

**CITY COUNCIL OF LOCK HAVEN**  
**NOVEMBER 6, 2024, 6:00PM SPECIAL MEETING**

1. CALL TO ORDER (Moment of silence followed by The Pledge of Allegiance)
2. ROLL CALL: Council Members Alexander, Brannan, Brinker, Conklin, Masorti, Stevenson, and Mayor Long
3. PUBLIC COMMENTS & REQUESTS
4. UNFINISHED BUSINESS
  - A. Discussion of water system projects
  - B. Funding and timeline or scheduling  
Proposed Consent Order & Agreement Milestones Schedule –  
As requested by DEP Division of Dam Safety, the following major milestone dates for each project will be used in the DEP Consent Order & Agreement.

**YOUNGDALE WELL FIELD DEVELOPMENT AND TRANSMISSION MAIN (1)**

Start Final Design	Completed
Submit Permits	September 30, 2024
Obtain Funding	January 22, 2025 (PennVEST) <i>(PV funding won't be available until after April 2025 at the earliest)</i>
Start Construction	May 30, 2025
End Construction	November 1, 2025

**KELLER DAM MODIFICATIONS**

Start Final Design	January 10, 2025
Submit Permits	September 1, 2025
Obtain Funding	July 15, 2026
Start Construction	October 1, 2026
End Construction	October 1, 2028

**OHL DAM, PHASE II (2)**

Start Final Design	Completed
Submit Permits (3)	N/A
Obtain Funding	July 15, 2028
Start Construction	November 1, 2028
End Construction	September 1, 2029

**UPPER CASTANEA DAM REMOVAL (4)**

Start Final Design	June 1, 2028
Submit Permits	October 1, 2028
Obtain Funding	April 15, 2029
Start Construction	September 1, 2029
End Construction	April 1, 2030

**Notes**

- (1) Emergency Permits and SRBC Temporary Withdrawal Permits previously obtained by City
- (2) Project could be a separate contract or as part of the Keller Dam contract
- (3) DEP Dam Safety Permits previously acquired under Phase 1
- (4) Milestones apply if project is not started after Ohl Dam, Phase II is finished

5. OTHER MATTERS
6. ADJOURNMENT

**City of Lock Havens**  
**Programming of City Dam Safety Projects**  
**September 11, 2024**

**General** – On August 1, 2024, a joint meeting of PADEP Dam Safety, City of Lock Haven and Gwin, Dobson & Foreman, Inc. was held at Keller Dam to review the condition of the concrete spillway and associated remedial actions. A general discussion later ensued on the City’s future dam safety projects and the programming rationale for these improvements.

This narrative discusses the City’s water supply facilities, system constraints, supplemental water supplies and needed capital improvements, among other factors. All of these elements are integrated into a milestone schedule for the proposed DEP Consent Order and agreement.

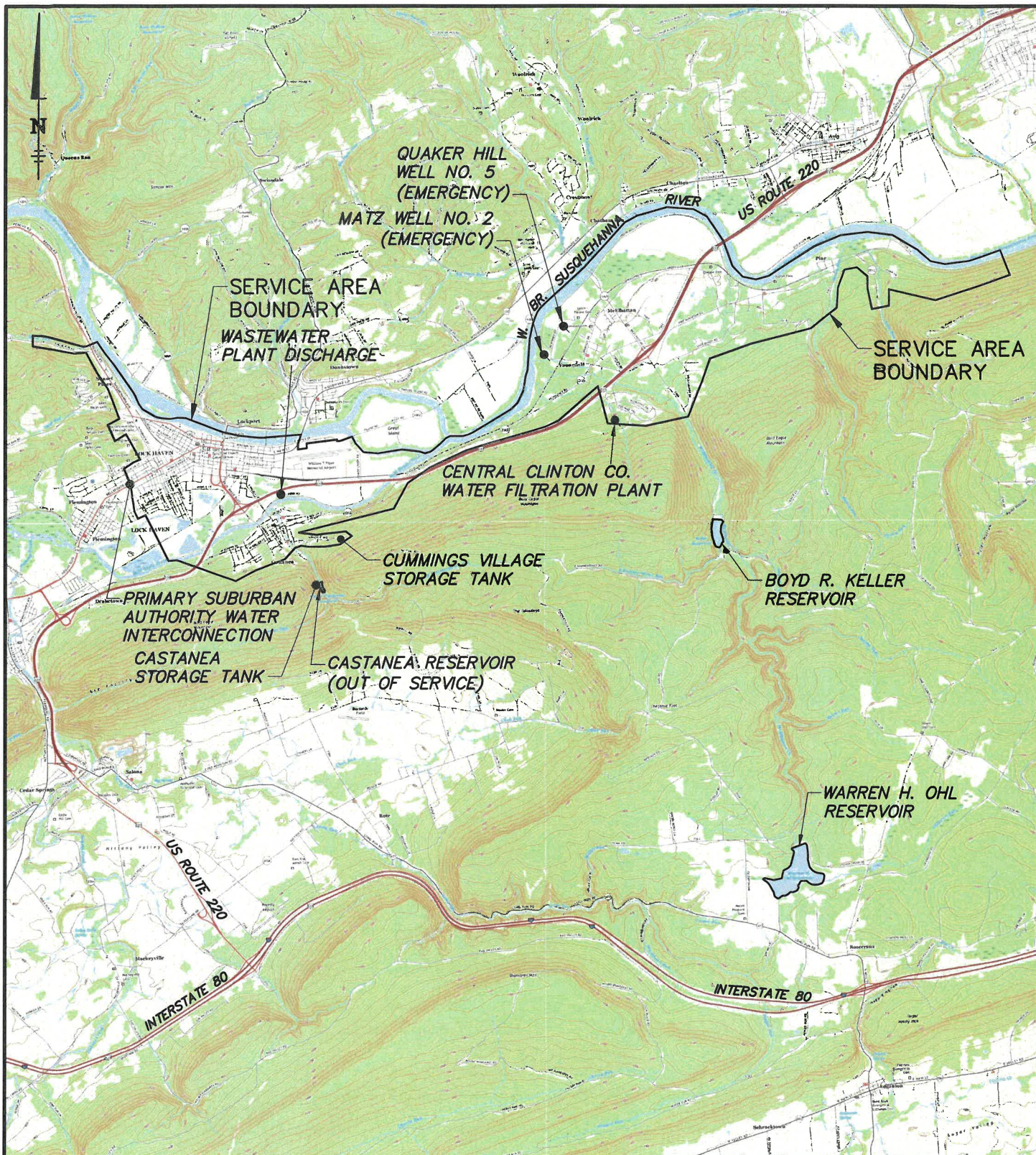
**Water Supply Facilities** – The City operates the following water supply components that serve a regional population of 20,000 in southern Clinton County.

- Warren Ohl Dam – 576 MG reservoir; storage dam only, discharges to McElhattan Creek
- Boyd R. Keller Dam – 94 MG reservoir located 4 miles downstream Ohl dam on McElhattan Creek; serves as primary gravity feed to the water treatment plant
- Upper Castanea Dam – 11 MG reservoir on Harvey’s Run; dam drained/disconnected from water system; dam designated “unsafe” by DEP Division of Dam Safety
- Youngdale Well Field – High capacity well field with a safe yield of 1.44 MGD as a supplemental water supply source; DEP Public Water Supply Permit pending and construction planned for 2025

The combined reservoir capacity (Ohl and Keller) is 670 MGD with a withdrawal limit of 2.8 MGD per the 2013 DEP Water Allocation Permit. Raw water treatment is provided by the Central Clinton County Water Filtration Authority (CCCWFA). Water is conveyed by City transmission mains to the service area. A map of the facilities is shown on the following page.

**Water Supply Constraints** – The following constraints limit the City’s water supply capacity:

- Water withdrawals from the reservoir system have averaged 2.8 MGD over the last 2 years. This is equivalent to the withdrawal limit of 2.8 MGD in the Water Allocation Permit. Water usage over the last 20 years varies between 2.4–2.8 MGD and is over 3.0 MGD for extended periods.
- Although having a large storage capacity, Ohl dam has a basin area of only 3.3 sq. mi. Inflow to the reservoir is nil during the summer/fall period. Along with evaporation loss, the conservation release consistently drains the reservoir during this summer/fall period where a 50% loss of storage capacity commonly occurs. Depending on drought conditions, water loss can reach 70% of total Ohl storage capacity by late fall.



**SERVICE AREA MAP**

**CITY OF LOCK HAVEN  
WATER DEPARTMENT**

**CLINTON COUNTY, PENNSYLVANIA  
PORTION OF LOCK HAVEN, JERSEY SHORE, LOGANTON AND MILL HALL, PA USGS MAPS**

**SCALE: 1" = 8000'**

**GD&F**

**GWIN  
DOBSON &  
FOREMAN  
ENGINEERS**

3121 Fairway Drive  
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gdfengineers.com

- Despite a drainage area of 18.5 sq. mi., Keller dam has a storage volume of only 94 MG. During drought conditions, the only inflow is the Ohl dam conservation release and runoff from the intervening watershed below Ohl dam. Experience has shown that the total inflow to Keller reservoir is not sufficient to maintain current demand of 2.4-2.8 MGD during droughts. Due to its low storage capacity, Keller reservoir is particularly vulnerable to shortages.
- Recently, emergency sources have been employed during prolonged droughts. In 2007, lowering of the reservoir pool for grouting work at Ohl dam resulted in the use of the W. Branch of the Susquehanna River as an emergency supply.

The reservoir was lowered 5-feet in February 2023 for Ohl dam safety construction that precipitated another water emergency. This time, the new, but unpermitted, Youngdale well field served as the alternative water supply. Several prolonged droughts in 1993 and 2000 were on the verge of water emergency conditions. The total facilities cost to implement these emergency water supplies has exceeded \$1 million.

**Water Supply Reliability** - In summary, based on the frequency of recent shortages and water emergencies, the City reservoir system is not a reliable water supply. Experience has shown that lowering reservoir pools for dam construction further jeopardizes the capacity of the system.

For these reasons a supplemental water supply is needed to increase the safe yield of the system and allow for removing dams from service for construction or maintenance. The development of the Youngdale well field will provide the needed water supply capacity.

**Status of City Dam Safety Projects and Associated Construction** – A brief status of City dam safety projects is described below.

- **Ohl Dam Modifications, Phase 1** – Phase 1 was a DEP Dam Safety spillway compliance project to pass the Probable Maximum Flood (PMF). Final inspection occurred in early July 2024. Ohl dam is now in full compliance with DEP dam safety standards.
- **Keller Dam Modifications** – Preliminary engineering work consisting of hydrology-hydraulics, subsurface exploration and testing, geotechnical report and preliminary design layout have been approved by DEP. Final design pending PUC approval of City water rate increase in early 2025.
- **Ohl Dam Modifications, Phase 2** – This work is not a DEP compliance project, but rather an operational enhancement project. Design work has been completed and permitted by DEP. The work consists of an intake tower building, intake tower mechanical piping renewal, intake tower access bridge and spillway chute slab replacement/rehabilitation.

- **Upper Castanea Dam** – This dam was removed from service in 1995 and drained in 2020 in response to the DEP designation as an “unsafe dam.” Dam demolition, breach opening and stream restoration are required. No engineering work has been done.

**Programming Constraints** – The following constraints will impact the programming of the above dam safety projects including associated projects necessary to maintain a reliable water supply during construction.

- As noted above, reservoirs cannot be lowered for Keller Dam and Ohl Dam (Phase 2) work without a supplement source on-line.
- As the supplemental source, the Youngdale well field and transmission main must be constructed and operating before any dam construction can be undertaken.
- Keller Dam must be the first dam removed from service for construction. A downstream intake structure (Zindel intake) will be repurposed as a gravity feed for the CCCWFA water treatment plant during construction. This will involve updating the intake piping system and cleaning the intake of sediment and debris. McElhattan Creek will flow unimpeded through Keller dam during a two-year construction period.
- The Youngdale well field and Zindel intake will provide the water supply needs of the system during Keller dam construction.
- After Keller dam construction, Ohl Dam Phase II work can proceed. As part of the project, the reservoir will be lowered 13-ft. for rebuilding the existing intake tower resulting in a loss of storage of 60%. For this reason, the Youngdale well field must be operated during the summer-fall dry season if McElhattan Creek fails to provide an adequate supply. (As noted, Phase II is not a DEP Dam Safety compliance project.)
- Work required to remove Upper Castanea dam is work that can be performed at any time. When Ohl Dam Phase II is finished and Upper Castanea is not removed, a commitment from the City will be required to complete the project.

**Proposed Sequence of Construction** – Based on the foregoing, the following projects are ranked in order of completion:

1. Youngdale Well Field Development and Transmission Main
2. Keller Dam Modifications
3. Ohl Dam, Phase II Modifications
4. Upper Castanea Dam Removal

**Proposed Consent Order & Agreement Milestones Schedule** – As requested by DEP Division of Dam Safety, the following major milestone dates for each project will be used in the DEP Consent Order & Agreement.

Youngdale Well Field Development and Transmission Main <sup>(1)</sup>

Start Final Design -	Completed
Submit Permits -	September 30, 2024
Obtain Funding -	January 22, 2025 (Pennvest)
Start Construction-	May 30, 2025
End Construction -	November 1, 2025

Keller Dam Modifications

Start Final Design -	January 10, 2025
Submit Permits -	September 1, 2025
Obtain Funding -	July 15, 2026
Start Construction-	October 1, 2026
End Construction -	October 1, 2028

Ohl Dam, Phase II <sup>(2)</sup>

Start Final Design -	Completed
Submit Permits <sup>(3)</sup> -	N/A
Obtain Funding -	July 15, 2028
Start Construction-	November 1, 2028
End Construction -	September 1, 2029

Upper Castanea Dam Removal <sup>(4)</sup>

Start Final Design -	June 1, 2028
Submit Permits -	October 1, 2028
Obtain Funding -	April 15, 2029
Start Construction-	September 1, 2029
End Construction -	April 1, 2030

Notes

(1) Emergency Permits and SRBC Temporary Withdrawal Permits previously obtained by City

(2) Project could be a separate contract or as part of the Keller Dam contract

(3) DEP Dam Safety Permits previously acquired under Phase 1

(4) Milestones apply if project is not started after Ohl Dam, Phase II is finished