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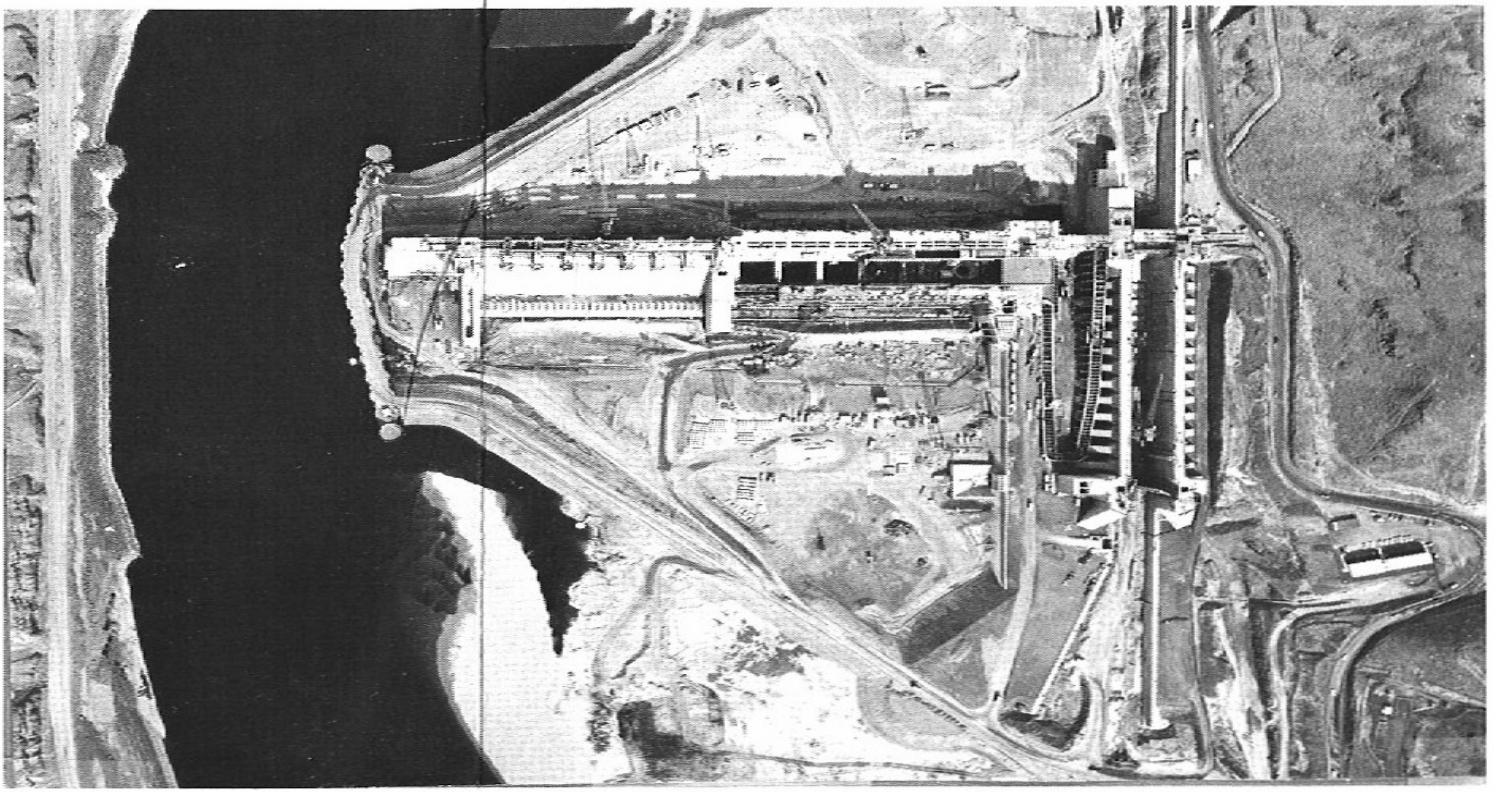
Little Goose Spillway



FIRST-STEP CONSTRUCTION

STARTED
JUNE 1963

SOUTH SHORE CONSTRUCTION-NAV. LOCK, NON-OVERFLOW DAMS, FISH LADDER, POWERHOUSE AND SPILLWAY

COMPLETED
APRIL 1969

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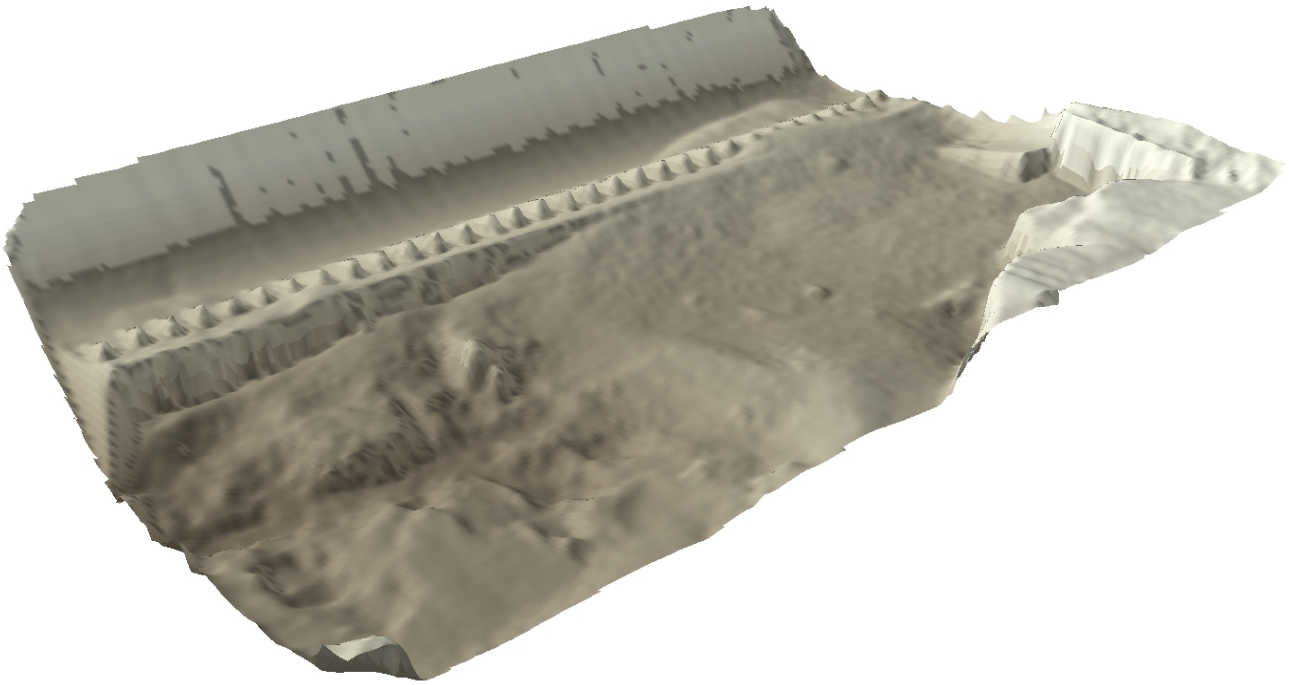

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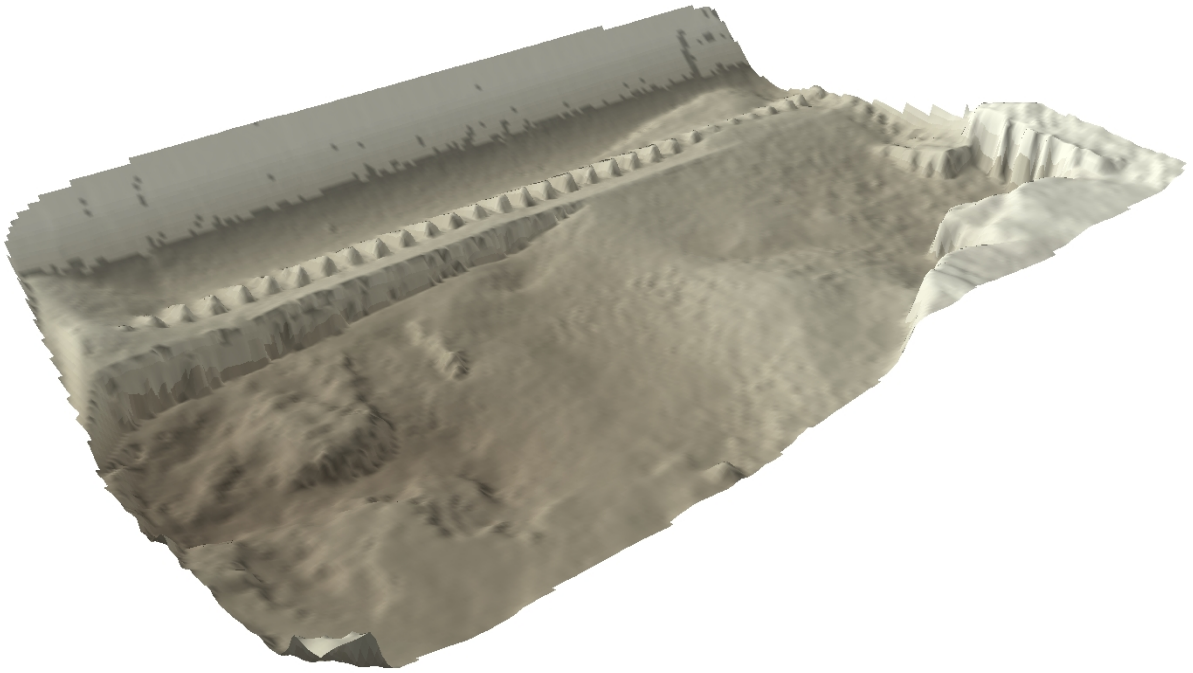

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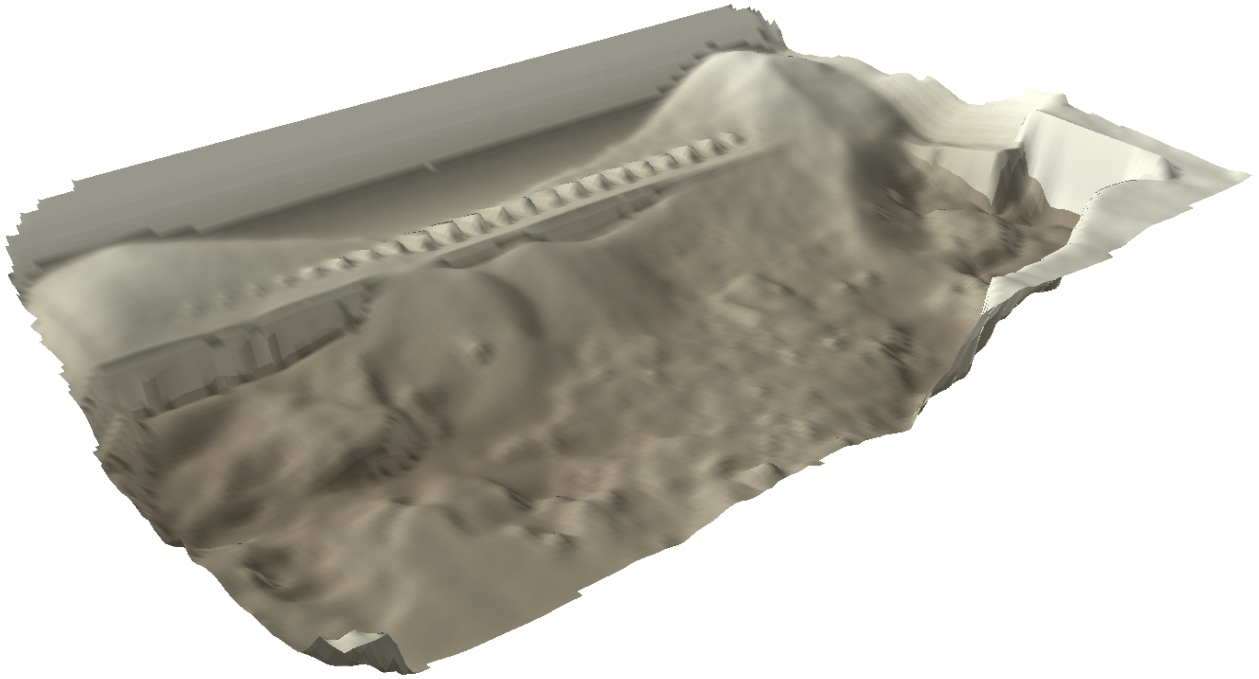

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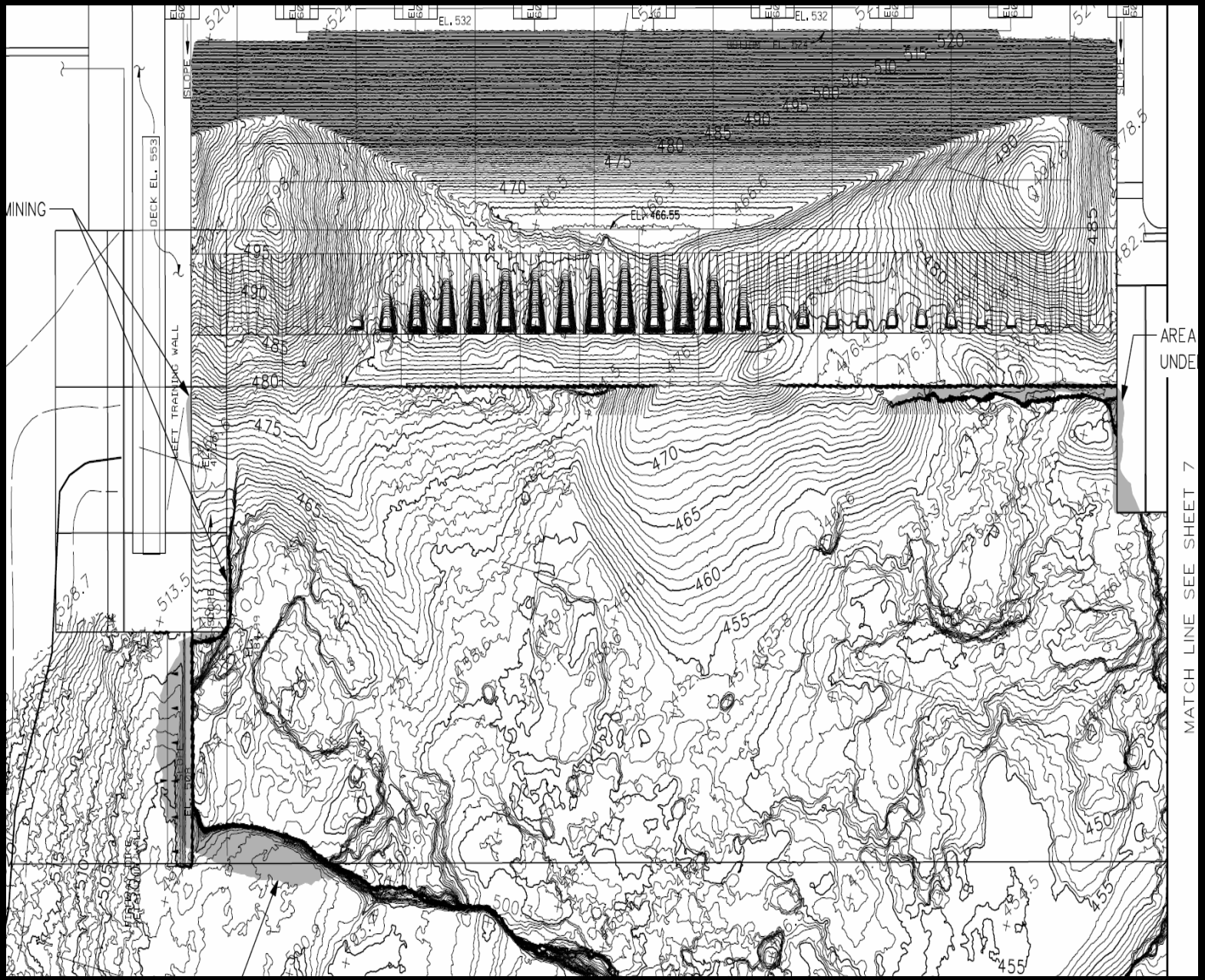
EL. 532
EL. 532
SLOPE
SLOPE
DECK EL. 553
MINING
LEFT TRAINING WALL
EL. 466.55
AREA
UNDE
MATCH LINE SEE SHEET 7

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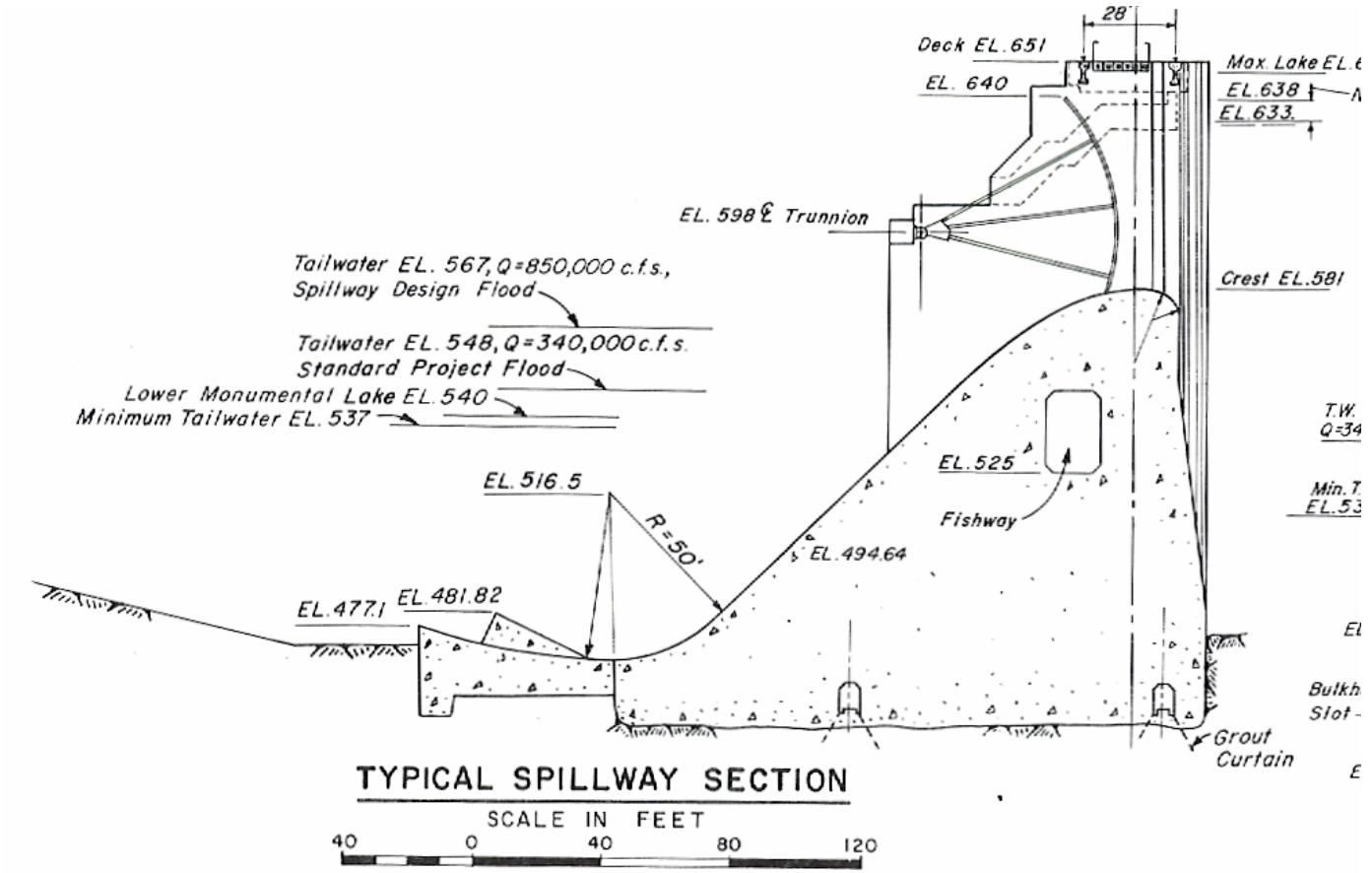

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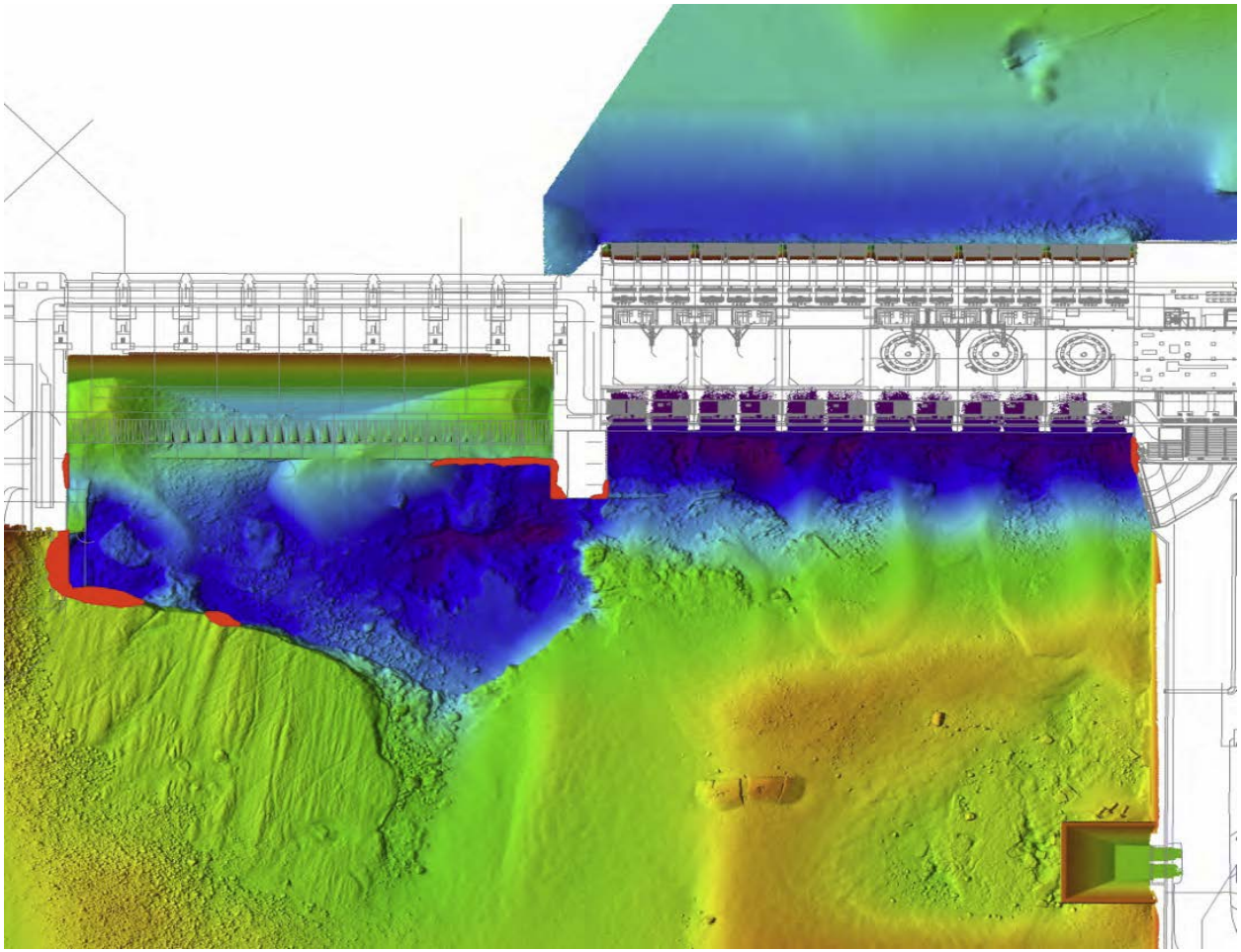

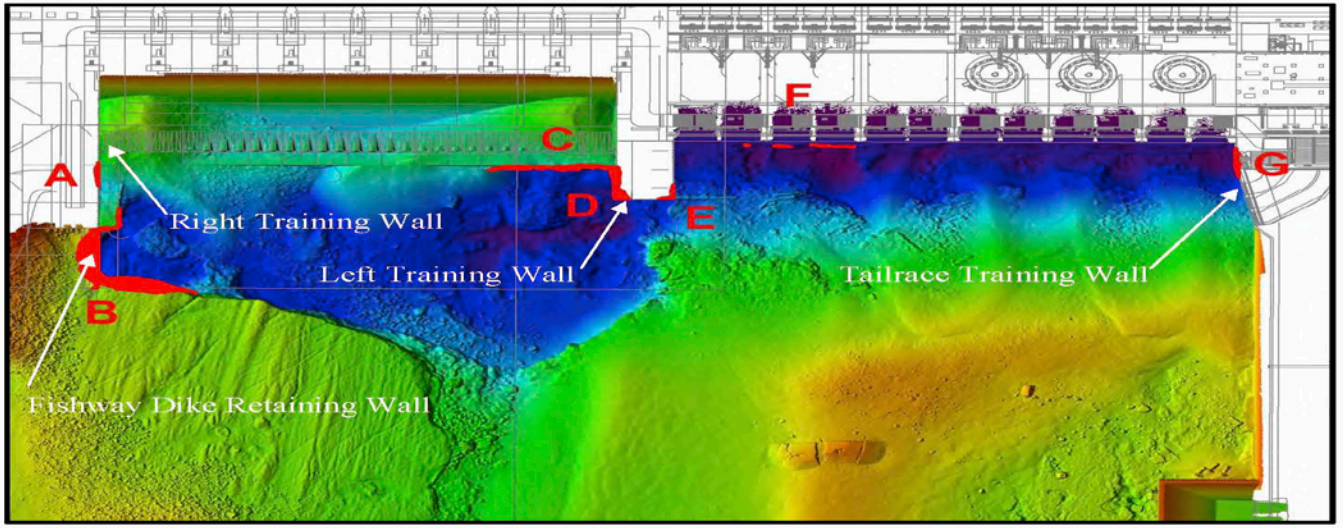

Figure 6: Areas of significant undermining

To quantify the amount of undermining, a reference surface is required. At the time of this report, no as-built Computer Aided Design and Drafting (CADD) objects were available for comparison. Reference surfaces were generated from least squares best-fit planar objects aligned to walls. A summary of the approximate extents of the undermining at each area are presented in Table 6. The depth of the undermining is shown as a distance from the reference plane, normal to its surface. Volumes represent the cubic yards required to fill the void under walls or structures created by the undermining process. Volumes were not computed when the undermining created voids under bedrock.

Table 6: Extents of significant undermining

Designation	Area	Length (Feet)	Height (Feet)	Depth (Feet)	Volume (Cubic Yards)
A	Right Training Wall	26	13	3	10
B	Fishway Dike Retaining Wall	76	42	19	1050*
C	Stilling Basing End Sill	30	5	2	5
D	Left Training Wall, North Side	50	14	12	53
E	Left Training Wall, West Side	18	8	2	3
F	Powerhouse	22	4	3	N/A
G	Tailrace Training Wall	46	7	5	14

*Volume represents amount of material to fill the void under the Fishway Dike Retaining Wall and not the large void extending under the bedrock downstream.

6.2.2 Area B – Fishway Dike Retaining Wall

A very large area of erosion was discovered downstream of the north fish entrance, shown in Figure 8. This area undermines the Fishway Dike Retaining Wall and bedrock downstream of the north fish entrance. It does not undermine the fish entrance. To measure the volume, the same plane fit to the Right Training Wall computed for Area A, which extends to the end of the Fishway Dike Training Wall, was used as the reference surface.

The void under the Fishway Dike Retaining Wall is approximately 76 feet long by 42 feet high, cutting a maximum of 19 feet into the area behind the wall. The volume of the pocket was estimated at 1,050 cubic yards.

Although a significant amount of undercut exists in the bedrock downstream of the stilling basin, it lies outside of this plane. The volume of this area was not included as there was no information available to reconstruct a reference surface.

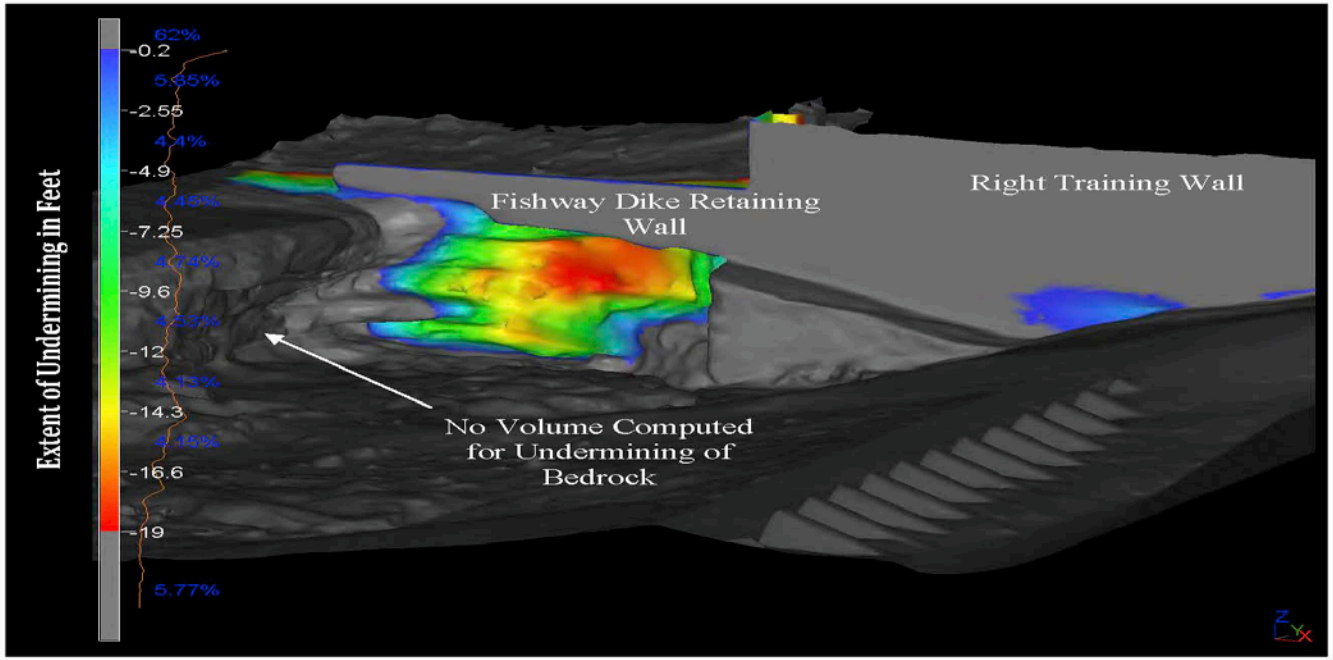

Figure 8: Undermining Area B, Fishway Dike Retaining Wall

6.2.3 Area C – Stilling Basin End Sill

Apparent undermining exists beneath the stilling basin end sill, as shown in Figure 9. The extents of the undermining were estimated by fitting a vertical plane through the top of the end sill, then projecting that plane down to the river bottom below. The end sill is resting on bedrock which is being undermined leaving a ledge of material with varying widths at the base of the endsill.

The extent of the area lying beneath the stilling basin slab is approximately 30 feet long by 5 feet high, cutting a maximum of 2 feet into the area below the stilling basin (distance from a plumb line from the end sill and not from the rock ledge projecting downstream). The volume of the undermined area was estimated at 5 cubic yards.

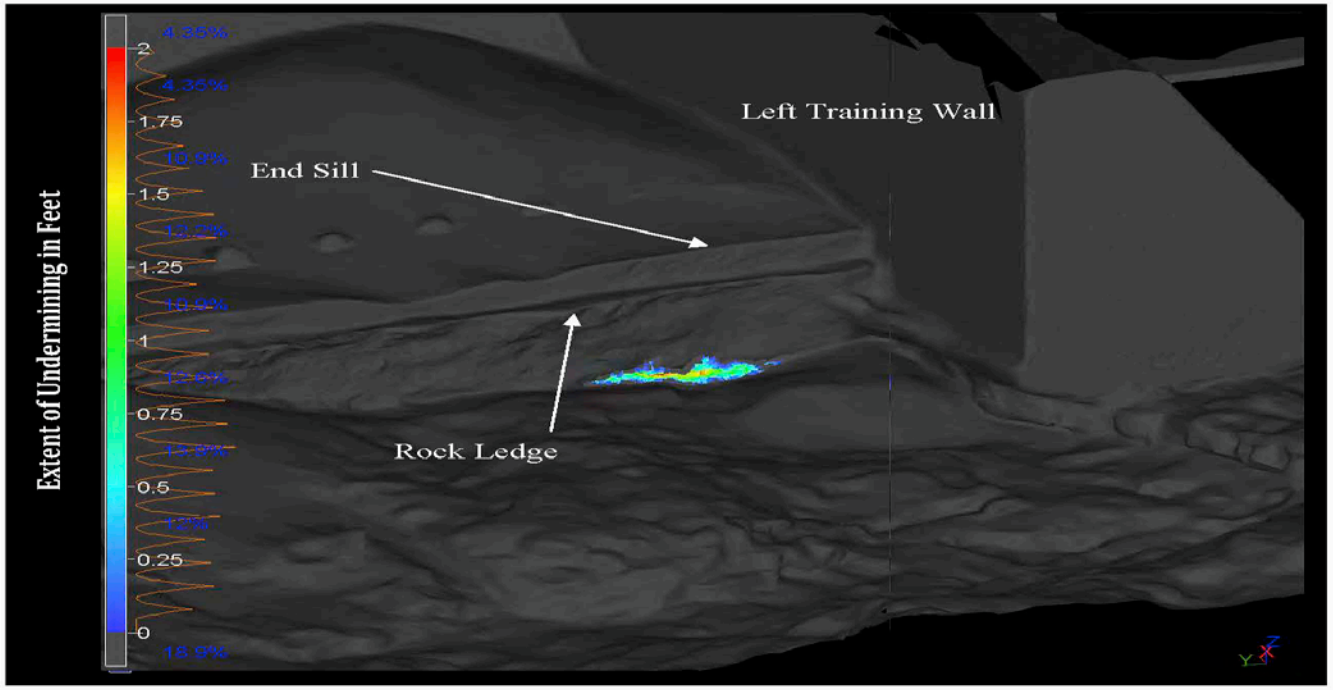

Figure 9: Undermining Area C, Stilling Basin End Sill

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Questions