

Washington DOT Bridge Washing Pilot Study

Chris Keegan, P. E.
Operations Engineer

Paula Hammond
Secretary of Transportation

Why?

- Due to changes in environmental regulations, WSDOT has not done routine bridge washing in over 20 years.
- Inspectors cannot inspect what they cannot see.
- Steel bascule bridges required ballasting to function.
- Moved to a bare pavement policy using NaCl 6 years ago.
- Cleaning should provide longer paint life and allow a spot painting program.

Design for Easier Maintenance



Current Permit

- Requires thorough hand cleaning of the bridge.
- Waste material measured and hauled off to an approved upland site.
- Bridge washing allowed after hand cleaning.
- Bridge washing allowed only during high run off, up to the end of May.
- Turbidity testing and effluent testing on select bridges.
- Requires covering the land area with tarps.

The Plan

- Focus on Steel Truss Bridges over water.
- Pilot program to determine cost.
- Change permit to allow annual flushing without first hand cleaning.
- Request funding for annual bridge washing and spot painting, including one time costs for equipment and thorough hand cleaning.
- 2011 – 2013, \$3.7 Mil; 2013 – 2015; \$3.5 Mil; Then \$ one million per year to maintain.

Collected debris after hand cleaning.



Owls Nest with eggs



Pilot Bridge Washing

- What is the science?
- Turbidity upstream?
- Turbidity downstream with thorough hand cleaning and after one year without hand cleaning?

Desired Result

- Permit to allow annual flushing of truss bridges over water without annual hand cleaning. **Done, approved for 2013**
- Remove permit requirement to tarp the bank during flushing.
- Funding to wash steel bridges over water annually.

Bridge washing results

- Black River, New paint three years ago, flush only: 1.60 ntu upstream 1.68 ntu 300 yds downstream.
- Sol Duc #4, Cleaned a year ago, flush only, .21 ntu upstream, .38 ntu downstream.
- Sol Duc # 5, hand clean then flush: .22 ntu upstream, .28 ntu downstream.
- Naches River, hand cleaned and then flush: 1.88 ntu upstream, 1.90 ntu downstream.

Results To Date

- Downstream turbidity increase was within tolerances.
- Established cost data for hand cleaning and flushing as well as flushing alone.
- Department of Ecology wanted another year of data. This was completed with the results within tolerance
- Approved permit to allow annual flushing. Request for increased funding was turned down after first year now approved.

Plan B

- We will flush those trusses that were cleaned within the last year or are new. (17 out of 29 within Olympic Region)
- UBIT's are needed for bridge washing.
- Resubmit funding request next year while continuing to add to the inventory of cleaned bridges as they are painted.
- Develop a five year permit for spot and area painting.

Lessons Learned

- Always have a plan B
- Know the science.
- Don't accept no for an answer.
- Never give up.
- USDA APHIS is a relatively low cost and effective way of keeping pigeons and other animal pests under control. Peregrine falcons and owls do a good job at a lower cost, but no flushing is allowed during nesting season.

QUESTIONS?

