

Forest Lake Spillway Report
April 20, 2023
By: Dan LeFevre

The Forest Lake Level Authority Board met today at its first meeting at the Arenac County Commissioners office in Standish. We expect the minutes from the meeting to be published soon. The agenda included an overview of the board's responsibilities, which was essentially a recap of FLPOA Update #46. The new board then appointed officers, which are summarized below:

- Ray Daniels (Moffatt Twp. Supervisor & Rep.), Chairman;
- Byron Fogarasi (Clayton Twp. Supervisor & Rep.), Vice Chairman;
- Larry Davis (Arenac County Drain Commissioner), Secretary/Treasurer;
- Sally Mrozinski (Arenac County Commissioner Rep.); and
- Dan LeFevre (FLPOA Rep.), appointed as Board Point Contact for spillway project.

Of note, the FLPOA BOD received a petition signed by a number of residents requesting an opportunity to hold a member vote to appoint our appointee to the lake level authority board. BOD sought the advice of our attorney, Mark Brissette, who concluded our bylaws gave that responsibility to the BOD (Exhibit A). To align FLPOA's appointee with our past history of annually assigning a director with the spillway responsibility, our appointee will serve at the pleasure of our BOD (Exhibit B).

Lastly, and most importantly, GEI Consultants presented three concept designs (Exhibit C). Our engineers indicated that Alternative 3 is most likely not viable due to cost, time and environmental impacts. The lake level board is awaiting word on a \$2.3 million grant request from EGLE, which if approved could supplement about \$3 million in existing USDA grants, and \$1 million of existing State of Michigan grants. Assessing the availability of grant funds will be an important step to enable the lake level board to make an informed decision on how to proceed. The next lake level board is scheduled at 1:00 pm on May 18th in the FLPOA clubhouse.

Exhibit A

From: Mark Brissette Mark@glblg.com
Subject: RE: FLPOA
Date: April 14, 2023 at 10:31 AM
To: Daniel LeFevre daniel.lefevre@att.net

MB

Dan, I reviewed the by laws relative to the situation described. It is within the powers of the board to appoint someone to serve on a committee. Article 7 gives the board the power to manage the affairs of the association and set policy. Section 10 of that article gives the power of appointment to the board and the president to appoint a committee or a member of a committee. I cannot find anywhere that states such appointments are subject to approval of the general membership. If I did not address the issue directly enough let me know. Mark Brissette

From: Daniel LeFevre <daniel.lefevre@att.net>
Sent: Tuesday, April 11, 2023 9:08 AM
To: Mark Brissette <Mark@glblg.com>
Subject: Re: FLPOA

Good morning Mark,

Just a quick follow up to see if you have had a chance to look at the issue I posed last Wednesday afternoon. I am preparing a counsel agenda for our next meeting this Saturday, and I would like to include your feedback for our Board.

Thanks

Dan

On Apr 5, 2023, at 4:41 PM, Daniel LeFevre <daniel.lefevre@att.net> wrote:

Mark,

Many changes at FLPOA since we last spoke and I need to give you a little background before presenting an issue that I would like you to weigh in on for us.

I believe I have informed you that I was appointed President last July following the retirement of Dennis Monsere. We changed engineering firms for our spillway repair project late in the year and have engaged a team from Spicer Group and GEI. Because we had a legal lake limit established under Part 307, the Spicer Firm has also been working with Arenac County Commissioners and the Fahey Schultz firm in Lansing to transition responsibility of this project from FLPOA to a county created lake level board. The first meeting of the new board is 4/20/23. FLPOA has been given a seat on the 5-person board, and we need to name our appointee.

The petition was delivered to our FLPOA office on Monday with a request that it be sent to each member on the FLPOA board. I also attached a proposed resolution that we are considering for our next meeting on April 15th

four.

I believe the essence of the petition is that the drafter (former FLPOA President Curtis Brown), and to a degree the 53 signers, would like FLPOA members to vote on our POA's appointee to the lake level board. I believe the petition is wrong about the scope of member voting rights in our [bylaws](#). Our [restrictive covenants](#) provide almost no details on the scope of member voting rights.

Our board reviewed our bylaws and, in our view, members can only vote for (1.) board members, (2.) increases to annual dues, or (3.) a petition for a special meeting. There is no provision to vote on other matters, certainly not a lake level board appointee. For what it is worth, for as long as most of us can remember our board has delegated oversight of the dam and spillway maintenance and operation to a single board member. Our board did have some concern about the two year appointment provided in the County Commissioner's resolution, so our board drafted the attached Word document that provides for our appointee to be "subject to reappointment". The thought with this language was that our appointee should be accountable to our board to keep them informed and to cast votes based on feedback from the FLPOA board. We could also use language like "serving at the pleasure of the board."

Since the FLPOA board will be meeting on the 15th I thought it was a good idea to share the details with you and seek your counsel. I look forward to hearing from you.

Thanks

Dan
734.945.7800

<Request for vote for Spec Assess District.pdf>
<Resolution to Appoint Members to the.docx>

Exhibit B

Resolution to Appoint a Member to the Forest Lake Level Authority Board

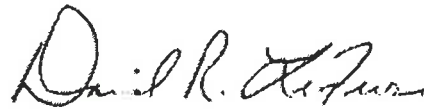
Whereas the Forest Lake Level Authority Board ("Lake Level Authority Board") was formed on March 16, 2023 to serve as Arenac County's delegated authority under Part 307. See MCL 324.30702(2). The Forest Lake Level Authority Board shall consist of five (5) members being:

1. A member of Arenac County Board of Commissioners appointed by the County Board of Commissioners.
2. The Arenac County Drain Commissioner.
3. A member of the Moffatt Township Board appointed by the Moffatt Township Board.
4. A member of the Clayton Township Board appointed by the Clayton Township Board.
5. A member of the Forest Lake Property Owners Association appointed by the Forest Lake Property Owners Association.

NOW, THEREFORE, BE IT RESOLVED:

The Board of Directors of the Forest Lake Property Owners Association shall appoint one member to serve a (2) year term. The member shall serve at the pleasure of the Forest Lake Property Owners Association. The member shall provide updates on maintenance and operations of the lake level control structure and related infrastructure on a regular basis or upon request by the Forest Lake Property Owners Association Board of Directors.

Dated: April 15, 2023



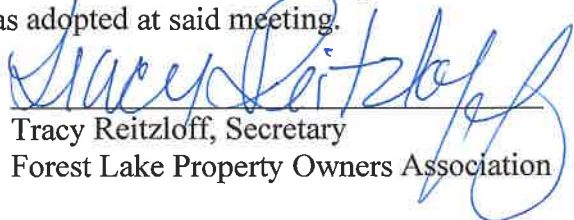
Daniel R. LeFevre, President
Forest Lake Property Owners Association

CERTIFICATION

STATE OF MICHIGAN)
) ss
COUNTY OF ARENAC)

I, the undersigned, the duly qualified and acting Secretary of Forest Lake Property Owners Association, DO HEREBY CERTIFY the foregoing is a true and complete copy of certain proceedings taken by the Forest Lake Property Owners Association at a meeting held on the 15th day of April, 2023, and that the above resolution was adopted at said meeting.

Dated: April 15, 2023



Tracy Reitzloff, Secretary
Forest Lake Property Owners Association



Forest Lake Dam Project Updates

4/20/2023

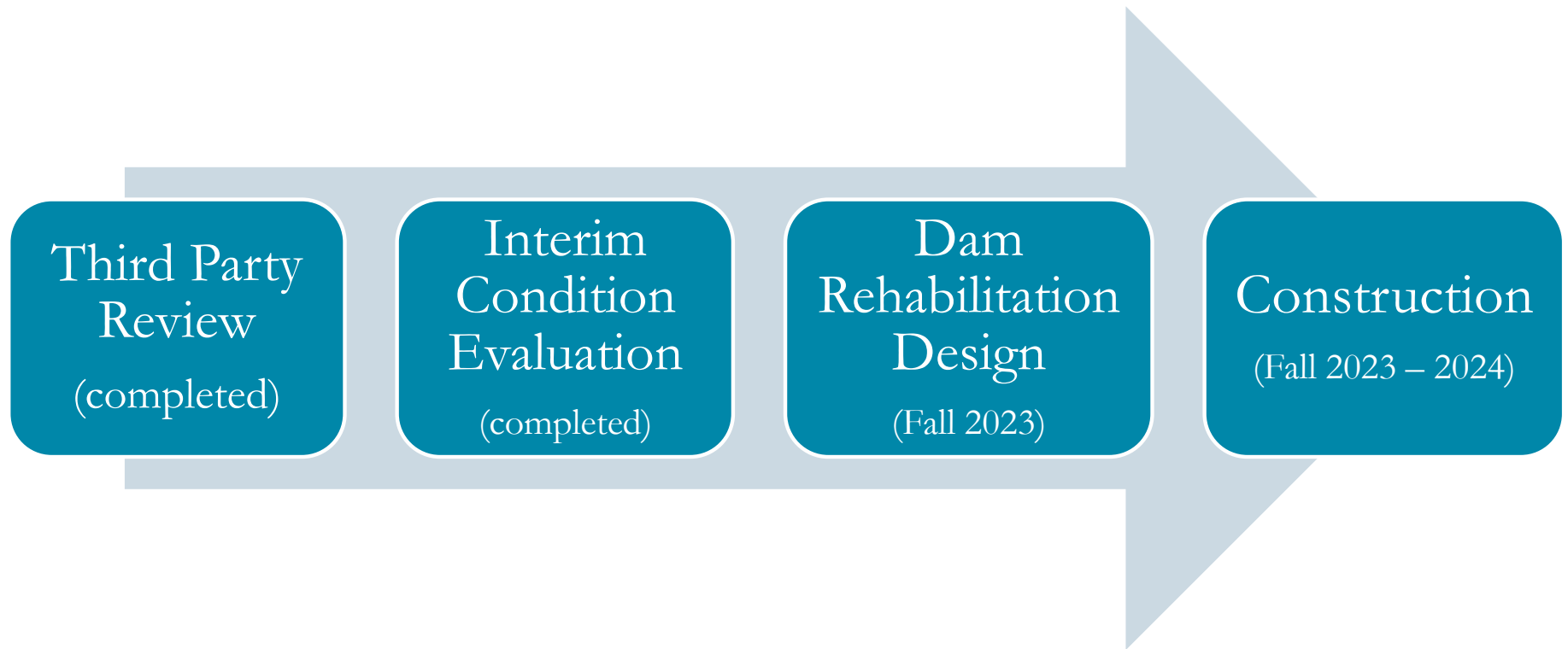
Agenda

1. Project Approach and Schedule
2. Field Investigations and Desktop Analyses
3. Dam Rehabilitation Alternatives
4. Alternatives Evaluation
5. Cost Estimates
6. Dam Rehabilitation Design



Project Approach and Schedule





- Project requires a comprehensive evaluation of the structure, including geotechnical explorations, structural investigations, and hydrologic and hydraulic evaluations.
- The design will be derived based on findings of the evaluations.
- Throughout the process, GEI will be working collaboratively with FLPOA and stakeholders to evaluate design alternatives and make informed decisions.

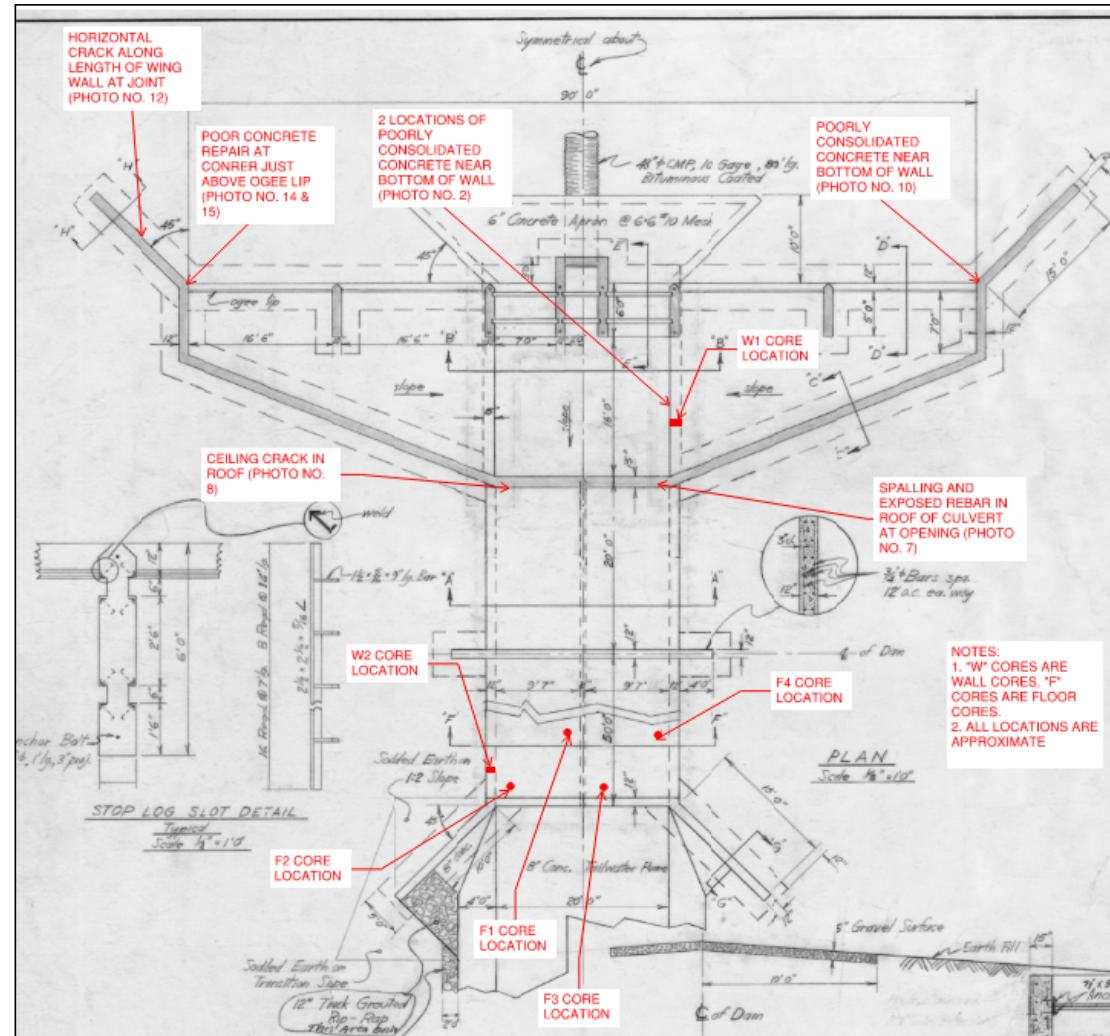


Field Investigations and Desktop Analyses

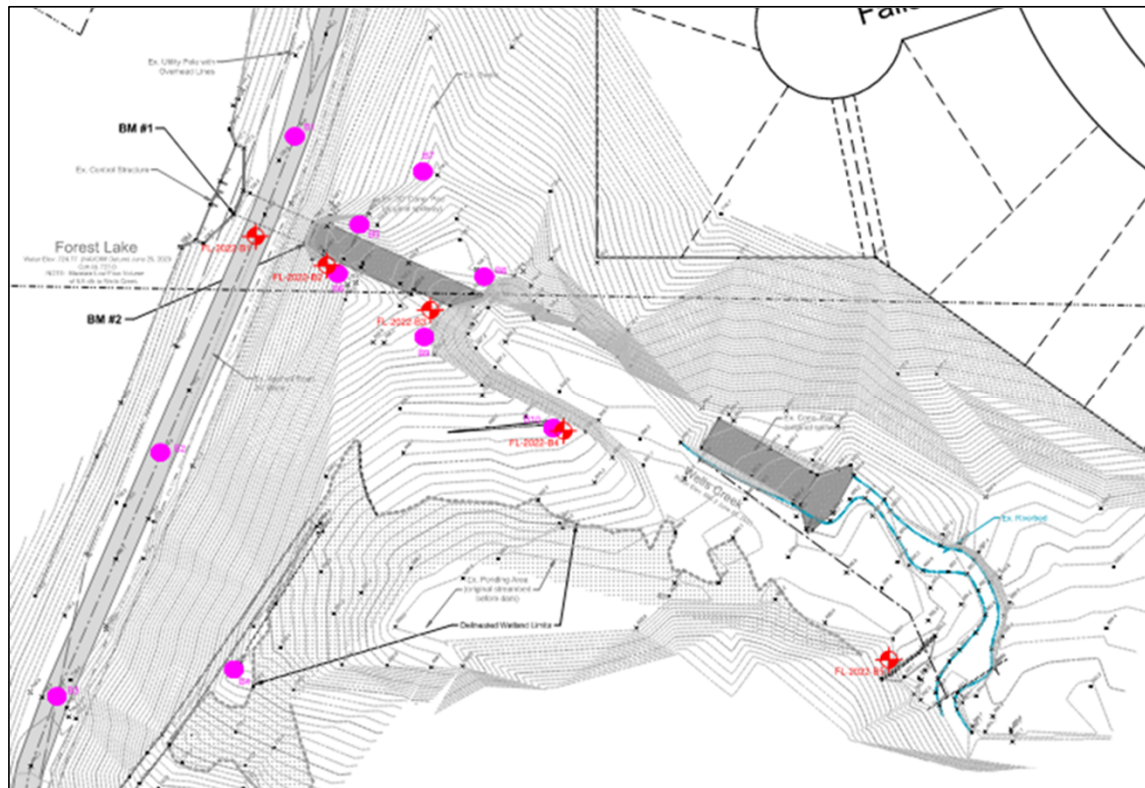


Structural Investigation

- Intake structure and box culverts in good condition overall
- Minor concrete repairs required
- Existing drawings match measurements and data collected in the field
- No undermining of structure observed
- In-situ concrete strength calculated from compressive strength of concrete cores
 - This value will be used in future structural assessments of intake and box culverts



Subsurface Explorations



- 5 Soil Borings including laboratory testing.
- Piezometers installed in bore holes.
- Embankment fill soils and clay core were consistent with plans.



Hydrology and Hydraulics

- Significant hazard dam must be capable of passing 200-year flood or flood of record, whichever is greater per Part 315, Dam Safety, Natural Resources and Environmental Protection Act, 1994 PA 451
- 200-year flow EGLE estimate = 500 cfs, **May 2020 flood estimate = 765 cfs**
- Regulations moving toward ½ Probable Maximum Flood, coarse analysis of ½ PMF for existing conditions included
 - Estimated from nearby watershed; additional studies needed if refined ½ PMF analysis required/requested

Parameter or Modeling Result	½ PMF 24-hr	½ PMF 72-hr	IDF
Peak Inflow (cfs)	1108	875	898
Peak Outflow Spillway (cfs)	993	838	774



Hydraulic Design Criteria

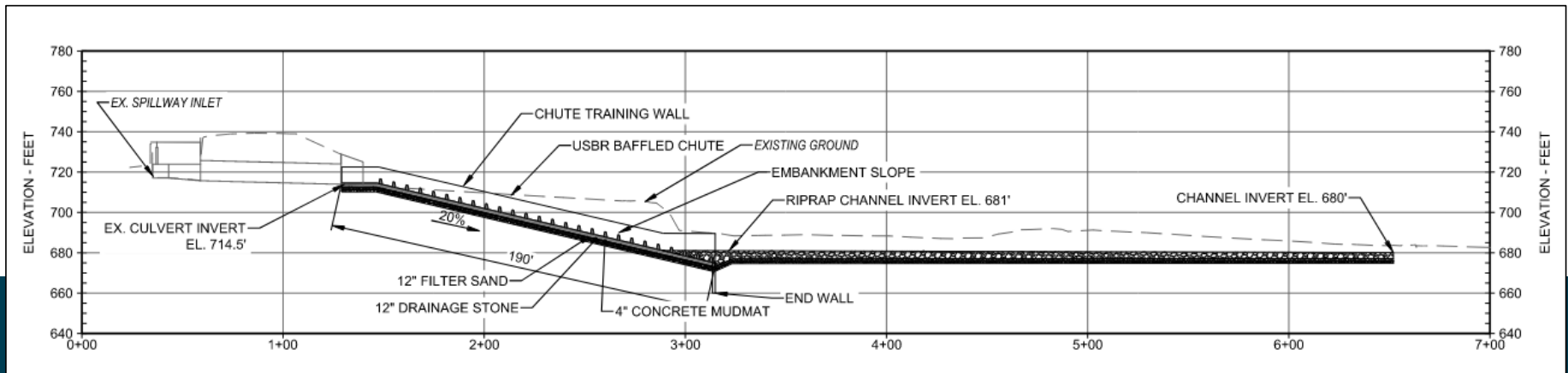
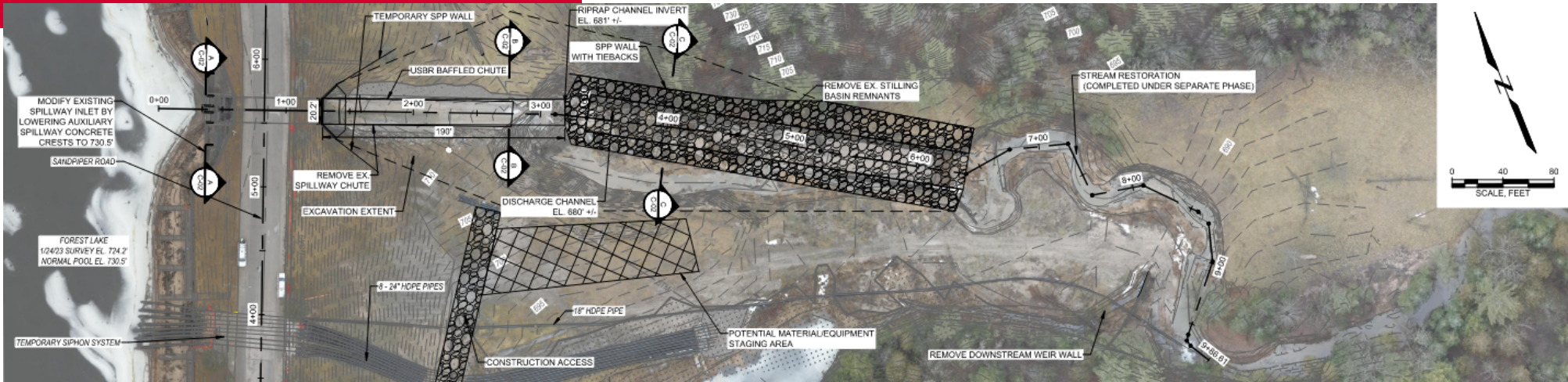
- Provide a 50+ year design service life (Alternatives 2 and 3).
- Meet current industry standards of engineering practice and design standards for significant hazard dams in accordance with State of Michigan EGLE Dam Safety - flood of record (May 2020) is the design flood.
- Allow sufficient capacity to pass design storm without overtopping embankments and provide sufficient freeboard below dam crest.
- Design flood maximum peak reservoir level is the minimum top of the existing clay core El. 735.0 feet with 4.3-feet of freeboard below dam crest.
- Structural integrity of the earthen dam and its foundation should not be jeopardized.
- Proposed design to fit within footprint of existing embankments to minimize impact to downstream wetlands.
- Impoundment will be drawn down 6-feet in winter in accordance with current lake operating level standards.



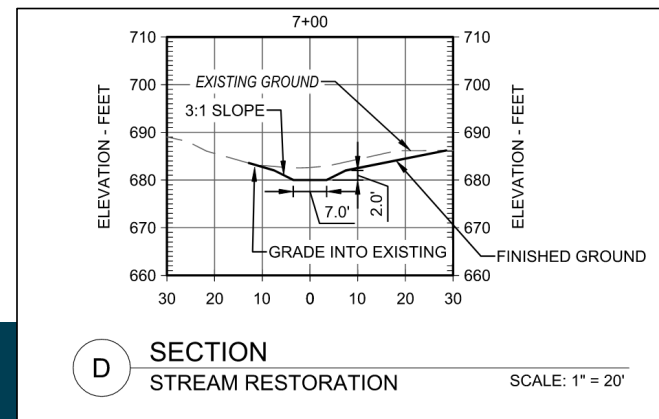
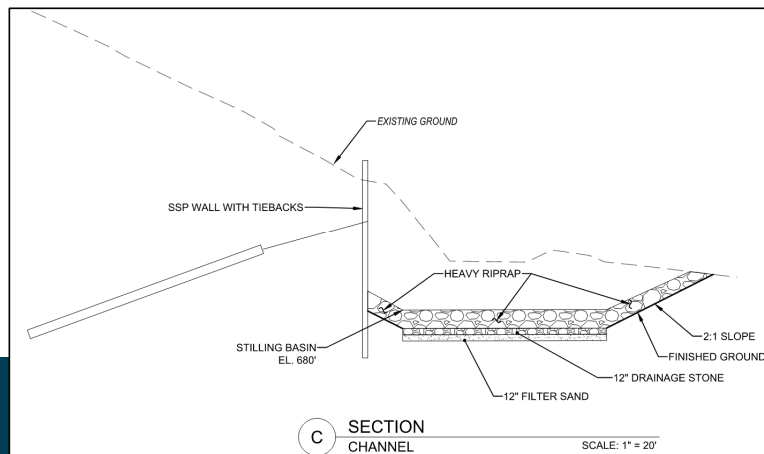
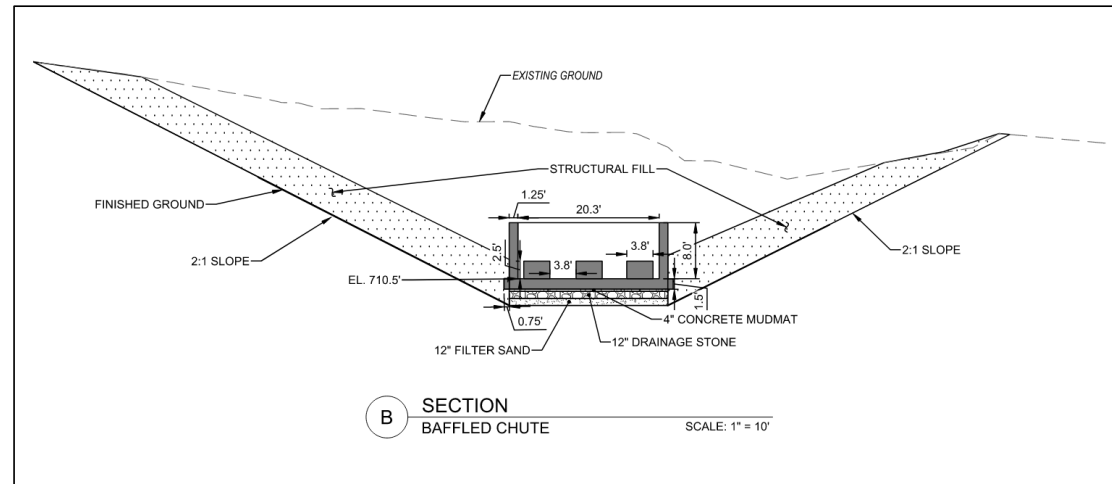
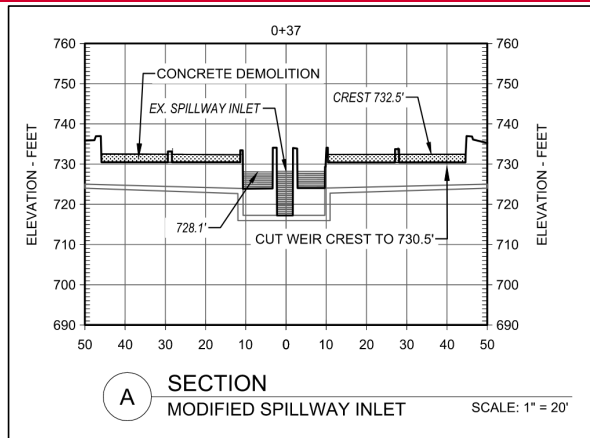
Dam Rehabilitation Alternatives



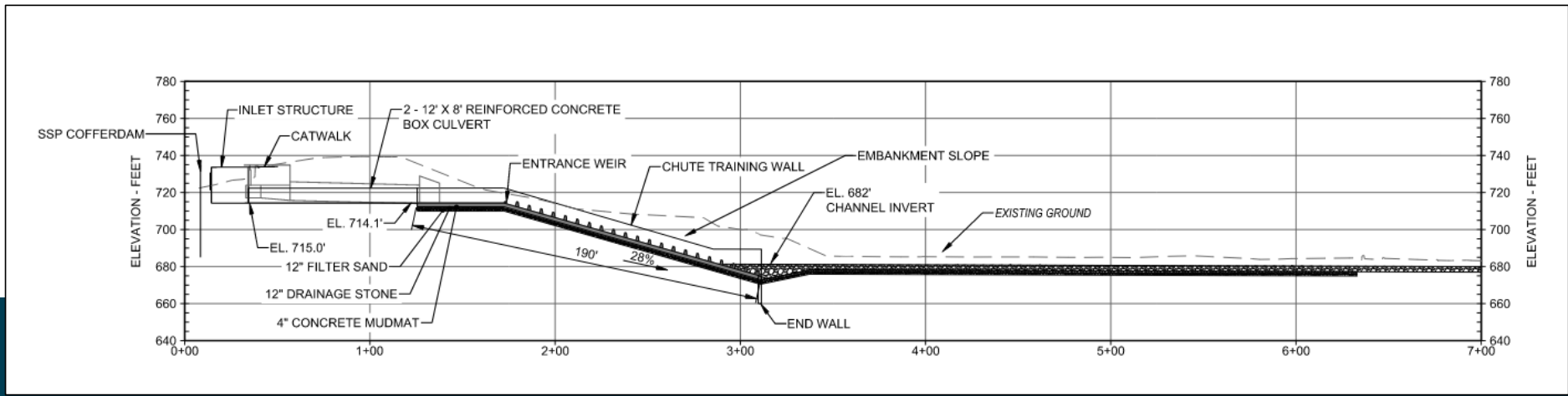
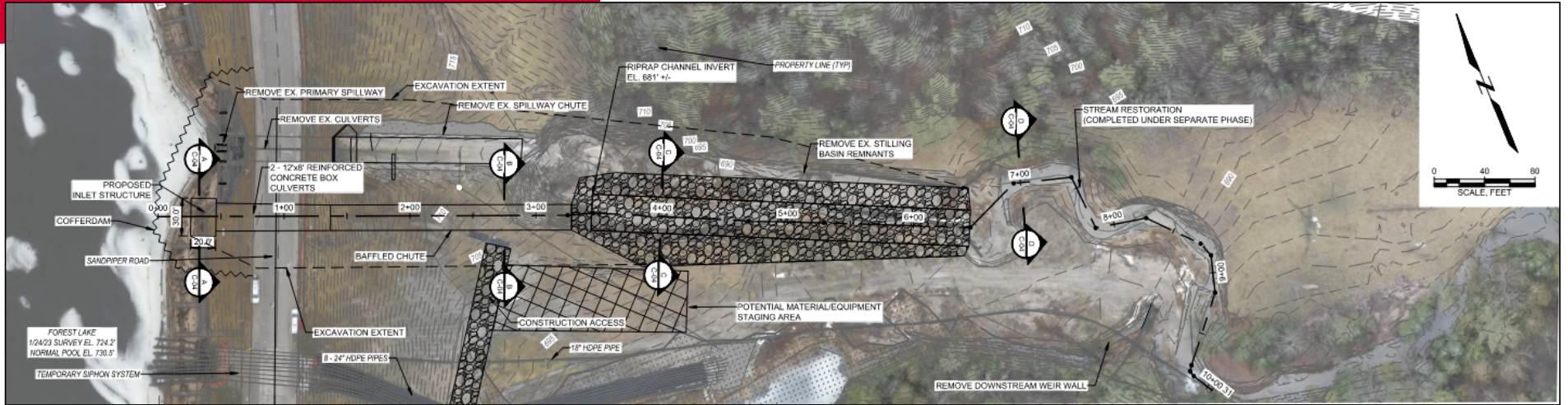
Alternative 1



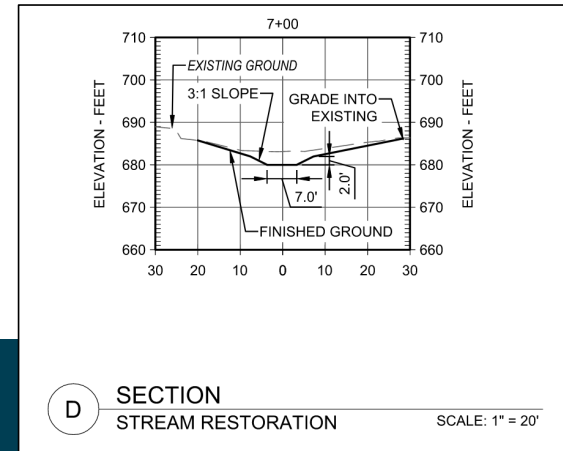
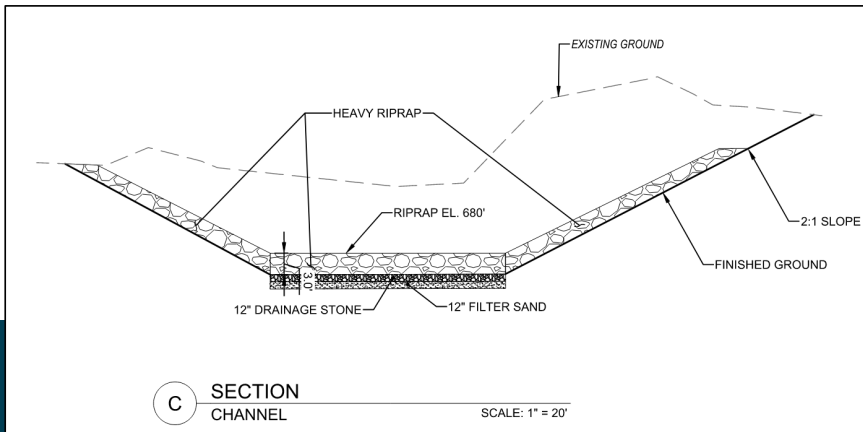
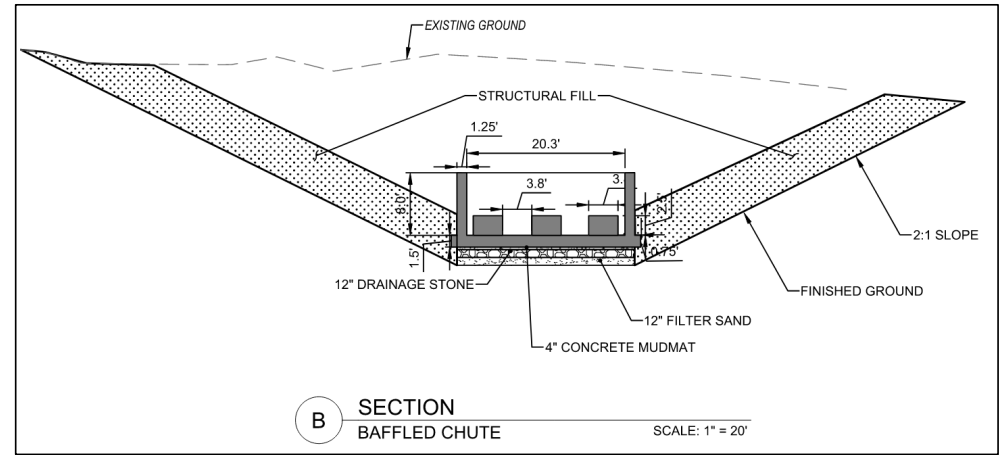
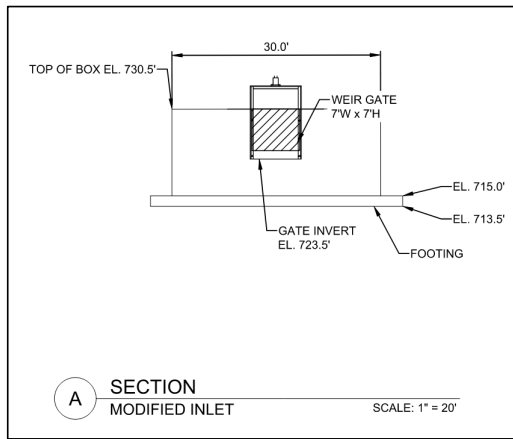
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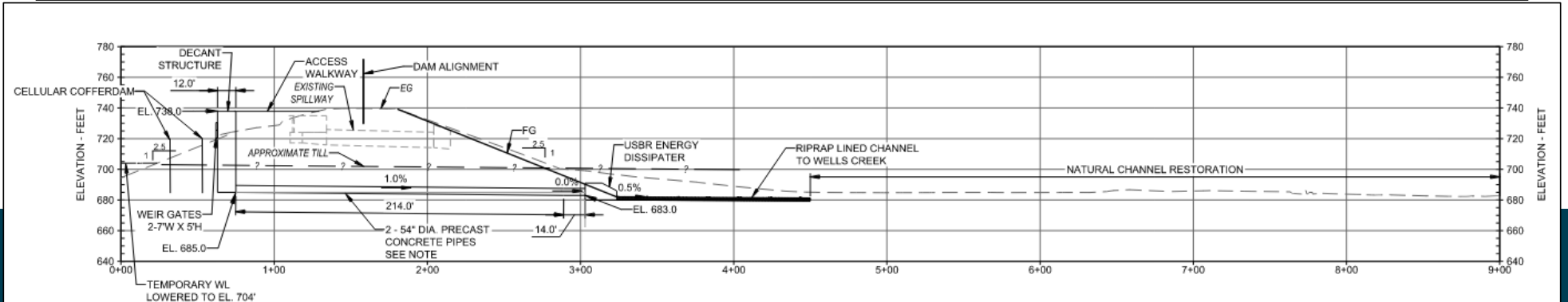
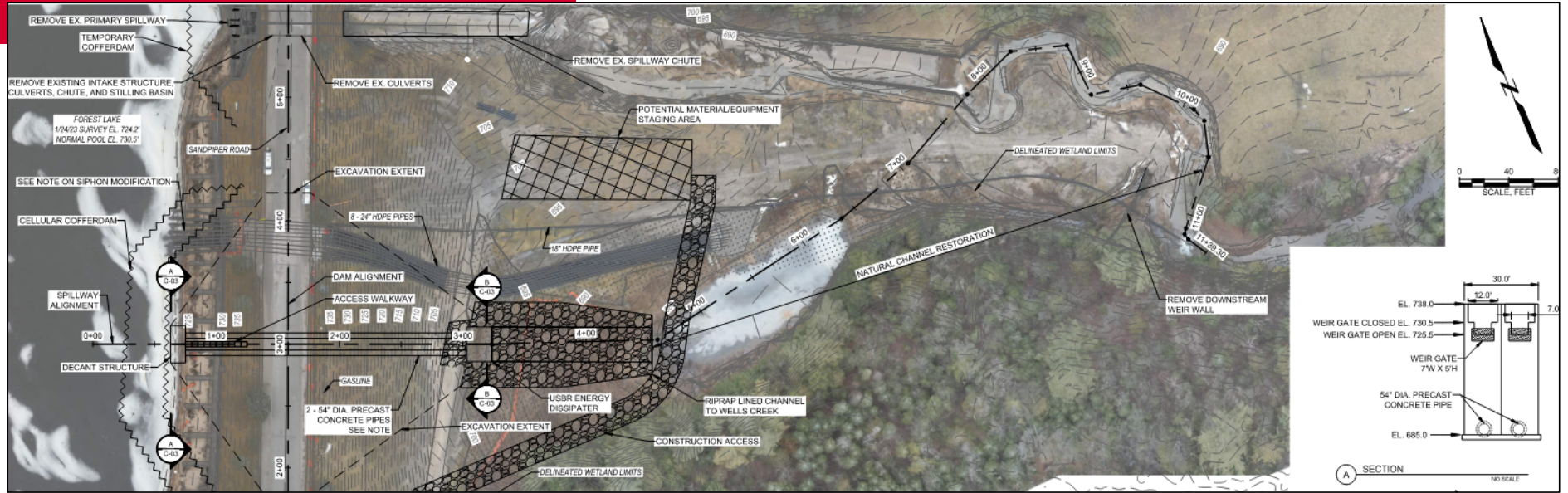
Alternative 2



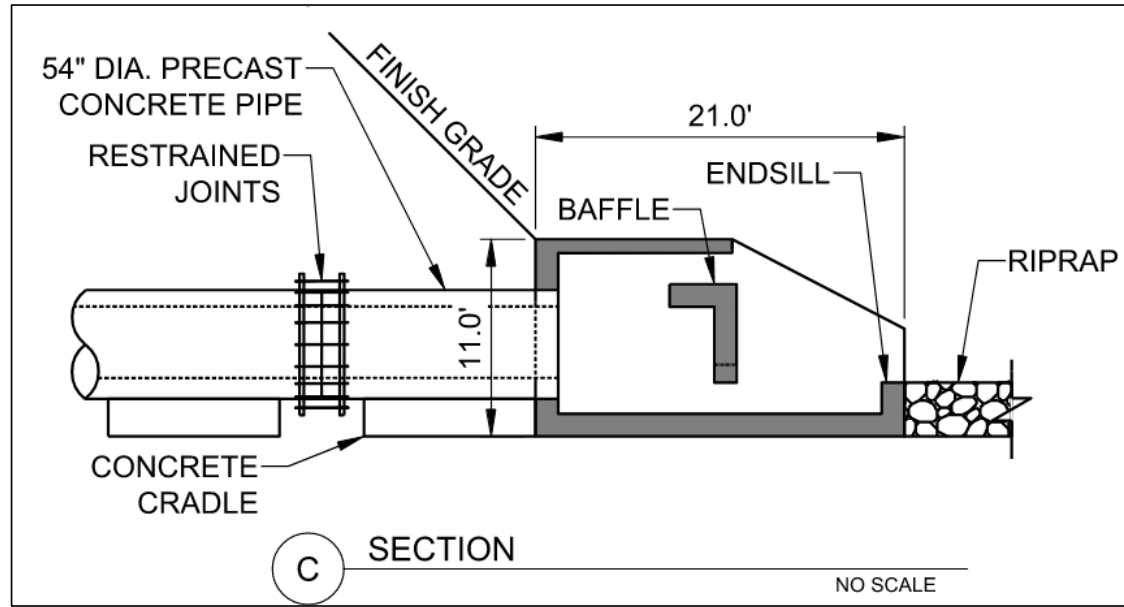
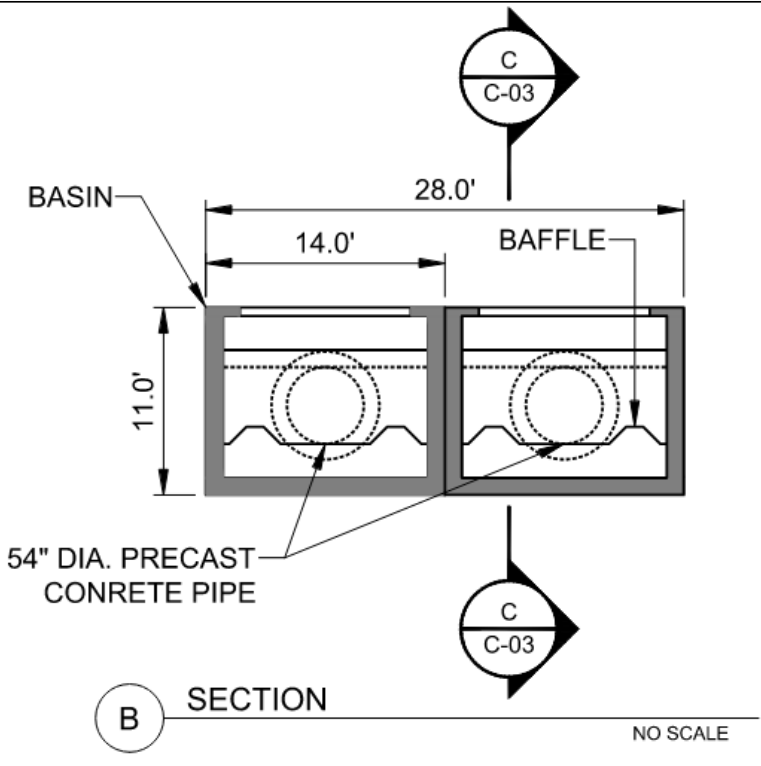
Alternative 2



Alternative 3



Alternative 3



Alternatives Evaluation



Flood Routing Results

Parameter or Modeling Result	Existing	Alt 1	Alt 2	Alt 3
Initial Water Surface El. (feet)	730.5	730.5	730.5	730.5
Peak Inflow (cfs)	898	898	898	898
Peak Outflow (cfs)	774	866	661	706
Maximum Reservoir El. (feet)	733.6	732.8	733.0	732.2
Freeboard (Dam Crest El. 739.3)	5.7	6.5	6.3	7.1



	Key Benefits	Cons
Alternative 1 New spillway chute in existing location	<ul style="list-style-type: none"> • Reuse of existing inlet structure and box culverts may result in cost savings and shorter construction duration • Lower outlet elevation provides improved downstream protection • Improved water level management with lowering of the auxiliary spillway • The existing water retention structures remain in place, thus eliminating the need for a cofferdam during construction. • Familiarity of the operation of the existing intake structure • Maintains access across Sandpiper Road during construction • Existing siphon system can remain intact to manage flows during construction • Functionality of 48” CMP low level outlet for drawdown, following inspection of pipe condition 	<ul style="list-style-type: none"> • Minimal improvements to design life of intake structure • Significant cut bank or retaining wall needed on left (north) side of discharge channel (requiring routine inspection and maintenance) • Potential future upgrade needs associated with upkeep on a 56-year-old structure
Alternative 2 Weir gate with box culverts and baffled chute	<ul style="list-style-type: none"> • Replacement of inlet improves design life of structure • Shifting of intake structure reduces impacts to northern bank and improves discharge hydraulics • Lower outlet elevation provides improved downstream protection • Improved water level management • Opportunity to add low level outlet 	<ul style="list-style-type: none"> • Increased impacts with replacement/relocation of inlet structure • Replacement of intake structure will require cofferdams and potential further dewatering (lowering of lake level) • Will require temporary closure of Sandpiper Road • Requires large cofferdam and demolition of existing structure • Large section of roadway removal and reconstruction of dam embankment
Alternative 3 Drop inlet with outlet pipes and USBR energy dissipater	<ul style="list-style-type: none"> • Replacement of inlet improves design life of structure • Shifting of intake structure reduces impacts to northern bank • Use of drop inlet provides improved hydraulic control and downstream protection • Improved water level management • Opportunity to add low level outlet 	<ul style="list-style-type: none"> • Maximum impacts with replacement/relocation of inlet structure • Replacement of intake structure will require cofferdams and further dewatering • Will require temporary closure of Sandpiper Road • Requires a significant drawdown and a large cofferdam structure, potentially a cellular cofferdam • Excavations well into the hardpan clay soils will be challenging to perform • Will require redesign and relocation of siphon pipe system during construction • Mitigation likely required for impacts to wetlands • Significant drawdown may result in impacts that aren’t justified by dam safety improvements (feasible and prudent alternatives)

Cost Estimates



Cost Estimates

Alternative 1

Item Description	Estimated Cost
Construction Cost Estimate	\$ 4,270,899
Contingency (30%)	\$ 1,281,270
Total Construction Estimate	\$ 5,552,168
Engineering and Permitting	\$ 555,217
Construction Engineering	\$ 555,217
Total Estimated Cost	\$ 6,662,602

Alternative 3

Item Description	Estimated Cost
Construction Cost Estimate	\$ 7,073,205
Contingency (30%)	\$ 2,121,962
Total Construction Estimate	\$ 9,195,167
Engineering and Permitting	\$ 919,517
Construction Engineering	\$ 919,517
Total Estimated Cost	\$ 11,034,200

Alternative 2

Item Description	Estimated Cost
Construction Cost Estimate	\$ 5,908,039
Contingency (30%)	\$ 1,772,412
Total Construction Estimate	\$ 7,680,450
Engineering and Permitting	\$ 768,045
Construction Engineering	\$ 768,045
Total Estimated Cost	\$ 9,216,540

Implementation Duration

	Engineering Duration	Construction Duration
Alternative 1	~6 months	~6-9 months
Alternative 2	~6-9 months	~9-12 months
Alternative 3	~9 months	~12-15 months



Dam Rehabilitation Design



Final Design and Construction

- Final design and construction scope, budget and schedule will be dictated by selection of preferred alternative.
- EGLE JPA will be submitted following 60% design completion.
- Designs will be coordinated with NRCS for acceptance under EWP and in accordance with NRCS standards.





Questions?

4/20/2023