



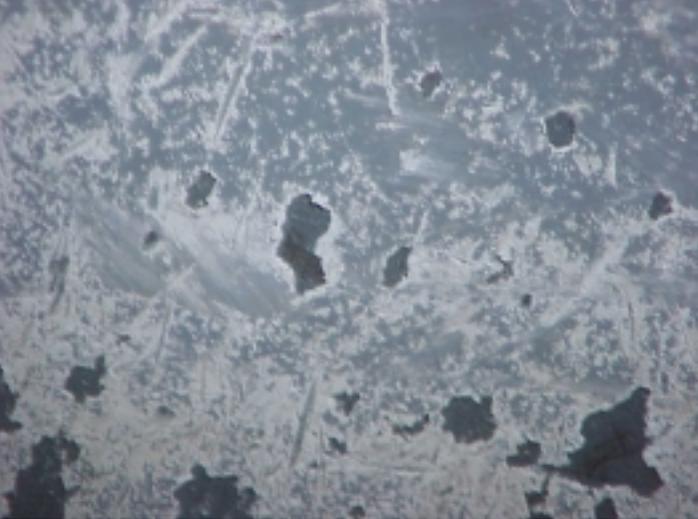
Greenup Dam Tainter Gate



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White and gray sealer is being eroded. Solid gray spot has no coating but is being galvanically protected by the metallizing.



Pattern indicates damage by abrasion



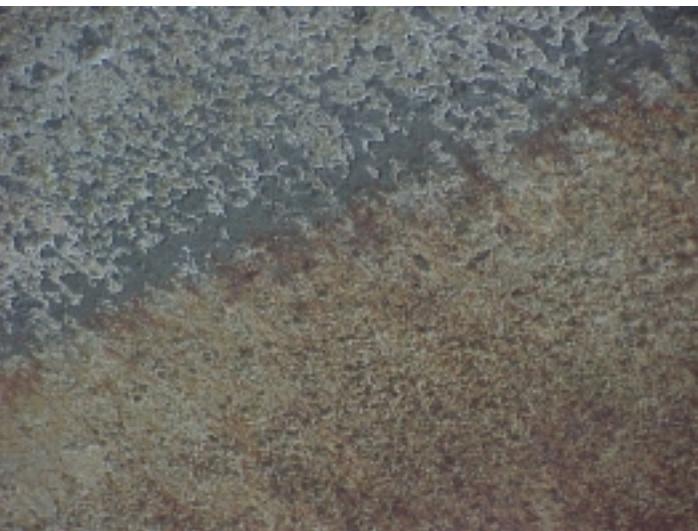
Erosion on weld lines



Beginning of failure on nose



Failure on edge





Downstream nose area.



Erosion on downstream weld line above nose.



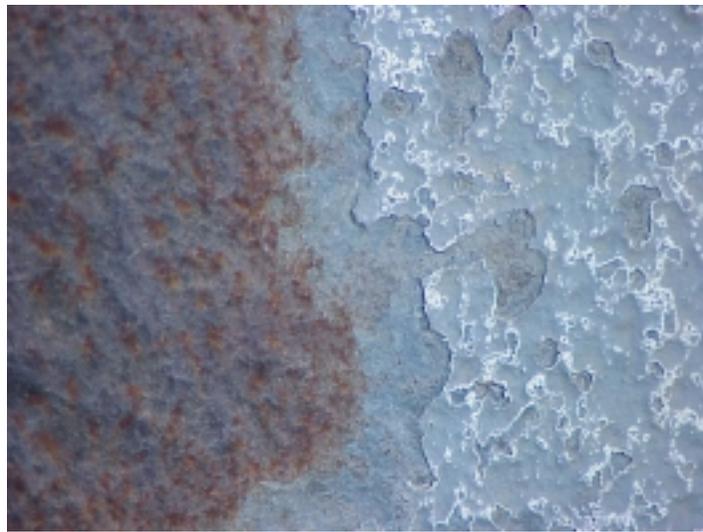
Downstream nose area.



Downstream nose area.



Downstream nose area.



Close-up of failure on downstream nose area.



Failure often begins as the coating is worn off the protrusions of a rough surface



On a smooth surface failure begins at a spot; the metallizing sacrifices to protect the spot until the diameter reaches ~2.5cm (~1 inch). As the spot becomes larger, rust begins in the center.



Upstream failure on lower portion of gate



Upper portion of upstream side of gate



Close-up of upstream side of gate



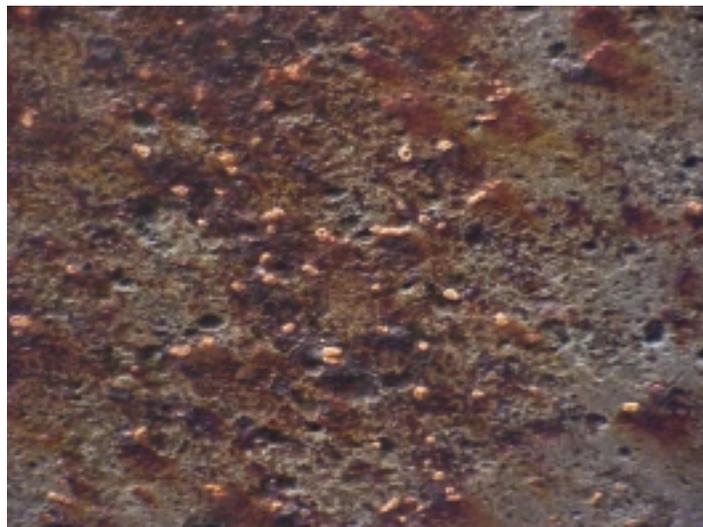
The lower section of the upstream side is high strength steel and subject to very high velocity flow.



Lifting cables are stainless steel



Lifting cables of stainless steel accelerate corrosion



Corrosion on high strength steel may begin on pre-existing pits that were poorly coated



Cause of random spotty failures is unknown



Nose area of the downstream side receives high abrasion



Last gate is poorest condition because area is used to pass drift



Damage of coating on nose area on second worst gate caused by passage of drift in adjacent bay.