Newman Lake Flood Control Zone District
2023 Flood Control Facility Inspection Report

Inspection Date: June 6th, 2023 & October 11, 2023

Participants: Spokane County Engineering/NLFCZD Staff
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Outlet Structure:

Lake Level: During the facility inspection on October 11, 2023, the lake level was at 2124.24 feet with both gates closed. The downstream channel gauge read 2121.08 feet.

Gates:

The northwestern gate was opened for a brief check and had difficulty closing fully. There appears to be a slight leak in the northern gate. The southeastern gate was also checked, with no apparent issues observed when opened. As noted in previous inspections, there is still minor rusting on the steel gates and frame around the gate openings on the downstream side. There is also some pitting in the gates; however, it is not structurally significant (Figure 2). The gates and gate control mechanisms will be epoxy-coated in 2024, and the leak will be repaired as well. The wheel used to open the gates is cracked and needs to be re-welded (Figure 1).

Figure 1: Gate wheel showing signs of rust.

Figure 2: Flood gates need to be repainted. Surrounding concrete shows some pitting.

Gages:

The condition of both gages continues to deteriorate. Both gages are becoming difficult to read below the ordinary high-water mark. The gages will be replaced in 2024 as part of the Newman Lake Capital Budget Grant project (Figure 3, Figure 4).

Figure 3: Northern gate is leaking slightly.

Figure 4: Outlet channel gage is beginning to deteriorate at water level.

Structural Integrity:

The beams and concrete are still in good condition. There are no cracks in the walls, but there is some concrete pitting below 2123.00 feet. Some spalling on southwest corner of the structure will be monitored. The overflow weir was inaccessible due to water when inspected but appears to be in good overall condition with minimal signs of scour on the downstream side. The downstream riprap is still in place. The deck grating is in good condition and clipped down. There is graffiti on multiple walls of the outlet structure.

Figure 5a: Graffiti on downstream end of outlet structure.

Figure 5b: Graffiti on opposite side of channel from previous figure on the downstream end of the outlet structure.

Figure 6: Concrete spalling and pitting along with graffiti on upstream side of the outlet structure.

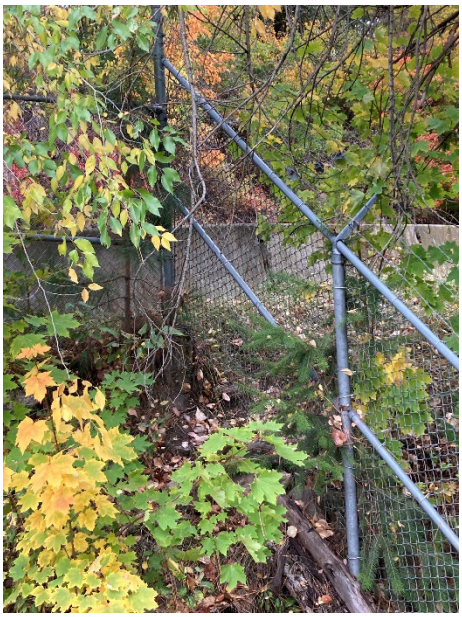

Figure 7: Northwest corner of outlet structure with a hole in the chain link fence.

Trash Rack:

The trash rack has surface rust below 2125.50 feet but is still in acceptable condition (Figure 8). It should be painted with an epoxy coating at the same time that the gates are painted to prevent further corrosion. Debris and aquatic plants are removed from the trash rack during periodic gage readings performed by staff. Gages at this location are also beginning to be difficult to read.

Figure 8: Some corrosion on trash rack.

Log Boom:

The log boom broke in the spring but was repaired to good condition and appears to be functioning well (Figure 9).

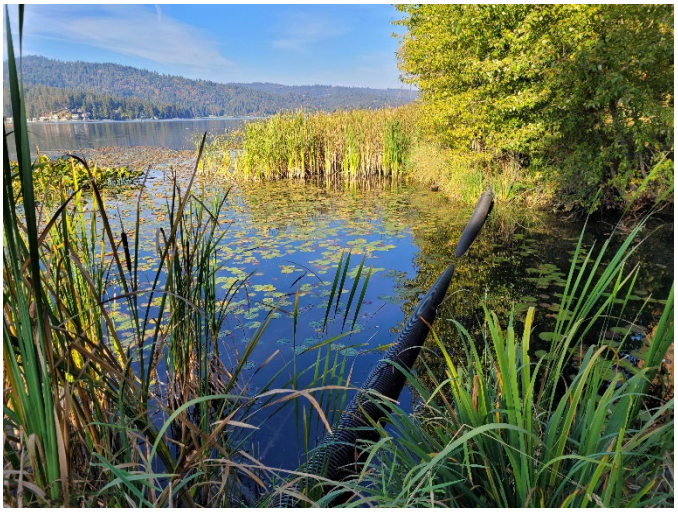

Figure 9: Log boom is still in good condition

Other:

- There is a hole in the chain link fence that could potentially allow access to the outlet gate (Figure 12). In addition, there is barbed wire that has been clipped (Figure 10). These repairs will be a priority at the start of 2024.

Figure 10: Barbed wire cut on eastern side of gate

Figure 11: View looking toward the lake. Barbed wire needs to be tightened.

Figure 12: Hole in chain link fence at outlet structure.

Channel Water Control Structure:

Water Level: 2120.75 feet (NAVD 88)Overall, the structural integrity of the channel water control structure is good, as in previous years (Figure 13). The concrete is still in acceptable condition with the exception of some spalling at the top of the roll gate (Figure 14). The repair is planned to occur in 2024 with the other structures. As noted since 2007, there are small cracks at the corner of both abutments (Figure 14). They do not appear to have changed significantly since last year, but staff will continue to monitor the cracks. The west side wing wall crack is still approximately 3/10 inch wide.

Figure 13: View of the upstream side of the channel water control structure.

Figure 14: Concrete spalling at the top of the roll gate and corner of abutment.

Figure 15: Spalling on roll gate

Figure 16: Spalling viewed from otherside

The downstream side of the channel is still in good condition with some erosion on the east side about 25 feet downstream below the shotcrete (Figure 16). The eroded soils may need to be stabilized in the near future.

Neither gate was tested during the facilities inspection, but the radial gate was opened by County staff laster in October with no issues. The weir gate is currently not functional and needs to be repaired. There is a small amount of water flow that passes through the gate currently in its closed position. (Figure 16).

The staff gage is becoming difficult to read below the ordinary high-water mark. The gage will be replaced in 2024 as part of the Newman Lake Capital Budget Grant project (Figure 18).

Figure 17: Weir gate closed during inspection.

Figure 18: Radial gate closed during facilities inspection, viewed from above.

Outlet Channel:

Water was present in the channel between the outlet structure and just upstream of the Moffat Road culvert. Due to the presence of water, access was limited. However, the channel was observed from road pullouts and along the banks, where possible.

Outlet Structure to Starr Road Bridge:

Water Level at Starr Road Bridge: 2121.25 feet (NAVD 88)

The stretch of channel between the outlet structure and Starr Road Bridge is well vegetated with grasses and lily pads. The channel banks appear to be in fair condition with some gradual sloughing and moderate bank failure downstream of the outlet gate. The bank condition will continue to be monitored for sloughing progression. There is some natural channel meandering beginning upstream of the Starr Road Bridge (Figure 19). The channel will be monitored for erosion and any necessary stabilization. Lily pad growth will also be monitored. The staff gauge at Starr Road Bridge is rusting and becoming difficult to read beneath the ordinary high-water mark (Figure 20). It will be replaced in the near future as part of the Newman Lake Capital Budget Grant project.

Figure 15: Channel is well vegetated and meandering upstream of Starr Road Bridge.

Figure 16: Staff gage at Starr Road Bridge is becoming difficult to read.

Starr Road Bridge to Channel Water Control Structure:
Water Level at Channel Water Control Structure: 2120.40 feet (NAVD 88)

The channel banks between the Starr Road Bridge and the channel water control structure appear to be in good condition and well-vegetated (Figure 21, Figure 22). Lily pad growth will be monitored over the next few years.

The gabion baskets along Starr Road Bridge are being eroded and are undercut. The gabions are canted approximately two feet from the bridge at the northwest and southwest corners of Starr Road Bridge (Figure 23, Figure 24). However, the baskets seen in Figure 24, and then on the other side of the road, but same side of channel, have not deteriorated since last year. The gabion baskets underneath the bridge deck have broken away from the bridge (Figure 24). The gabion baskets will need to be stabilized in the near future.

Figure 17: Channel downstream of Starr Road Bridge is in good condition and well vegetated.

Figure 18: Channel upstream of the channel outlet structure.

Figure 19: Gabion baskets beneath the bridge deck are separating from the bridge and deteriorating.

Figure 20: Gabion baskets at southwest and northwest corner of Starr Road Bridge are pulling away from the bridge.

As mentioned previously, the gage at the channel outlet structure as well as the Starr Rd. Bridge gage are difficult to read and needs to be replaced (Figure 20).

Channel Water Control Structure to Moffat Road:

The channel banks are in good condition and well vegetated between the channel water control structure and the culvert at Moffat Road (Figure 25, Figure 26). There is a pine tree growing above the downstream side of the Moffat Road culvert (Figure 27), but the culvert still appears to be in good condition (Figure 28). The culvert will be monitored for any future damage.

The weir upstream of the Moffat culvert is missing its weir boards (Figure 29). The gage at Moffat Road has some rust and is covered with vegetation that needs to be removed (Figure 30). The staff gauge will be replaced in the near future as part of the Newman Lake Capital Budget Grant project.

Figure 21: Channel downstream of the channel water control structure is well vegetated.

Figure 22: Channel upstream of Moffat Road is well vegetated.

Figure 23: Pine tree growing above Moffat Road culvert.

Figure 24: Moffat Road culvert is still in good condition.

Figure 25: No weir boards are present.

Figure 26: Staff gage is difficult to read and vegetation needs to be removed.

Moffat Road to Lincoln Road:
The banks appear to be in good condition. Vegetation throughout the channel thalweg was tall. Downstream of Morris Road the channel was dry. Fallen trees, brush and wood debris were removed within the main channel by the clean-up crew in October.

Lincoln Road to Eller Driveway:
The bottom of the Lincoln Road culvert is still deteriorating. Noticeable undermining of roots for two pine trees located on top of the Lincoln Road culvert was observed. The undermining will be monitored for future damage. The culvert is also beginning to compress due to road traffic pressure. There is some concern with the bank stabilization near Eller's Pond, but it hasn't noticeably changed since the 2012 inspection. Fallen trees, brush and wood debris were removed within the main channel by the clean-up crew in October. As noted in a previous report, there is erosion and sloughing of the driveway edge above the middle culvert of Eller's driveway at Marve Lane. The hole over the middle culvert noted in the 2019 Inspection report has reappeared. Additional rocks and damage on the inlet side of all 3 culverts were observed. Discussions to repair the culverts have not progressed.

Eller Driveway to Sump:
This section of channel was walked and appeared to be in good condition with some bank sloughing along the corner bends just downstream of Eller's driveway. Some scour was present along the "S" curve just downstream of Eller's but has not changed much since last year. Much of this section of channel is composed of bedrock, boulders, and cobbles. Between the "S" curve and the sump the channel widens and becomes very shallow. Vegetation covers the entire section and a few animal trails were observed.

Overall, the operating condition of the Outlet Channel is in good condition with the exception of its culverts.

Sump Area:
Condition of exposed gravels:
The gravel looked fair. There was observable silt buildup present during the inspection. Sump was scraped and silt-laden material was removed in November 2017.

Dikes:
The separation dikes and overflows are in good condition. The gabion baskets are also in good condition. There is minimal scouring at the pipe outlet. The trash rack fence is holding up well.

Gages:
Both gages are in good condition.

Figure 28: Lincoln Rd culvert deterioration

Figure 27: View of upstream end of Eller driveway culverts.

Figure 30: Close up of an Eller driveway culvert inlet

Figure 29: View of downstream end of Eller driveway culverts

Lake Dike:

Inspection Date: Annual Dike inspection occurred on June 6th, 2023 & October 11th, 2023.

Participants: Spokane County Engineering/NLFCZD Staff
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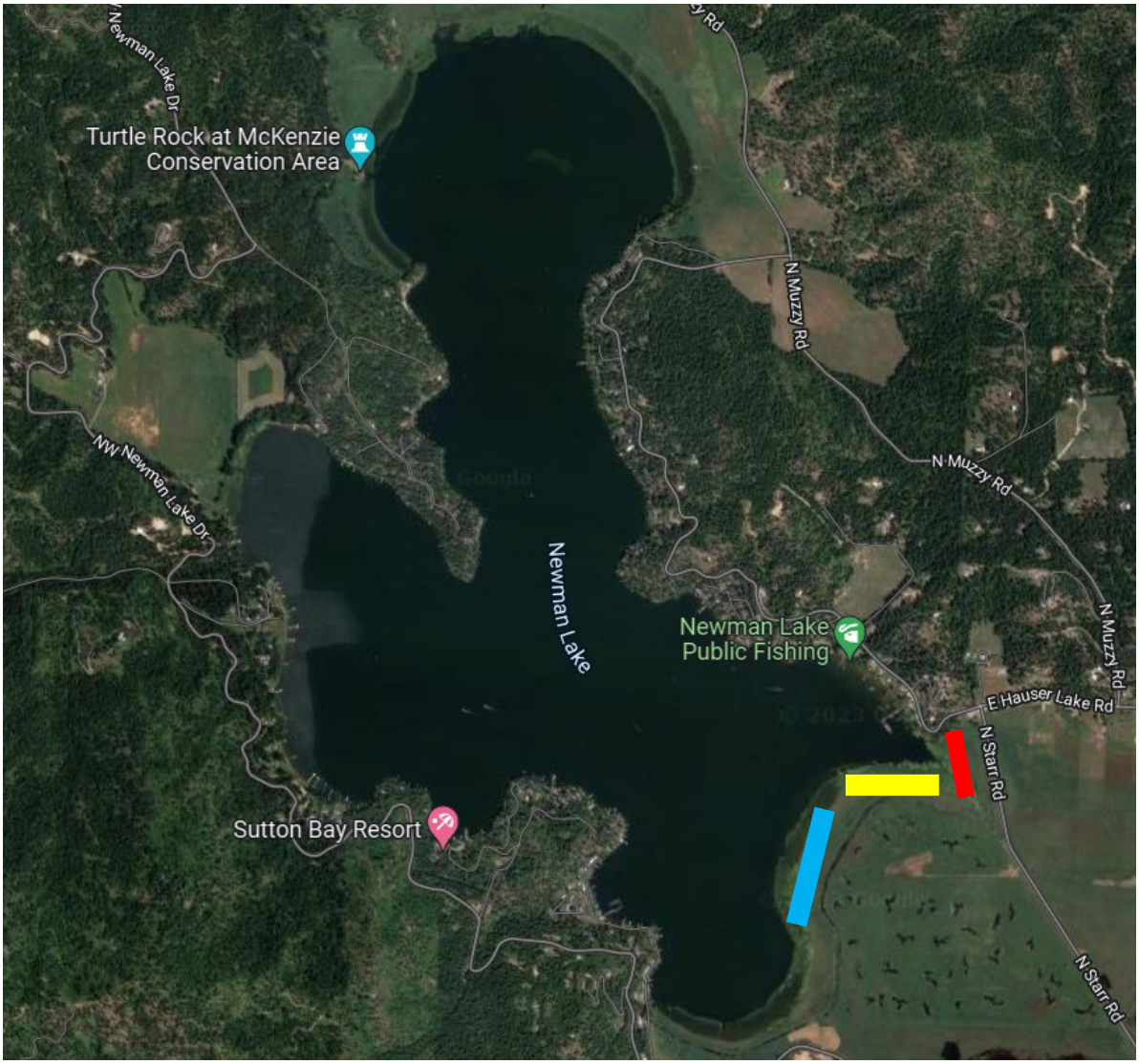
Inspection Notes:

- Multiple animal burrows and cracks are present along sections of the dike.
- Certain areas of the dike are below the 100-year flood elevation.
- Sand bags are still present from flood mitigation attempts in 2017.

Discussion Items:

- The dike is continuing to deteriorate and no longer is capable of impounding the amount of water it was designed to. Restoration efforts would be very costly and full removal of a section could impound downstream areas. Further discussions between NLFCZD & NRCS have led to a full topographic survey of the dike in 2023. Data is being analyzed and will steer decision making in 2024.
- Lincoln Road culvert deterioration.

Dike Photos and Locations:



Location 1 shown in red

Location 2 shown in yellow

Location 3 shown in blue

Location 1: Sandbags and cracks along dike near Starr rd.

Location 2: Deep animal burrows and holes next near piles installed from previous dike maintenance. Also shown is rut that runs alongside piles on the lake side of the dike with a few feet of ground elevation difference.

Location 3: Deep holes, cracks and animals burrows in this area are shown below.