&R**	**717-221-0292**	**CRebert@dauphinc.org**
Paul Wentz	**DCCD**	**717-921-8100**	**pwentz@dauphinc.org**
Josh Fair	**PADEP**	**717-772-5988**	**josfair@pa.gov**
Brittany Seguin	**ACOE**	**814-235-1765**	**Brittany.Seguin@usace.army.mil**
Su Ann Shupp	**PA DCNR**	**717-783-7990**	**c-sushupp@pa.gov**
Nevin Welte	**PA F&B**	**412-586-2334**	**c-nwelte@pa.gov**
John Taucher	**PA Game Commission**	**717-787-4250**	**jotaucher@pa.gov**

2. PROJECT DESCRIPTION:

Herbert, Rowland & Grubic, Inc. has contracted with Dauphin County to complete due diligence and provide a Feasibility Study for the restoration of Wildwood Lake in terms of impoundment capacity at Wildwood Park in the City of Harrisburg, Dauphin County, Pennsylvania.

The primary focus of the Feasibility Study is the accumulation of sediment that has been deposited in the lake over the last 100 years due to upstream disturbance and development within the Paxton Creek watershed. The storage capacity of the lake to manage stormwater runoff has been significantly decreased with the sediment deposition. Per the *'Management Plan for Wildwood Lake'* dated April 2011, last updated August 2014, a once average depth of water of four feet in the lake is now approximately 6 inches. The County would like to explore the feasibility of removing some of the accumulated sediment by means of dredging.

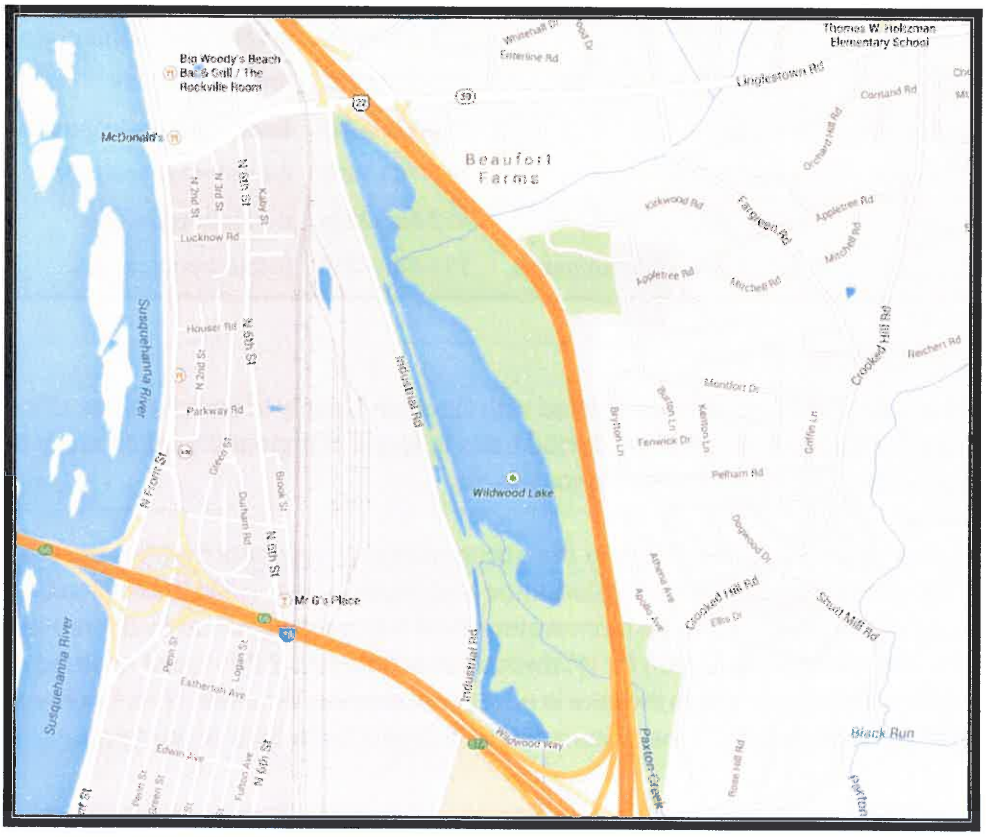
3. MEETING PURPOSE:

- Review the potential project
- Determine Impacts
- Outline required regulatory approvals needed

4. AGENCY INFORMATION:

- PADEP – (Maintenance / Permit Requirements)
  - Jurisdictional Dam (22-008)
- ACOE – Section 404 or Section 10 Rivers & Harbors Act Permit Requirements
- DCCD – E&S And NPDES Permit Requirements
- PA DCNR – PNDI Coordination
  - (Smartweed Dodder, Ellisia, White-Bracted Thoroughwort, Umbrella Mognolia)
- PA F&B – PNDI Coordination & Drawdown Permit Requirements
  - (Yellow Lampmussel)
- PA Game Commission – PNDI Coordination
  - (Great Egret)
- PHMC – Archaeology/Historical Structures
  - (No Concerns)

5. LOCATION MAP:



APPENDIX C

WILDWOOD SEDIMENT LAB DATA

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

December 29, 2014

Mr. James LaRegina
Herbert, Rowland & Grubic, Inc.
369 East Park Drive
Harrisburg, PA 17111

Certificate of Analysis

Project Name:	**2014-WILDWOOD DREDGING -**	Workorder:	**2045831**
Purchase Order:		Workorder ID:	**Wildwood / 1222.0428**

Dear Mr. LaRegina:

Enclosed are the analytical results for samples received by the laboratory on Thursday, December 18, 2014.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Mr. Brad W Kintzer (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Mr. Brad W Kintzer
Project Coordinator

ALS Environmental

34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2045831 Wildwood / 1222.0428

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2045831001	Wildwood Composite Sediment	Solid	12/8/2014 12:45	12/18/2014 14:02	Mr. Michael Techky

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit

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ANALYTICAL RESULTS

Workorder: 2045831 Wildwood / 1222.0428

Lab ID: **2045831001** Date Collected: 12/8/2014 12:45 Matrix: Solid

Sample ID: **Wildwood Composite Sediment** Date Received: 12/18/2014 14:02

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
SEMIVOLATILES										
Acenaphthene	ND		ug/kg	177	SW846 8270D	12/19/14	KAC	12/19/14 12:08	CGS	B
Acenaphthylene	ND		ug/kg	177	SW846 8270D	12/19/14	KAC	12/19/14 12:08	CGS	B
Anthracene	ND		ug/kg	177	SW846 8270D	12/19/14	KAC	12/19/14 12:08	CGS	B
Benzo(a)anthracene	ND		ug/kg	177	SW846 8270D	12/19/14	KAC	12/19/14 12:08	CGS	B
Benzo(a)pyrene	ND		ug/kg	177	SW846 8270D	12/19/14	KAC	12/19/14 12:08	CGS	B
Benzo(b)fluoranthene	ND		ug/kg	177	SW846 8270D	12/19/14	KAC	12/19/14 12:08	CGS	B
Benzo(g,h,i)perylene	ND		ug/kg	177	SW846 8270D	12/19/14	KAC	12/19/14 12:08	CGS	B
Benzo(k)fluoranthene	ND		ug/kg	177	SW846 8270D	12/19/14	KAC	12/19/14 12:08	CGS	B
Chrysene	ND		ug/kg	177	SW846 8270D	12/19/14	KAC	12/19/14 12:08	CGS	B
Dibenzo(a,h)anthracene	ND		ug/kg	177	SW846 8270D	12/19/14	KAC	12/19/14 12:08	CGS	B
Fluoranthene	ND		ug/kg	177	SW846 8270D	12/19/14	KAC	12/19/14 12:08	CGS	B
Fluorene	ND		ug/kg	177	SW846 8270D	12/19/14	KAC	12/19/14 12:08	CGS	B
Indeno(1,2,3-cd)pyrene	ND		ug/kg	177	SW846 8270D	12/19/14	KAC	12/19/14 12:08	CGS	B
Naphthalene	ND		ug/kg	177	SW846 8270D	12/19/14	KAC	12/19/14 12:08	CGS	B
Phenanthrene	ND		ug/kg	177	SW846 8270D	12/19/14	KAC	12/19/14 12:08	CGS	B
Pyrene	ND		ug/kg	177	SW846 8270D	12/19/14	KAC	12/19/14 12:08	CGS	B
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
2-Fluorobiphenyl (S)	63.9		%	45 - 105	SW846 8270D	12/19/14	KAC	12/19/14 12:08	CGS	B
Nitrobenzene-d5 (S)	74.1		%	41 - 110	SW846 8270D	12/19/14	KAC	12/19/14 12:08	CGS	B
Terphenyl-d14 (S)	76.6		%	38 - 113	SW846 8270D	12/19/14	KAC	12/19/14 12:08	CGS	B
SEMIVOLATILE SIM										
Acenaphthene	ND		ug/kg	5.8	8270 SIM	12/19/14	KAC	12/19/14 10:32	CGS	B
Acenaphthylene	14.8		ug/kg	5.8	8270 SIM	12/19/14	KAC	12/19/14 10:32	CGS	B
Anthracene	10.3		ug/kg	5.8	8270 SIM	12/19/14	KAC	12/19/14 10:32	CGS	B
Benzo(a)anthracene	57.9		ug/kg	5.8	8270 SIM	12/19/14	KAC	12/19/14 10:32	CGS	B
Benzo(a)pyrene	72.0		ug/kg	5.8	8270 SIM	12/19/14	KAC	12/19/14 10:32	CGS	B
Benzo(b)fluoranthene	79.6		ug/kg	5.8	8270 SIM	12/19/14	KAC	12/19/14 10:32	CGS	B
Benzo(g,h,i)perylene	43.0		ug/kg	5.8	8270 SIM	12/19/14	KAC	12/19/14 10:32	CGS	B
Benzo(k)fluoranthene	30.6		ug/kg	5.8	8270 SIM	12/19/14	KAC	12/19/14 10:32	CGS	B
Chrysene	72.6		ug/kg	5.8	8270 SIM	12/19/14	KAC	12/19/14 10:32	CGS	B
Dibenzo(a,h)anthracene	10.9		ug/kg	4.1	8270 SIM	12/19/14	KAC	12/19/14 10:32	CGS	B
Fluoranthene	101		ug/kg	5.8	8270 SIM	12/19/14	KAC	12/19/14 10:32	CGS	B
Fluorene	ND		ug/kg	5.8	8270 SIM	12/19/14	KAC	12/19/14 10:32	CGS	B
Indeno(1,2,3-cd)pyrene	48.0		ug/kg	5.8	8270 SIM	12/19/14	KAC	12/19/14 10:32	CGS	B
Naphthalene	8.5		ug/kg	5.8	8270 SIM	12/19/14	KAC	12/19/14 10:32	CGS	B
Phenanthrene	42.5		ug/kg	5.8	8270 SIM	12/19/14	KAC	12/19/14 10:32	CGS	B

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2045831 Wildwood / 1222.0428

Lab ID: **2045831001** Date Collected: 12/8/2014 12:45 Matrix: Solid

Sample ID: **Wildwood Composite Sediment** Date Received: 12/18/2014 14:02

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Pyrene	112		ug/kg	5.8	8270 SIM	12/19/14	KAC	12/19/14 10:32	CGS	B
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
2-Methylnapthalene-d10 (S)	73.2		%	50 - 150	8270 SIM	12/19/14	KAC	12/19/14 10:32	CGS	B
Fluoranthene-d10 (S)	71.1		%	50 - 150	8270 SIM	12/19/14	KAC	12/19/14 10:32	CGS	B
PCBs										
Total Polychlorinated Biphenyl	ND		mg/kg	0.058	SW846 8082A	12/18/14	JCG	12/19/14 15:21	EGO	B
Aroclor-1016	ND		mg/kg	0.058	SW846 8082A	12/18/14	JCG	12/19/14 15:21	EGO	B
Aroclor-1221	ND		mg/kg	0.058	SW846 8082A	12/18/14	JCG	12/19/14 15:21	EGO	B
Aroclor-1232	ND		mg/kg	0.058	SW846 8082A	12/18/14	JCG	12/19/14 15:21	EGO	B
Aroclor-1242	ND		mg/kg	0.058	SW846 8082A	12/18/14	JCG	12/19/14 15:21	EGO	B
Aroclor-1248	ND		mg/kg	0.058	SW846 8082A	12/18/14	JCG	12/19/14 15:21	EGO	B
Aroclor-1254	ND		mg/kg	0.058	SW846 8082A	12/18/14	JCG	12/19/14 15:21	EGO	B
Aroclor-1260	ND		mg/kg	0.058	SW846 8082A	12/18/14	JCG	12/19/14 15:21	EGO	B
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
Decachlorobiphenyl (S)	70.9		%	46 - 120	SW846 8082A	12/18/14	JCG	12/19/14 15:21	EGO	B
Tetrachloro-m-xylene (S)	69.1		%	52 - 115	SW846 8082A	12/18/14	JCG	12/19/14 15:21	EGO	B
WET CHEMISTRY										
Moisture	44.6		%	0.1	S2540G-97			12/22/14 14:08	AAP	A
Total Solids	55.4		%	0.1	S2540G-97			12/22/14 14:08	AAP	A
METALS										
Arsenic, Total	5.0		mg/kg	2.7	SW846 6020A	12/22/14	AAM	12/26/14 14:14	ZMC	B1
Barium, Total	152		mg/kg	4.5	SW846 6020A	12/22/14	AAM	12/26/14 14:14	ZMC	B1
Cadmium, Total	ND		mg/kg	0.90	SW846 6020A	12/22/14	AAM	12/26/14 14:14	ZMC	B1
Chromium, Total	17.6		mg/kg	1.8	SW846 6020A	12/22/14	AAM	12/26/14 14:14	ZMC	B1
Lead, Total	35.1		mg/kg	1.8	SW846 6020A	12/22/14	AAM	12/26/14 14:14	ZMC	B1
Mercury, Total	ND		mg/kg	0.085	SW846 7471B	12/29/14	MNP	12/29/14 14:41	MNP	B2
Selenium, Total	ND		mg/kg	4.5	SW846 6020A	12/22/14	AAM	12/26/14 14:14	ZMC	B1
Silver, Total	ND		mg/kg	1.8	SW846 6020A	12/22/14	AAM	12/26/14 14:14	ZMC	B1

Mr. Brad W Kintzer
Project Coordinator

ALS Environmental
34 Dogwood Lane
Middletown, PA 17057
P. 717-944-5541
F.717-944-1430

CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Page 1 of 1
Courier:
Tracking #:

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

Co. Name: HRG
Contact (Report to): Michael Techky
Phone: 717 564-1121
Address: 369 East Park Drive Harrisburg PA 17111

Bill to (if different than Report to):
PO#:

Project Name/#: Wildwood / 122.0428
ALS Quote #:

TAT: Normal-Standard TAT is 10-12 business days. Rush-Subject to ALS approval and surcharges.
Date Required:
Approved By:

Email? Y MTechky@hrg-inc.com
Fax? Y No.:

Sample Description/Location (as it will appear on the lab report)	COC Comments	Sample Date	Military Time	*G or C	**Matrix	***Container Type	***Container Size	*** Preservative	ANALYSES/METHOD REQUESTED: PCBs, PAHs, RSKMethods	Enter Number of Containers Per Analysis
1 Wildwood Composite-sediment		12/8/14	1245	C	SO	CG	16oz	—		1
2										
3										
4										
5										
6										
7										
8										

BWC 12-9-14 1458
12/8/14 1615

Performed by:
Cooler Temp: 1.2
Therm. ID: IR-281
No. of Coolers:
Notes:

	Circle appropriate Y or N.
Correct containers?	N Y
Correct sample volume?	N Y
Correct preservation?	N Y
Headspace/Volatiles?	N Y
Custody seals Present?	N Y
(if present) Seals intact?	N Y
Received on ice?	N Y
COC/Labels complete/accurate?	N Y
Container in good condition?	N Y

SAMPLED BY (Please Print): Michael Techky

Project Comments:

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 Michael Techky / HRG	12/8/14	1402	2 ALS	12/8	1402
3			4		
5			6		
7			8		
9			10		

Data Deliverables: Standard; CLP-like; NJ-Reduced; NJ-Full; (other)
EDDs Required? If yes, format type:
SDWA Forms? yes yes yes yes
State Samples Collected In? MD NJ NY PA
Other
DOD Criteria Required?

ALS FIELD SERVICES: Pickup; Labor; Composite Sampling; Rental Equipment; Other:

* G=Grab; C=Composite
**Matrix: Al=Air; DW=Drinking Water; GW=Groundwater; Oi=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater
***Container Type: AG-Amber Glass; CG-Clear Glass, PL-Plastic. Container Size: 250ml, 500ml, 1L, 8oz., etc. Preservative: HCl, HNO3, NaOH, etc.

Copies: WHITE - ORIGINAL CANARY - CUSTOMER COPY

Rev 01-2013

APPENDIX D

APRIL 2, 2015
MEETING ATTENDEES

HRG
Herbert, Rowland & Grubic, Inc.
Engineering & Related Services

AN EMPLOYEE-OWNED COMPANY

[BUILDING RELATIONSHIPS.
DESIGNING SOLUTIONS.]

SIGN-IN SHEET
April 2, 2015
FRIENDS OF WILDWOOD PRESENTATION
FEASIBILITY STUDY – WILDWOOD LAKE RESTORATION

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