The Dalles Dam Powerhouse Trash Rack ROV Inspection Report

Report date: 8/21/13;

Inspection conducted for: The Dalles Dam, POC Robert Cordie;

ROV Inspection by: NWP Office of Dive/ ROV Operations and Safety

Inspection location: TDA Powerhouse Main and Fish Unit Trash Racks;

Desired inspection targets: Locate submerged debris on or piled in front of trash racks;

ROV and Sonar description:

The Dalles Dam Trash Racks were inspected using a Deep Ocean Engineering XTL Phantom remotely operated vehicle (ROV). Visual inspection was conducted using the installed high resolution camera and documenting on DVD. Sonar imaging was conducted utilizing a BlueView 2D multi-beam sonar as well as a Tritech SeaPrince Sector/ Polar Scan sonar.

Figure 1 DOE Phantom XTL ROV and sonar

TDA trash rack Inspection description:

This ROV inspection was conducted to determine the amount of debris loading on the 22 Main Generating Unit trash racks as well as the 2 Fish Unit trash racks. Due to the need for power generation to continue during the inspection, Main Units (MU) were secured, locked-out/ tagged-out and inspected in groups of four at a time. This ensured the distance needed between running units to provide a safe area for the ROV to operate in during the inspection but a significant cross-flow still existed. Due to this cross-flow, the inspection continued but we kept the ROV on or close to the surface and utilized the BlueView sonar exclusively.

Initial inspection plan was to inspect MU trash racks from a distance with the BlueView sonar until debris loading was found. Once found, the ROV would be piloted closer to obtain video and determine the extent and content of debris. This was a great plan in theory but there was no significant debris found on the trash racks.

Some debris was found in front of MU trash racks at the upstream end of the Powerhouse and in front of the Fish Unit trash racks at the downstream end. This minimum debris consists mainly of small rock, gravel and small woody debris. The rock and gravel appears to have sloughed off of the sloped bottom at each end of the Powerhouse. See fig. 8 & 16.

The Fish Unit trash racks have some wood debris on the very top trash rack that may need to be removed to allow clearance for the lifting beam if removal of the trash rack is needed. See fig. 9 & 10.

Please note: The sonar images of the trash racks appear as mostly horizontal lines and do not show the vertical bars as constructed. This is due to the installation angle of the trash racks, viewing angle of the sonar, as well as the small cross-section of the trash rack vertical bars. As the sonar is panned down the angled trash rack, the multiple beams that reflect off of the larger surface area of the horizontal bars is greater than the vertical bars and therefore the sonar interprets the image as a trash rack of horizontal members.

Figure 2 Typical top of MU trash rack.

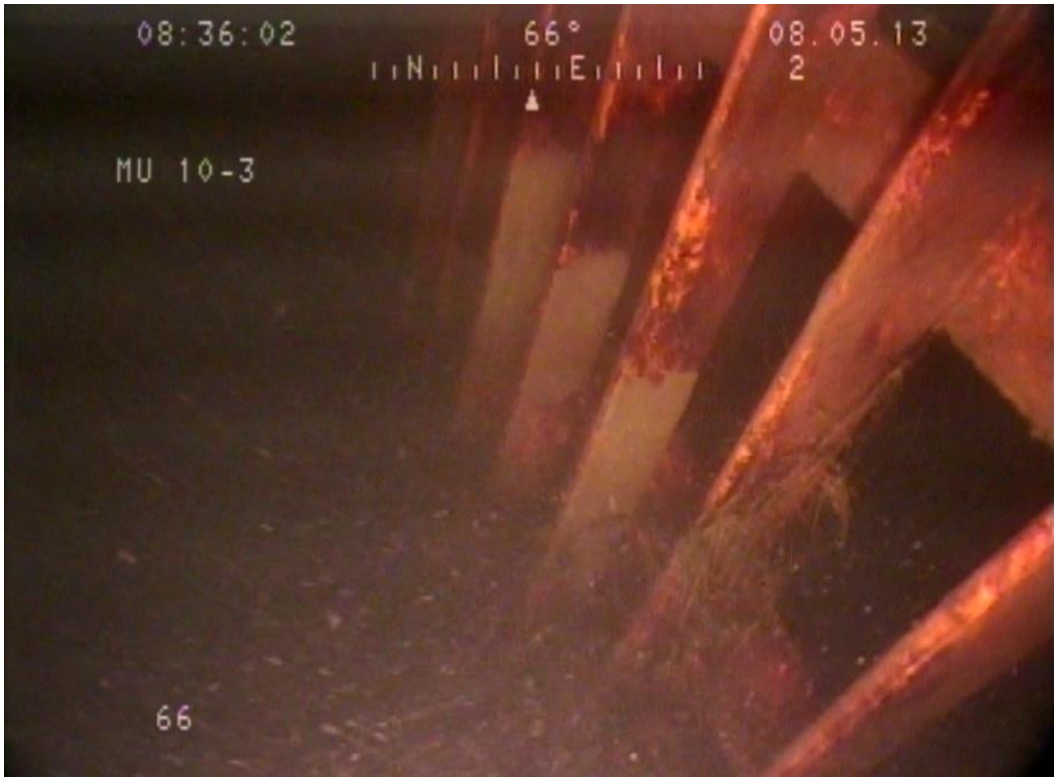

Figure 3 Typical MU trash rack at depth.

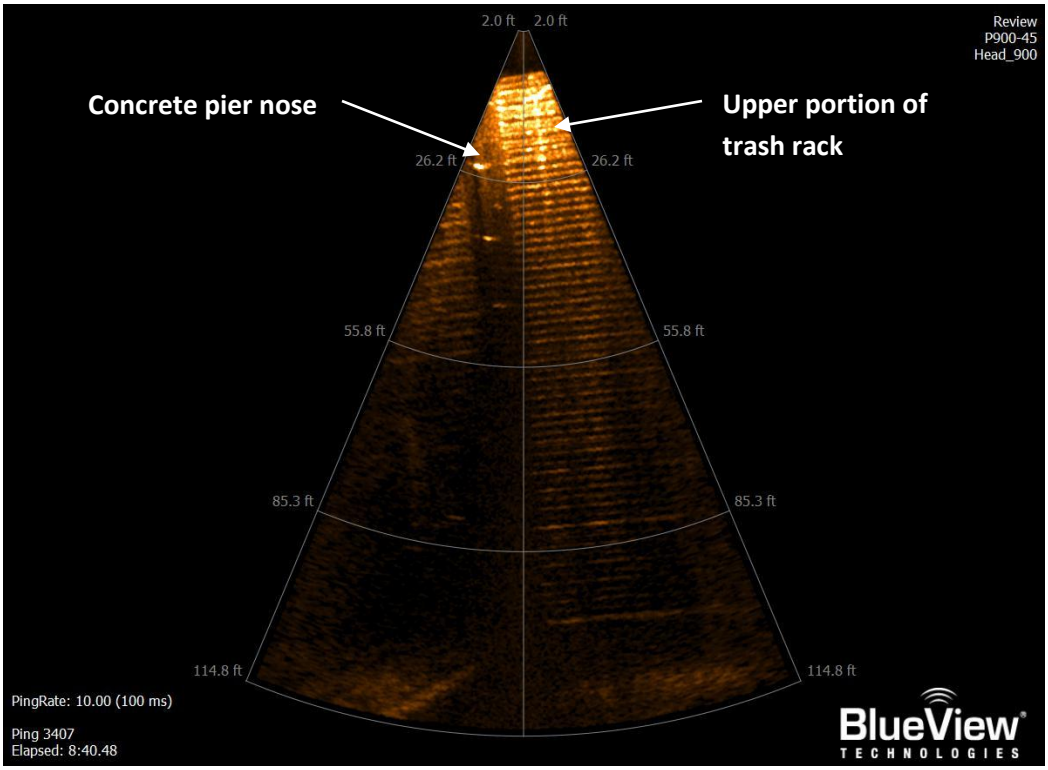

Figure 4 Typical sonar image of upper MU trash rack. If there was debris on the trash rack, it would show up as a very bright sonar reflection across the trash rack horizontal bars.

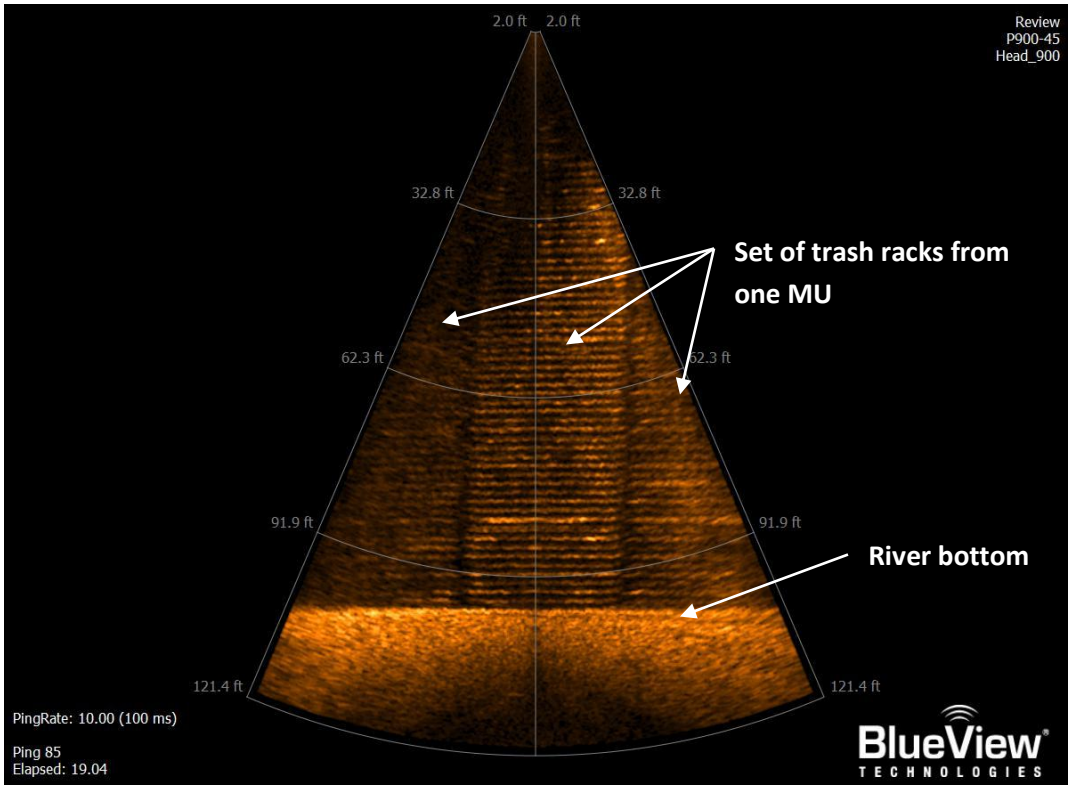

Figure 5 Typical sonar image of bottom of MU trash rack. Image shows a nice even bottom and trash racks free of debris.

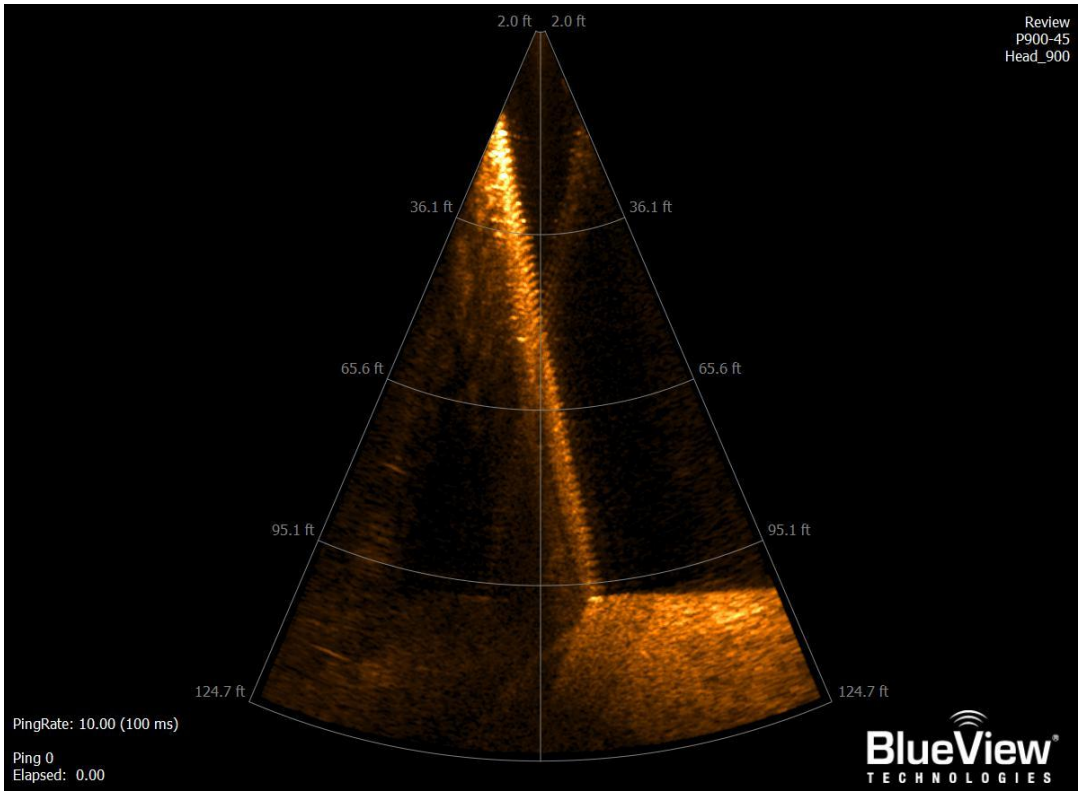

Figure 6 Typical sonar image of MU trash rack profile.

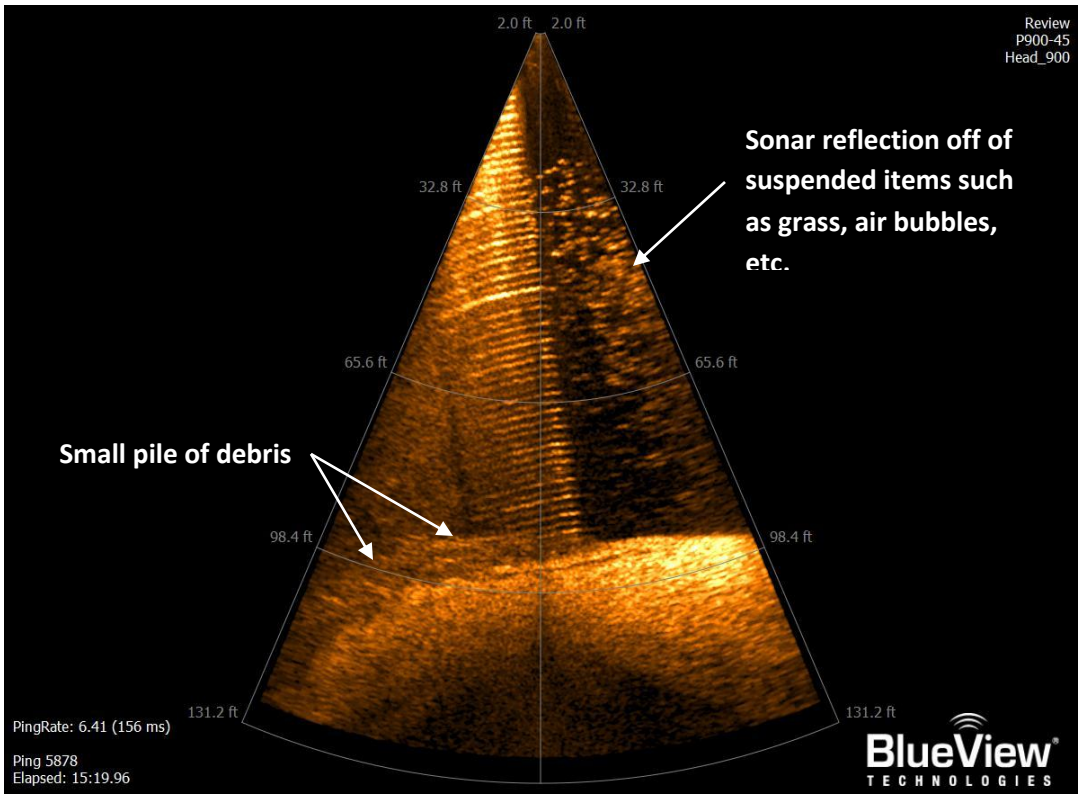

Figure 7 Sonar image showing small pile of debris on MU trash rack at upstream end of powerhouse.

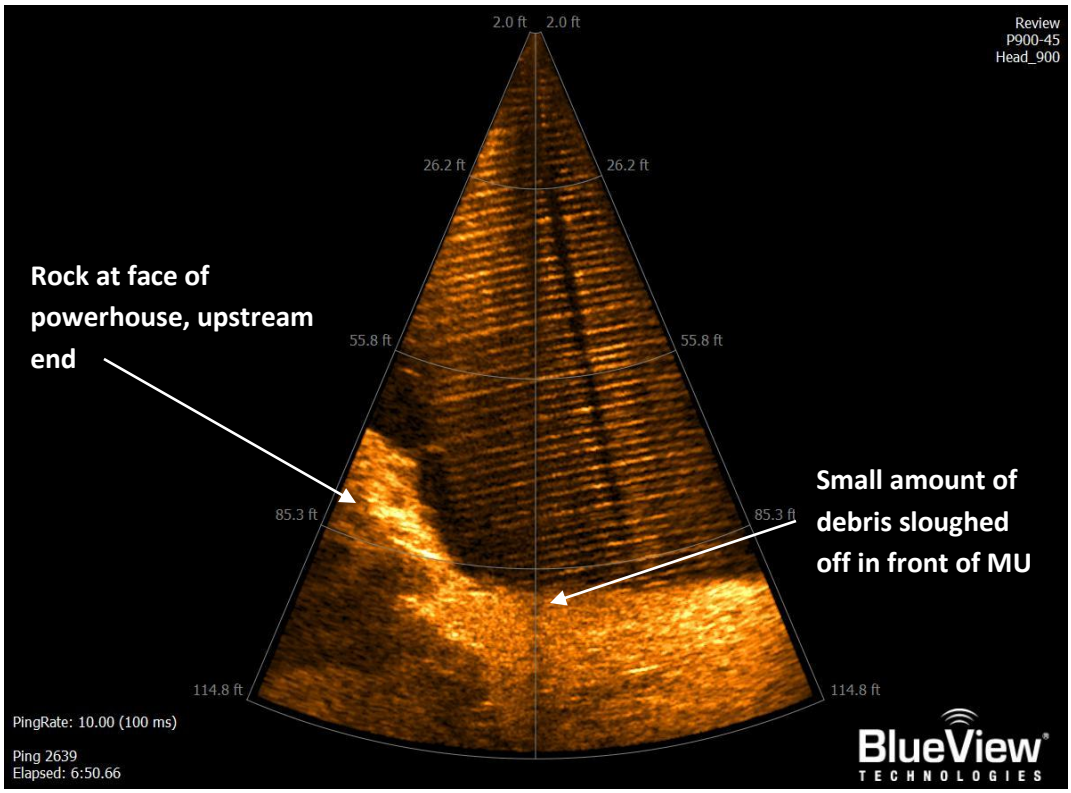

Figure 8 Sonar image showing small debris pile in front of MU 22 trash rack.

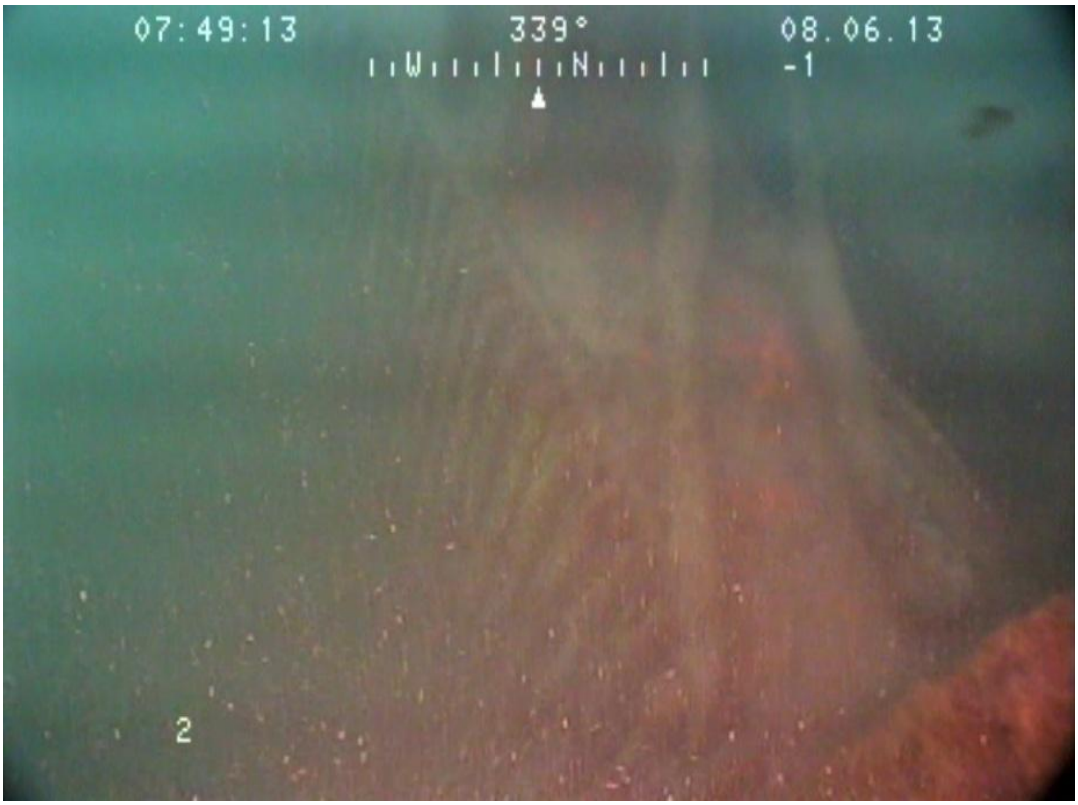

Figure 9 Typical FU trash rack showing woody debris.

Figure 10 Top of FU trash rack with woody debris.

Figure 11 Typical FU trash rack near surface showing grass debris.

Figure 12 Typical debris at bottom of FU trash rack.

Figure 13 More FU debris.

Figure 14 FU trash rack debris. Appears to be a piece of tarp or bag.

Figure 15 FU trash rack debris. Appears to be a fiberglass lid.

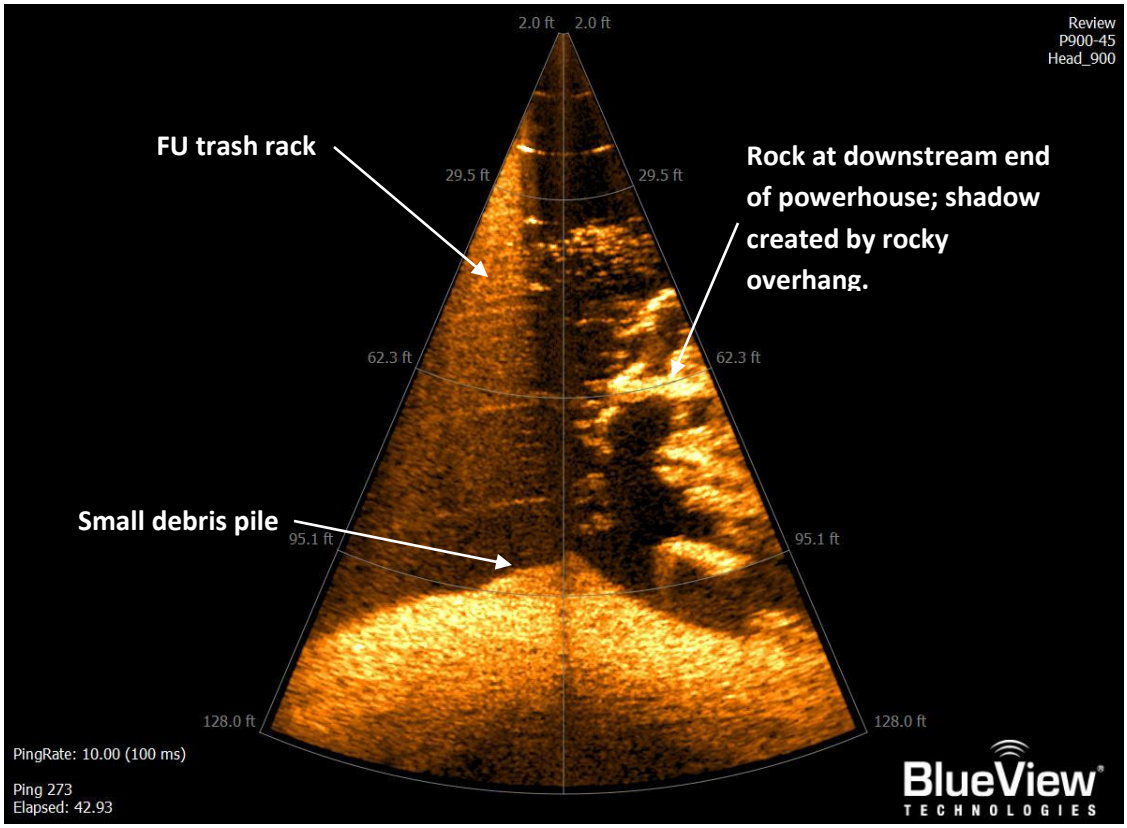

Figure 16 FU trash rack at downstream end of powerhouse.

Inspection conclusion:

TDA Powerhouse Main Unit trash racks have very little debris loading either on or piled at their base. There was one small pile found, approximately 5 feet high by 25 wide in front of MU 21 and 22.

Overall, the MU and FU trash racks are in excellent structural condition as well as being free of major debris loading. I believe TDA Powerhouse has such little debris due to its unique parallel configuration with the flow of the Columbia River.

Point of contact for inspection results and report:

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