SWIFT CREEK ACTION PLAN
Whatcom County, Washington

December 2019

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Cris Matthews (Primary contact)
Toxics Cleanup Program - Bellingham Field Office
913 Squalicum Way, Suite 101
Bellingham, WA 98225
(360) 255-4379 or Cris.Matthews@ecy.wa.gov

Tamara Cardona-Marek
Toxics Cleanup Program – NW Regional Office
3190 160th Ave. SE, Bellevue, WA 98008
(425) 649-7058 or Tamara.Cardona.Marek@ecy.wa.gov

Pete Kmet (Retired)
Washington State Department of Ecology
Toxics Cleanup Program - Headquarters Office
300 Desmond Drive
P.O. Box 47600
Olympia, WA 98504-7600
Table of Contents

Executive Summary
1.0 Introduction
   1.1 Purpose
   1.2 Previous Studies
   1.3 Regulatory Framework
2.0 Site Description and History
3.0 Action Alternatives and Screening Level Analysis
4.0 Proposed Selected Action and Analysis of Compliance with MTCA
   4.1 Definition of Site
   4.2 Description of Proposed Action
   4.3 Analysis of Selected Remedy for Compliance with MTCA
5.0 Environmental Standards
6.0 Applicable Local, State, and Federal Laws
7.0 Institutional Controls and Site Use Restrictions
8.0 Compliance Monitoring
9.0 Schedule for Implementing the Selected Action
10.0 State Environmental Policy Action Compliance

References and Technical Investigations

List of Tables

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>Soil / Sediment results for selected substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>TABLE 2</td>
<td>Estimated excess lifetime cancer risks for various exposure scenarios using asbestos dust concentrations generated in August 2006 EPA activity based sampling study.</td>
</tr>
<tr>
<td>TABLE 3</td>
<td>Estimated excess lifetime cancer risks for various exposure scenarios using asbestos dust concentrations generated in August 2010 EPA activity based sampling study.</td>
</tr>
<tr>
<td>TABLE 4</td>
<td>Surface water asbestos and metals analyses from Swift Creek and Sumas River</td>
</tr>
<tr>
<td>TABLE 5</td>
<td>Calcium and Magnesium Analyses from Swift Creek and Sumas River and hardness calculation</td>
</tr>
<tr>
<td>TABLE 6</td>
<td>Swift Creek water quality data collected 2003-2006 and 2001-2013</td>
</tr>
<tr>
<td>TABLE 7</td>
<td>Sumas River water quality data collected 2003-2006 and 2001-2013</td>
</tr>
<tr>
<td>TABLE 8</td>
<td>Comprehensive list of recommended actions from the Swift Creek Sediment Action Plan and Phase 1 Project Plan Final EIS</td>
</tr>
<tr>
<td>TABLE 9</td>
<td>Performance Goals</td>
</tr>
</tbody>
</table>

List of Figures

| FIGURE 1 | General location of Swift Creek Site |
| FIGURE 2 | Swift Creek general vicinity map and areas at risk due to flooding and sediment deposition |
| FIGURE 3 | Great Western Lumber gravel removal operation along upper Swift Creek |
| FIGURE 4 | Swift Creek between Goodwin Road and Oat Coles Road, before dredging, 2004 |
| FIGURE 5 | Swift Creek between Goodwin Road and Oat Coles Road, after dredging, 2006 |
| FIGURE 6 | Area potentially impacted by flooding by Swift Creek and Sumas River that could be subject to acquisition of development rights under natural flow alternative. |
| FIGURE 7 | Conceptual layout of MTCA selected remedy |
List of Appendices
Appendix A Responsiveness Summary (to be added after public comment)

List of Acronyms and Abbreviations

ARAR applicable or relevant and appropriate requirements
Ca calcium
CAP cleanup action plan
SCAP Swift Creek action plan
CERCLA comprehensive environmental response compensation and liability act
CY cubic yards
Ecology department of ecology
EE/CA engineering evaluation/cost analysis
EIS environmental impact statement
EPA United States environmental protection agency
J estimated value
MFL million fibers per liter
Mg magnesium
mg/L milligrams per liter
MTCA Model Toxics Control Act (Chapter 70.105D RCW)
NTU nephelometric turbidity units
PCME phase contrast microscopy equivalent asbestos concentration
ppm parts per million
RCW revised code of Washington
RI/FS remedial investigation/feasibility analysis
s/cc asbestos structures per cubic centimeter
SPLP synthetic precipitation leaching procedure
TCLP toxic characteristic leaching procedure
TEE terrestrial ecological evaluation
U value not detected at reported concentration
ug/L micrograms per liter
um micrometers
WAC Washington Administrative Code
WCH Whatcom County health department
EXECUTIVE SUMMARY

This document presents the Swift Creek Action Plan (SCAP) for the Swift Creek/Sumas Mountain Site near Everson Washington. This SCAP was prepared by the Washington State Department of Ecology (Ecology) in collaboration with Whatcom County and the United States Environmental Protection Agency (EPA). This SCAP has been prepared to meet the requirements of the Model Toxics Control Act (MTCA) administered by Ecology under Chapter 173-340 of the Washington Administrative Code (WAC). This SCAP describes Ecology’s proposed action for this site and sets forth the requirements the action must meet.

Background

Swift Creek is a small creek in the northeastern lowlands of Whatcom County. An ongoing landslide on Sumas Mountain that is believed to have started in the late 1930’s or early 1940’s has resulted in a large volume of sediment containing naturally occurring asbestos and metals continuously filling up the creek bed. For several decades Swift Creek has been dredged and the sediment managed to limit downstream flooding. This dredging and management of the sediment has created liability under the Model Toxics Control Act.

This Swift Creek Action Plan is intended to address those aspects of this site related to this historic liability and prospective liability for managing these sediments in the future. For context, it also describes broader actions needed beyond those required under MTCA to reduce environmental and human health risks resulting from this ongoing landslide and downstream flooding. It supports Ecology’s commitment in a Joint Agency Agreement with EPA and Whatcom County to work together to manage the impacts of this landslide.

The landslide on Sumas Mountain where the sediment in Swift Creek originates is massive. The active part of the slide is approximately one mile long by one-quarter mile wide and encompasses approximately 225 acres, with an estimated volume of 68 million cubic yards. This landslide is slowly moving down Sumas Mountain within a layer of slippery serpentinite bedrock. Precipitation that falls within the watershed encompassing this landslide gravitates to the toe of the slide, where the south fork of Swift Creek emerges.

As the water flows along the surface of the landslide and emerges from the toe of the landslide, it picks up large amounts of sediment and debris (e.g. boulders, trees) and carries it downstream. Then as Swift Creek flows down slope onto its alluvial fan, the terrain and stream gradient flattens out, and the water velocity slows, resulting in the Creek dropping much of the sediment and debris it is carrying. Suspended fine particles of sediment then continue downstream to the Sumas River and can eventually

---

1 Estimates vary from 30,000 cubic yards to up to 150,000 cubic yards per year, with the amount varying considerably during the year.
be carried by natural forces to the Canadian Border, some 10 river miles to the north. As further described in Section 4.1, for the purposes of this Swift Creek Action Plan, the site definition under MTCA is limited to the areas within and proximate to the Swift Creek alluvial fan where the sediment will be managed through actions described herein.

Sediments from the landslide are naturally enriched in chrysotile asbestos, chromium, cobalt, magnesium, nickel, and exhibit an elevated pH. It is thought that the primary source of these contaminants is the serpentinite bedrock within the slide, with these contaminants released through natural physical and chemical weathering processes.

Studies by EPA confirm that activities common in a rural community can result in the asbestos in the sediment becoming airborne when dry and posing a significant health risk to individuals exposed to the dust. The primary concern with the metals in the sediment is the impact to terrestrial plants and aquatic life. The part of Swift Creek impacted by the sediment is essentially devoid of aquatic life. Areas where the sediment has been piled due to dredging activity are barren of plant life. And agricultural fields where the sediment has been deposited by flooding have stunted vegetation for many years after a flood event. The impact on plants is thought to be due to the sediment being enriched in magnesium, resulting in an imbalance in the calcium to magnesium ratio.

**Action Overview**

Over the years, numerous studies have been conducted to evaluate options for stabilizing the landslide and managing the sediment that accumulates in Swift Creek. To date, the only practical alternative that has emerged is to capture the sediment in the upper reach of Swift Creek and manage it in a nearby repository that is covered with clean soil to prevent the sediment from re-entering the environment.

In addition, there are large piles of sediment along the creek between Goodwin and Oat Coles Roads that have accumulated as a result of historic dredging activity. This plan calls for stabilizing these sediments in place to create permanent levees to keep Swift Creek within its channel. Excess sediment not needed for levee construction would be hauled to the repository for long term management. These levees would be armored and encapsulated with clean soil to prevent erosion of the sediment back into Swift Creek and surrounding properties. In addition to stabilizing sediment in place, the elevated Swift Creek bed may also be stabilized in place and all or a portion of Swift Creek re-routed to establish lower bed elevations.

These actions, coupled with access restrictions, will permanently seal off the sediments, preventing the release of asbestos to the air.

These elements – levee construction and sediment capture and storage, along with other actions described in more detail this plan – constitute the proposed remedy under the Model Toxics Control Act. This remedy is intended to address hazardous substances that pose actual or potential threats to human health or the environment resulting from past releases and threatened releases caused by historical human activities to manage this naturally occurring sediment. The remedy is also intended to minimize
and address threats or potential threats with respect to any release or threatened release of hazardous substances caused by certain future human activities during management of this naturally occurring sediment.

1.0 INTRODUCTION

1.1 Purpose

This document is the Swift Creek Action Plan (SCAP) for the Swift Creek/Sumas Mountain site (Site) located near Everson, Washington. The general location of the Site is shown in Figures 1 and 2. An action plan is required as part of the site cleanup process under Chapter 173-340 WAC, the Model Toxics Control Act (MTCA). The purpose of the action plan is to identify the proposed action for the Site and to provide an explanatory document for public review. More specifically, this plan:

- Describes the Site;
- Summarizes current site conditions;
- Summarizes the action alternatives considered in the remedy selection process;
- Describes the selected action for the Site and the rationale for selecting this alternative;
- Identifies contaminants, points of compliance, and media of concern for the proposed action;
- Identifies applicable state and federal laws for the proposed action;
- Identifies environmental covenants and site use restrictions that are part of the proposed action;
- Discusses compliance monitoring requirements; and
- Presents the schedule for implementing the SCAP.

1.2 Previous Studies

This SCAP presents a brief description and history of the Swift Creek/Sumas Mountain Site. Over the years, numerous studies have been conducted to document current site conditions and to evaluate options for stabilizing the landslide and managing the sediment that accumulates in Swift Creek (see Section 3.0). However, while much work has been done, none of the studies follow the format required under MTCA for a Remedial Investigation/Feasibility Study (RI/FS). Thus, this document provides more detail than a typical MTCA CAP, and pursuant to WAC 173-340-350(6), incorporates RI/FS requirements by reference by drawing relevant information from several of these documents.

---

2 Except where noted, the term “sediment”, as used throughout this CAP is a general term intended to include both the material in the bed of Swift Creek and the soil-like material in the dredge piles along Swift Creek.
1.3 Regulatory Framework

The asbestos and metals that are present in the Swift Creek sediment are hazardous substances under MTCA and several studies have shown that they pose a threat to human health and the environment. Since they are naturally occurring and are transported and deposited in Swift Creek through water flowing down the creek, a natural phenomenon, there would normally not be any requirement to conduct a remedial action under MTCA. However, because these sediments have been actively dredged to manage flooding over the years, a “release” or “threatened release” of “hazardous substances”, as those terms are defined or used in MTCA, has occurred at the Site. When compared with unabated natural processes and unmanaged human response, this SCAP will lead to more effective abatement of hazardous substances at the Site. In addition, this SCAP anticipates that active sediment dredging and management will be required into the future to reduce flood hazards. As such, this SCAP provides a plan for continuing that work in a manner that will abate threatened releases in compliance with MTCA.

EPA has been actively involved in this site and has conducted removal actions under the federal superfund law (CERCLA). However, the Swift Creek/Sumas Mountain site is not on the Federal National Priorities List as a federal superfund site. While there are many similarities between MTCA and CERCLA, this action plan is not intended to satisfy EPA’s requirements for a federal record of decision under CERCLA.

In addition to the actions under MTCA proposed in this SCAP, there are several other actions that could be taken to reduce the long term operation and maintenance costs and risks posed by the landslide and flooding caused by sediment deposition. These actions are described in the 2013 Swift Creek Sediment Management Action Plan (SCSMAP) and associated Environmental Impact Statement. While all of these actions are not necessary to address the MTCA releases or threatened releases at this site and thus are not part of the action specified in this plan, for completeness a description of these actions has been included in this SCAP.

2.0 Site Description and History

This section summarizes existing site conditions as described in the reports listed in Section 3.0 of this Swift Creek Action Plan. This description, and the associated reports, fulfills the remedial investigation requirements under WAC 173-340-350(7).

Swift Creek is a small creek in the northeastern lowlands of Whatcom County. The general location of the Site is shown in Figures 1 and 2. An ongoing landslide on Sumas Mountain that is believed to have started in the late 1930’s or early 1940’s has resulted in a large load of naturally occurring asbestos and metal-contaminated sediment continuously filling up the creek bed. For several decades Swift Creek has been dredged and the sediment managed to limit downstream flooding (Figures 3 – 5).
The landslide on Sumas Mountain where the sediment in Swift Creek originates is massive. The active part of the slide is approximately one mile long by one-quarter mile wide and encompasses approximately 225 acres, with an estimated volume of 68 million cubic yards. This landslide is slowly moving down Sumas Mountain within a layer of slippery serpentinite bedrock. Precipitation that falls within the watershed encompassing this landslide gravitates to the toe of the slide, where the south fork of Swift Creek emerges.

As the water flows along the surface of the landslide and emerges from the toe of the slide, it picks up large amounts of sediment and debris (e.g. boulders, trees) and carries it downstream. Then as Swift Creek flows down slope onto its alluvial fan, the terrain and stream gradient flattens out, and the water velocity slows, resulting in the Creek dropping much of the sediment and debris it is carrying. Suspended fine particles of sediment then continue downstream to the Sumas River and can eventually be carried by natural forces to the Canadian Border, some 10 river miles to the north. As further described in Section 4.1, for the purposes of this Swift Creek Action Plan, the site definition under MTCA is limited to the areas where the sediment has been actively managed within the Swift Creek alluvial fan.

Sediments from the landslide are naturally enriched in chrysotile asbestos, chromium, cobalt, magnesium, nickel, and exhibit an elevated pH. It is thought that the primary source of these contaminants is the serpentinite bedrock within the slide, with these contaminants released through natural physical and chemical weathering processes.

Table 1 provides a summary of asbestos and metals concentrations measured in the sediment relative to natural background and several regulatory values. While little sampling has been done outside of the sediment piles and areas with recent flood deposits, based on the limited sampling to date outside of these areas, it is likely that most soils within the Swift Creek alluvial fan and floodplains of Swift Creek and the Sumas River contain elevated asbestos and metals concentrations from historic flood events and natural changes in the location of the stream channel.

Studies by EPA confirm that activities common in a rural community can result in the asbestos in the sediment becoming airborne and posing a significant health risk to individuals exposed to the dust. Tables 2 and 3 summarize the results of these studies. All of these studies indicate that the asbestos typically found in the sediments from Swift Creek can cause potential cancer risks in individuals well in excess of the MTCA acceptable cancer risk (1X10-6 residential; 1X10-5 industrial worker).

The primary concerns with the metals in the sediment are the impacts to terrestrial plants and aquatic life (not human health). The part of Swift Creek impacted by the sediment is essentially devoid of aquatic life. Areas where the sediment has been piled due to dredging activity are barren of plant life. And agricultural fields where the sediment has been deposited by flooding have stunted vegetation for many years after a flood event.

---

3 Estimates vary from 30,000 cubic yards to up to 150,000 cubic yards per year.
Figure 1: General Location of Swift Creek Site (Source: Whatcom County EIS)
Figure 2: Swift Creek general vicinity map and areas at risk due to flooding and sediment deposition (Source: Whatcom County EIS)
Figure 3: Great Western Lumber gravel removal operation along upper Swift Creek, 2009
(Source: Whatcom County)
Figure 4: Swift Creek between Goodwin Road and Oat Coles Road, 2004 before dredging
(Source: Whatcom County)

Figure 5: Swift Creek between Goodwin Road and Oat Coles Road, after dredging, 2006
As noted in Table 1, the concentrations of chromium, cobalt and especially nickel in the sediment are well in excess of potentially toxic screening level concentrations for upland plants. While it is possible bioassays could be used to more precisely determine non toxic concentrations of these metals in the sediment, for upland soils, the effect of these metals is secondary to the magnesium levels in the sediment. As discussed in several studies, the magnesium levels are so high that the calcium to magnesium ratio of the sediment is 1 to 2 orders of magnitude below that needed for plants to thrive (3:1), resulting in the sediment piles being essentially devoid of plant life. This effect is also evident in agricultural fields where the sediment has been deposited by flooding, stunting vegetation for many years after a flood event.

As the sediment moves down Swift Creek, the fine components of the sediment become suspended within the water, resulting in very high turbidity levels, severely impacting water quality. High turbidity levels can cause fish to stop feeding and seek cover, migrate to other areas, secrete excessive mucus, and suffocate. In addition, the turbidity and the substantial and constantly shifting bed load smothers aquatic life within the creek channel, adversely impacting food supply, cover, and spawning habitat. Furthermore, the concentrations of chromium and nickel in the sediment are well in excess of fresh water sediment screening level concentrations for aquatic life, indicating the sediment is likely toxic to aquatic life. The result is a creek that is essentially devoid of aquatic life throughout much of its length. Only the north fork of Swift Creek, which is unaffected by the slide, has been found to have a viable fish population. (2013 EIS)

During precipitation events the suspended sediment is flushed downstream, resulting in violations of chronic water quality criteria for nickel in both Swift Creek and the Sumas River. During dryer times of the year when flow in Swift Creek soaks into the ground and no longer reaches the Sumas River, the nickel concentrations in the river reduce to within acceptable levels. See Tables 4 through Table 7 for a summary of available surface water quality data and Appendix D of the Swift Creek Sediment Management Action Plan EIS for additional discussion of surface water quality within Swift Creek and the Sumas River.

Because the sediment contains asbestos and elevated concentrations of several metals, tests were conducted by the Whatcom County Health District and the USEPA to examine potential impacts to groundwater due to leaching of these substances. For metals, this included sediment analysis for a suite of targeted metals, and the use of two leaching tests - the Synthetic Precipitation Leaching Procedure (SPLP) and Toxicity Characteristic Leaching Procedure (TCLP) to examine the mobility of these metals. For both metals and asbestos, this included characterization of local groundwater through the installation and testing of three monitoring wells and testing of several private wells in the vicinity of the Creek.

The metals analyses found four metals (chromium, cobalt, nickel, and magnesium) to be elevated in the sediment at concentrations significantly greater than natural background levels found in other parts of Washington State. However, leach testing found these metals to be low in solubility, decreasing concern for effects to groundwater. And groundwater monitoring and water well test data did not find significant levels of either asbestos or these metals.
These data were also compared with primary and secondary drinking water MCLs and no exceedances were found, with most metals falling ten to one hundred times less than these standards. Based on data from both the Whatcom County Health tests and the USEPA testing, the USEPA concluded that leaching of metals from sediment and dredge material would not be expected to have significant impact on groundwater quality.4

The Washington State Department of Health in a more recent Draft Health Consultation,5 agreed with EPA’s analysis for asbestos, cobalt and nickel. In contrast, they noted that the reporting limit for arsenic used in the EPA leaching studies and water well tests, while at the drinking water standard, was above concentrations of potential health concern. However, arsenic within the sediment is at or below concentrations typically found in background, uncontaminated soils throughout Washington State and if found, would not be attributable to the Swift Creek sediment. In addition, groundwater tests within the Abbotsford-Sumas Aquifer in the late 1990’s did not find elevated arsenic levels (USGS, 10997). Therefore, Ecology has concluded this is not a contaminant of concern at the site.

Furthermore, in this same Health Consultation, the Washington State Department of Health also noted that the chromium analyses were for total chromium but if the chromium is in the form of hexavalent chromium, there could be a health concern. However, there is no reason to expect the chromium at this site to be in the form of hexavalent chromium, as if it were, it would likely have been found in the water wells that were tested. So Ecology concludes it is unlikely this is a contaminant of concern at the site. Future monitoring will include speciation of the chromium in selected samples to confirm this.

Therefore, Ecology concludes it is unlikely that potential leaching of the contaminants of concern at this site (asbestos, chromium, cobalt, nickel, and magnesium) would affect groundwater quality to the degree that there would be adverse impacts human health or ecological receptors.

However, the studies do show that there could be a modest increase in the mineralization of groundwater, primarily due to leaching of magnesium. While not at levels that would be of human health or ecological concern, this could potentially increase the hardness of the groundwater, and thus affect the aesthetic qualities of the groundwater, if the sediment is deposited in an area outside the Swift Creek alluvial fan. Therefore, should this occur, additional work will be needed to address this potential concern.

---

4 Engineering / Cost Analysis Sumas Mountain Asbestos Site, Appendix A; USEPA, July 2013
### Table 1: Soil/Sediment Sample Results for Selected Substances (all values mg/kg except asbestos)

<table>
<thead>
<tr>
<th></th>
<th>Asbestos (%)</th>
<th>Calcium</th>
<th>Chromium</th>
<th>Cobalt</th>
<th>Magnesium</th>
<th>Nickel</th>
<th>Ca:Mg Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EPA 2006</strong>&lt;sup&gt;a&lt;/sup&gt; (6 samples)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>1.9</td>
<td>4,340</td>
<td>245</td>
<td>71</td>
<td>167,667</td>
<td>1,593</td>
<td>0.026</td>
</tr>
<tr>
<td>Median</td>
<td>1.6</td>
<td>4,250</td>
<td>233</td>
<td>70</td>
<td>169,000</td>
<td>1,585</td>
<td>0.027</td>
</tr>
<tr>
<td><strong>EPA 2009</strong>&lt;sup&gt;b&lt;/sup&gt; (29 samples)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>12.3</td>
<td>2,547</td>
<td>291</td>
<td>74</td>
<td>203,862</td>
<td>1,614</td>
<td>0.026</td>
</tr>
<tr>
<td>Median</td>
<td>11.0</td>
<td>2,230</td>
<td>305</td>
<td>75</td>
<td>195,000</td>
<td>1,660</td>
<td>0.012</td>
</tr>
<tr>
<td><strong>WCH 2009</strong>&lt;sup&gt;c&lt;/sup&gt; (6 samples)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td>209</td>
<td>67</td>
<td></td>
<td>138,110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td></td>
<td>204</td>
<td>68</td>
<td></td>
<td>136,462</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>EPA 2010</strong>&lt;sup&gt;d&lt;/sup&gt; (14 samples)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>11.1</td>
<td>3,338</td>
<td>230</td>
<td>68</td>
<td>143,667</td>
<td>1,302</td>
<td>0.061</td>
</tr>
<tr>
<td>Median</td>
<td>12.5</td>
<td>3,315</td>
<td>272</td>
<td>78</td>
<td>169,500</td>
<td>1,530</td>
<td>0.019</td>
</tr>
<tr>
<td><strong>EPA 2013</strong>&lt;sup&gt;e&lt;/sup&gt; (5 samples)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>3.2</td>
<td>4,852</td>
<td>224</td>
<td>58</td>
<td>113,550</td>
<td>1,139</td>
<td>0.132</td>
</tr>
<tr>
<td>Median</td>
<td>2.7</td>
<td>4,615</td>
<td>263</td>
<td>73</td>
<td>143,000</td>
<td>1,415</td>
<td>0.032</td>
</tr>
<tr>
<td><strong>EE/CA 2013</strong>&lt;sup&gt;f&lt;/sup&gt; (4 samples)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td>1,803</td>
<td>302</td>
<td>81</td>
<td>104,150</td>
<td>1,808</td>
<td>0.027</td>
</tr>
<tr>
<td>Median</td>
<td></td>
<td>1,875</td>
<td>298</td>
<td>81</td>
<td>97,600</td>
<td>1,825</td>
<td>0.016</td>
</tr>
<tr>
<td><strong>Reference Values</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Statewide Background&lt;sup&gt;g&lt;/sup&gt;</td>
<td>5,493</td>
<td>42</td>
<td>11</td>
<td>298</td>
<td>38</td>
<td>18.4</td>
<td></td>
</tr>
<tr>
<td>Method B Direct Contact&lt;sup&gt;h&lt;/sup&gt;</td>
<td>120,000</td>
<td>42</td>
<td>20</td>
<td>1,600</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TEE Table 749-3&lt;sup&gt;i&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freshwater Sediment&lt;sup&gt;j&lt;/sup&gt;</td>
<td>72</td>
<td>88</td>
<td></td>
<td></td>
<td>26</td>
<td>110</td>
<td></td>
</tr>
</tbody>
</table>

---

**Notes:**

- **a.** Swift Creek Asbestos Integrated Assessment Final Report; TDD Number 06-03-0020; Region 10 START; November 2006. A total of 48 samples were analyzed; this is just the 6 samples with both asbestos and metals data. The average asbestos content for all 12 grab samples was 1.9% and the 36 composite samples was 1.6%.
- **b.** Soil, Sediment and Surface Water Sampling; Sumas Mountain Naturally Occurring Asbestos Site, Whatcom County Washington, EPA Region 10, October 13, 2009.
- **c.** Whatcom County Health Department sediment samples, 2009.
- **g.** 90<sup>th</sup> Percentile values from: Natural Background Soil Metals Concentrations in Washington State, Ecology Publication 94-115, 1994. NOTE: Background values for calcium, cobalt and magnesium are from soils in the Spokane area since limited statewide data were available. No background data for asbestos in soil is available.
- **h.** Calculated using Equation 740-2 in WAC 173-340-740. Value for chromium is trivalent chrome.
- **i.** From Table 749-3 in WAC 173-340-900 - terrestrial ecological evaluation indicator values for plants in sensitive ecological locations.
- **j.** From Table VI in WAC 173-204-563 – freshwater sediment cleanup objective values (top) and cleanup screening levels (bottom value) for protection of aquatic life.
Table 2: Estimated excess lifetime cancer risks for various exposure scenarios using asbestos dust concentrations generated in August 2006 EPA activity based sampling study. (EPA, 2007)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Loading/Hauling</th>
<th>Dredge/Haul for 25 years</th>
<th>Dredge/Haul for 1 year</th>
<th>Farm/Soil Work</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Asbestos PCME ((s/cc))</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max Value</td>
<td>0.2076</td>
<td>5x10-4</td>
<td>2x10-5</td>
<td>3x10-4</td>
</tr>
<tr>
<td>Mean Value</td>
<td>0.078</td>
<td>2x10-4</td>
<td>7x10-6</td>
<td>1x10-4</td>
</tr>
<tr>
<td>Shoveling/Raking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max Value</td>
<td>0.0403</td>
<td>2x10-4</td>
<td></td>
<td>1x10-4</td>
</tr>
<tr>
<td>Mean Value</td>
<td>0.018</td>
<td>1x10-4</td>
<td></td>
<td>5x10-5</td>
</tr>
<tr>
<td>Walking/Biking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max Value</td>
<td>0.09342</td>
<td>2x10-4</td>
<td>4x10-6</td>
<td></td>
</tr>
<tr>
<td>Mean Value</td>
<td>0.029</td>
<td>5x10-5</td>
<td>1x10-6</td>
<td></td>
</tr>
</tbody>
</table>

PCME = Phase contrast microscopy equivalent asbestos concentration; \(s/cc\) = structures per cubic centimeter

Table 3: Estimated excess lifetime cancer risks for various exposure scenarios using asbestos dust concentrations generated in August 2010 EPA activity based sampling study. (EPA, 2011)

<table>
<thead>
<tr>
<th>Location &amp; Activity</th>
<th>Asbestos PCME ((s/cc))</th>
<th>Gardening</th>
<th>Walking</th>
<th>Farming</th>
<th>Child Play</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, walking in field with dry sediment</td>
<td>Max</td>
<td>0.10296</td>
<td>8.4X10-4 to 9.6X10-5</td>
<td>1.1X10-4 to 9.6X10-5</td>
<td>8.0X10-5 to 6.4X10-4</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>0.09</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1, Loading, raking, spreading dry sediment</td>
<td>Max</td>
<td>2.2876</td>
<td>1.5X10-3 to 1.2X10-2</td>
<td>1.1X10-3 to 1.4X10-2</td>
<td>3.6X10-6 to 4.5X10-5</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>1.22</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2, Raking &amp; mowing dry sediment near house</td>
<td>Max</td>
<td>0.00728</td>
<td>2.7X10-6 to 2.5X10-5</td>
<td>3.6X10-6 to 4.5X10-5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>0.004</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2, Raking &amp; mowing dry sediment near shed</td>
<td>Max</td>
<td>0.02448</td>
<td>6.2X10-5 to 8.4X10-5</td>
<td>8.0X10-6 to 1.5X10-4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>0.009</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2, walking in corn field with dry sediment</td>
<td>Max</td>
<td>0.0432</td>
<td>3.0X10-5 to 4.6X10-5</td>
<td>3.5X10-6 to 2.2X10-4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>0.028</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3, raking along river – (Rained-wet sediment)</td>
<td>Max</td>
<td>0.01672</td>
<td>1.1X10-5 to 1.8X10-5</td>
<td>9.7X10-6 to 2.1X10-5</td>
<td>7.0X10-6 to 1.0X10-4</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>0.0079</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PCME = Phase contrast microscopy equivalent asbestos concentration; \(s/cc\) = structures per cubic centimeter
Table 4: Surface Water Asbestos & Metals Analyses from Swift Creek and Sumas River

<table>
<thead>
<tr>
<th>Location</th>
<th>Asbestos MFL &gt; 10 um</th>
<th>Chromium ug/L</th>
<th>Nickel ug/L</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EPA 2009 (a)</td>
<td>EPA 2010 (b)</td>
<td>EPA 2009 (a)</td>
</tr>
<tr>
<td>Swift Creek</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 2 Goodwin Bridge</td>
<td>1241</td>
<td>113</td>
<td>673</td>
</tr>
<tr>
<td>• 3/4 Oat Coles Bridge</td>
<td>923</td>
<td>180/197</td>
<td>1070/1160</td>
</tr>
<tr>
<td>Sumas River</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 1 Massey Road (bkgd)</td>
<td>0.19 U</td>
<td>1.0 U</td>
<td>0.34 J</td>
</tr>
<tr>
<td>• 5 South Pass Bridge</td>
<td>63</td>
<td>3.1</td>
<td>62.1</td>
</tr>
<tr>
<td>• 6 Nooksack City Park</td>
<td>293</td>
<td></td>
<td>65.3</td>
</tr>
<tr>
<td>• 7 Telegraph Road</td>
<td>879</td>
<td>8.5</td>
<td>76.8</td>
</tr>
<tr>
<td>• Gillies Road Farm Bridge</td>
<td>6.1</td>
<td></td>
<td>1.4 J</td>
</tr>
<tr>
<td>• 9 Gillies Road Bridge</td>
<td>300</td>
<td>2.4</td>
<td>76.8/79.9</td>
</tr>
<tr>
<td>• 10 Alm Road</td>
<td>544</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 11 Lindsay Road</td>
<td>530</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 12 N. Telegraph Road</td>
<td>321</td>
<td>4.4</td>
<td>150</td>
</tr>
<tr>
<td>• 13 N. Telegraph Road 2</td>
<td>265</td>
<td>4.1</td>
<td>86.1</td>
</tr>
<tr>
<td>• 14 Front St./Rock Road</td>
<td>213</td>
<td></td>
<td>31.9</td>
</tr>
<tr>
<td>• Jones Road/Canadian Border</td>
<td>168</td>
<td>1.7</td>
<td>19.9</td>
</tr>
</tbody>
</table>

Surface Water Quality Standards (c)

- Based on Swift Creek Hardness of 501 mg/L in 2009
  - Acute Chromium: \( \leq (0.316)(e^{(0.8190 \ln(\text{hardness})} + 3.688) \) With a 1-hour average concentration not to be exceeded more than once every three years on the average.
- Chronic Chromium: \( \leq (0.860)(e^{(0.8190 \ln(\text{hardness})} + 1.561) \) With a 4-day average concentration not to be exceeded more than once every three years on the average.
- Nickel: \( \leq (0.998)(e^{(0.8460 \ln(\text{hardness})} + 3.3612) \) With a 1-hour average concentration not to be exceeded more than once every three years on the average.
- Nickel: \( \leq (0.997)(e^{(0.8460 \ln(\text{hardness})} + 1.1645) \) With a 4-day average concentration not to be exceeded more than once every three years on the average.

- Based on Sumas River Hardness of 299 in 2009 and 168 in 2010
  - Acute Chromium: \( \leq (1.346) \) With a 1-hour average concentration not to be exceeded more than once every three years on the average.
  - Chronic Chromium: \( \leq (3.575) \) With a 4-day average concentration not to be exceeded more than once every three years on the average.

- Human Health (d)
  - 7 MFL > 10 um: \( 100 \) ug/L
  - 100 ug/L

Values exceeding either surface water quality or drinking water standards are **bolded**.
### Table 5: Calcium and Magnesium Analyses from Swift Creek and Sumas River and hardness calculation

<table>
<thead>
<tr>
<th>Location</th>
<th>Calcium (ug/L)</th>
<th>Magnesium (ug/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EPA 2009 (a)</td>
<td>EPA 2010 (b)</td>
</tr>
<tr>
<td><strong>Swift Creek</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 2 Goodwin Bridge</td>
<td>5,280</td>
<td>81,400</td>
</tr>
<tr>
<td>• 3/4 Oat Coles Bridge</td>
<td>5,410/5,410</td>
<td>132,000/143,000</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td>5,367</td>
<td>118,800</td>
</tr>
<tr>
<td><strong>Hardness Equivalent (c)</strong></td>
<td>13.5</td>
<td>488</td>
</tr>
<tr>
<td><strong>Total Hardness Equivalent</strong></td>
<td><strong>13.5 + 488 = 501 mg/L CaCO₃ (2009 samples)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Sumas River</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 1 Massey Road (bkgd)</td>
<td>15,900</td>
<td>18,900</td>
</tr>
<tr>
<td>• 5 South Pass Bridge</td>
<td>11,200</td>
<td>16,500</td>
</tr>
<tr>
<td>• 6 Nooksack City Park</td>
<td>11,000</td>
<td>61,700</td>
</tr>
<tr>
<td>• 7 Telegraph Road</td>
<td>8,900</td>
<td>16,200</td>
</tr>
<tr>
<td>• Gillies Road Farm Bridge</td>
<td>17,100</td>
<td>32,600</td>
</tr>
<tr>
<td>• 9 Gillies Road Bridge</td>
<td>9,310/9,040</td>
<td>17,600/17,400</td>
</tr>
<tr>
<td>• 10 Alm Road</td>
<td>9,190</td>
<td>68,000</td>
</tr>
<tr>
<td>• 11 Lindsay Road</td>
<td>9,730</td>
<td>101,000</td>
</tr>
<tr>
<td>• 12 N. Telegraph Road</td>
<td>10,400</td>
<td>19,300</td>
</tr>
<tr>
<td>• 13 N. Telegraph Road 2</td>
<td>11,200</td>
<td>20,200</td>
</tr>
<tr>
<td>• 14 Front St./Rock Road</td>
<td>11,900</td>
<td>43,300</td>
</tr>
<tr>
<td>• 15 Jones Road / Canadian Border</td>
<td>17,600</td>
<td>27,200</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td>11,281</td>
<td>18,933</td>
</tr>
<tr>
<td><strong>Hardness Equivalent (c)</strong></td>
<td>28.3</td>
<td>47.3</td>
</tr>
<tr>
<td><strong>Total Hardness Equivalent</strong></td>
<td><strong>28.3 + 271 = 299 mg/L CaCO₃ (2009 samples)</strong></td>
<td><strong>47.3 + 119 = 168 mg/L CaCO₃ (2010 samples)</strong></td>
</tr>
</tbody>
</table>

a. Soil, Sediment and Surface Water Sampling; Sumas Mountain Naturally Occurring Asbestos Site, Whatcom County Washington, EPA Region 10, October 13, 2009. Highly turbid water in both Swift Creek & Sumas River.
c. Hardness equivalent in ppm CaCO₃. Hardness is needed to calculate surface water standards for chromium and nickel. The following criteria have been used to classify water hardness for domestic water use. For reference, based on these criteria, Swift Creek water would be considered very hard and the Sumas River hard to very hard:

<table>
<thead>
<tr>
<th>USEPA, 1976 (a)</th>
<th>Briggs, J.C., and Ficke, J.F., 1977 (b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-75 mg/L CaCO₃ = soft</td>
<td>0-60 mg/L CaCO₃ = soft</td>
</tr>
<tr>
<td>75-150 mg/L CaCO₃ = moderately hard</td>
<td>61-120 mg/L CaCO₃ = moderately hard</td>
</tr>
<tr>
<td>150-300 mg/L CaCO₃ = hard</td>
<td>121-180 mg/L CaCO₃ = hard</td>
</tr>
<tr>
<td>≥300 mg/L CaCO₃ = very hard</td>
<td>≥181 mg/L CaCO₃ = very hard</td>
</tr>
</tbody>
</table>

CaCO₃ = calcium carbonate
(a) Quality Criteria for Water, USEPA, 1976;
Table 6: Swift Creek water quality data collected 2003-2006, and 2011-2013 (various locations) (from EIS, Appendix D).

<table>
<thead>
<tr>
<th>Parameter</th>
<th># Samples</th>
<th>WQ Criteria (a)</th>
<th>Average</th>
<th>Maximum</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>21</td>
<td>6.5-8.5</td>
<td>8.1</td>
<td>8.8</td>
<td>7.5</td>
</tr>
<tr>
<td>Temperature (°C)</td>
<td>22</td>
<td>&lt;18</td>
<td>8.4 (b)</td>
<td>20.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Dissolved Oxygen (mg/L)</td>
<td>11</td>
<td>&gt;8</td>
<td>10.2</td>
<td>14.3</td>
<td>4.5</td>
</tr>
<tr>
<td>Turbidity (NTU)</td>
<td>&gt;18,000 (c)</td>
<td>(d)</td>
<td>243</td>
<td>&gt;3,000 (e)</td>
<td>0</td>
</tr>
</tbody>
</table>

a. WAC 173-201A.
b. Sampling occurred more frequently during the winter so the average temperature value is likely underestimated.
c. Includes data recorded continuously every 15 minutes from October 2011 to April 2012 (PSE 2012).
d. 5 NTU over background when the background is 50 NTU or less; 10% above background when background is greater than 50 NTU.
e. Sensor limit for turbidity was 3,000 NTU but values in excess of this occurred on at least 14 different occasions.

mg/L = milligrams per liter
NTU = nephelometric turbidity units

Table 7: Sumas River water quality data collected 2003-2006, and 2011-2013 (various locations) (from EIS Appendix D).

<table>
<thead>
<tr>
<th>Parameter</th>
<th># Samples</th>
<th>WQ Criteria (a)</th>
<th>Average</th>
<th>Maximum</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>41</td>
<td>6.5 – 8.5</td>
<td>7.3</td>
<td>8.1</td>
<td>6.6</td>
</tr>
<tr>
<td>Temperature (°C)</td>
<td>41</td>
<td>&lt;18</td>
<td>8.9</td>
<td>15.7</td>
<td>3.9</td>
</tr>
<tr>
<td>Dissolved Oxygen (mg/L)</td>
<td>33</td>
<td>&gt;8.0</td>
<td>7.2</td>
<td>12.3</td>
<td>2.7</td>
</tr>
<tr>
<td>Turbidity (NTU)</td>
<td>&gt;50,000 (b)</td>
<td>(c)</td>
<td>68.7</td>
<td>1,910</td>
<td>1.1</td>
</tr>
</tbody>
</table>

a. WAC 173-201A.
b. Includes data recorded continuously every 15 minutes from October 2011 to April 2012 (PSE 2012).
c. 5 NTU NTU over background when the background is 50 NTU or less; 10% above background when background is greater than 50 NTU.
3.0 Action Alternatives and Analysis

Over the years several engineering studies have been completed to evaluate alternatives for controlling the sediment transported down Swift Creek. This document incorporates those studies by reference to fulfill RI/FS requirements under WAC 173-340-350(6). These studies include:


2012 Swift Creek Sediment Management Action Plan, Phase 1 Project Plan, Phase 1 Implementation Plan, Prepared by Whatcom County Public Works for Whatcom County Flood Control Zone District, December, 2012.


2013, Swift Creek Sediment Management Action Plan and Phase 1 Project Plan Final EIS. Prepared by Whatcom County Public Works for Whatcom County Flood Control Zone District, February, 2013.
This SCAP incorporates several of the alternatives from these reports to fulfill FS requirements under WAC 173-340-350(8). In general, the range of alternatives evaluated in these reports encompasses the following categories of actions:

- Stabilizing the slide by controlling infiltration or constructing a toe buttress.
- Annual dredging of Swift Creek and managing the sediment.
- Capturing the sediment using a series of check dams and sedimentation ponds and managing the captured sediment either in the ponds or in a nearby repository.
- Constructing levees at strategic locations to keep Swift Creek within its channel.
- Rerouting the clean water in the north branch of Swift Creek to separate it from the south branch to reduce flow and downstream sediment movement.
- Infrastructure revisions such as removing or widening bridges and raising the elevation of roads within the Swift Creek alluvial fan.
- Letting Swift Creek flow naturally and limiting exposure through restrictions/limitations on access and development within vulnerable areas along Swift Creek and the Sumas River.

Sediment management options evaluated include:

- Depositing dredged/captured sediment in a repository within the Swift Creek alluvial fan.
- Hauling the dredged/captured sediment to a repository outside the Swift Creek alluvial fan, generally to a nearby gravel pit.
- Using the sediment, or the gravel component of the sediment, for controlled fill in construction projects in the area.
- Treating the sediment to render the asbestos innocuous.

Of these alternatives, the following have been eliminated in various reports as infeasible:

- **Construction of a toe buttress.** Converse et. al. (1976) estimated 13 million cubic yards of fill would be necessary to create a toe buttress with enough mass to counteract the slide force. At a modest $5 per cubic yard, the cost of this enormous structure would be $65 million just for the fill. This does not include access, drainage, or foundation preparation work which would likely be millions more. There is also some concern that if water built up behind this structure, it could lubricate and destabilize the slide. The total cost to stabilize a similar sized slide in Utah was $200 million in 1983. (Kerr, Wood Leidal Associates, 2005)
- **Annual dredging of Swift Creek and depositing the sediment in a nearby repository.** $1.9 million/year; $15.7 million over 10 years, assuming repository haul distance is 5 miles. (July 2013 EE/CA)
Figure 6: Area potentially impacted by flooding by Swift Creek and Sumas River that could be subject to acquisition of development rights under natural flow alternative.
• **Letting Swift Creek flow naturally and acquiring development rights/land within the Swift Creek alluvial fan and Sumas River floodplain (Figure 6).** It would cost an estimated $190 million just to acquire all properties within the 100 year floodplain of Swift Creek and the Sumas River. (Whatcom County personal communication) If just the Swift Creek alluvial fan was acquired, the cost is estimated at up to $44 million. (2008 multiagency report) These cost estimates do not include the costs of demolition of structures on the acquired properties and infrastructure revisions to either remove or raise key roads and bridges in the affected area to prevent them from being buried by accumulated sediment.

• **Using the sediment, or the gravel component of the sediment, for controlled fill in construction projects in the area.** While a cost estimate for this hasn’t been prepared, the Port of Bellingham evaluated and ultimately rejected this option in 1990. While potentially feasible with the right partners, the challenge with the use of Swift Creek material is that it has higher handling costs to limit asbestos exposure during placement. Also, any location where it is used needs to be: capped with clean soils; have groundwater monitoring; permanent land use restrictions on the property deed to prevent disturbance of the material; and, regular inspections conducted to confirm the material remains undisturbed. This results in the material having a “stigma” that would likely make its use infeasible for most projects. Also, given the abundance of cheap fill material available in Whatcom County, it is unlikely this would be competitive with other sources of clean fill material without a substantial subsidy.

• **Treating the sediment to render the asbestos innocuous.** In 2009, ABCOV, a private company working with EPA, evaluated a proprietary process where the sediment was pulverized and treated with acid to breakdown the asbestos fibers. This was found to be unsuccessful in part because much of the aggregate within the sediment could not be sufficiently pulverized to enable treatment.

In all likelihood, it will take a combination of the remaining alternatives to manage sediment in Swift Creek in the future. The Swift Creek Sediment Management Action Plan and Phase 1 Project Plan Final EIS (2013) provide a comprehensive discussion of recommended actions and an analysis of those actions. Rather than repeat that analysis here, the reader should refer to that document. A list of those actions is provided in Table 8.
**Table 8: Comprehensive List of Recommended Actions from the Swift Creek Sediment Management Action Plan and Phase 1 Project Plan Final EIS (2013)**

<table>
<thead>
<tr>
<th>Landslide Stabilization</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Landslide Monitoring</td>
<td></td>
</tr>
<tr>
<td>• Landslide Toe Stabilization 7</td>
<td></td>
</tr>
<tr>
<td>• Surface Drainage</td>
<td></td>
</tr>
</tbody>
</table>

North Fork Reroute

Levee Construction and Protection

• Upper Goodwin Reach Deflection Levee
• Goodwin to Sumas Levees

Sediment Capture and Management

• Canyon Reach Sediment Traps
• Sediment Basins
• South Pass Setback Levee and Sediment Trap
• Sediment Management in a Nearby Repository

Annual Maintenance and Repair

• Annual Inspections and Small Scale Repairs
• Large Scale Maintenance and Repairs
• Swift Creek Channel Conveyance Dredging and Maintenance

Infrastructure Revisions

• Remove Oat Coles Road Bridge
• Raise South Pass Road Elevation

Flood Hazard Management Planning

• Watershed-Wide Flood Hazard Management Plan
• Technical Flood Hazard Identification
• Flood Education and Outreach
• Flood Warning and Emergency Response

Development Controls

• Comprehensive Plan and Zoning Revisions
• Purchase of Development Rights/Land Acquisition
• Limitations on Logging within the Swift Creek Watershed

Compliance Monitoring

Institutional Controls

Education and Outreach

---

7 While deemed infeasible by Converse, et. al. (1976), it is possible landslide toe stabilization could be cost effective over the very long term. Therefore, it has been kept on the list as an action that may be further evaluated in the future.
4.0 Proposed Selected Action and Analysis of Compliance with MTCA

As noted earlier, the dredging and management of the sediment has created liability under the Model Toxics Control Act. This Swift Creek Action Plan is intended to address those aspects of this site related to this historic liability and prospective liability for managing these sediments in the future.

4.1 Definition of “Site”

For the purposes of this Swift Creek Action Plan, the MTCA “site” is defined as the locations within and proximate to the Swift Creek alluvial fan where sediment from Swift Creek will be managed through actions described in this SCAP. For the most part, this consists of construction and operation of deflection levees, in-stream sediment traps, sediment piles, channel conveyance improvements, berms, levees, and similar structures. Sediments deposited beyond these locations, either naturally during flood events, or through transport outside these areas by individuals for use as fill (or for other uses), are not included as part of the “Site” addressed in this SCAP. “Site” also includes the location of any approved repositories that will be used in the future to manage the sediment.

4.2 Description of Selected Action (Remedy)

While, as identified in Table 8, there is a longer list of actions needed for flood management purposes, only a subset of these elements serves as a remedy that addresses MTCA liability for historic and future management of naturally occurring sediment. The remedy is intended to address the hazardous substances that pose actual or potential threats to human health or the environment resulting from past releases and threatened releases caused by human activities to manage sediment. The remedy is also intended to minimize and address threats or potential threats with respect to any release or threatened release of hazardous substances caused by certain future human activities during management of the sediment. In general, the selected MTCA remedy consists of:

Actions to address historical dredging:

- Removal of part of the sediment that has accumulated in the sediment piles so they can be stabilized
- Stabilization and capping of the existing levees with riprap and clean soil
- Controlling future use and access to the levees to prevent disturbance of, and exposure to, the sediment and airborne asbestos. This will require fencing off these areas to control access, imposing legal restrictions on future use of the properties (institutional controls), and frequent inspections to ensure compliance. It may also require acquisition of additional property or easements.
- Monitoring of air and surface water during construction and groundwater after stabilization
Actions to abate threatened future releases, including those associated with future sediment management:

- Dredging and levee repairs as necessary before remedy is implemented
- Use of existing sediment piles and deposits in construction of a repository and new levees
- Deposition of current excess sediment (sediment beyond that needed for levee and repository construction) in a dedicated repository where it will be covered with clean soil
- Capturing new sediment in a series of traps and sedimentation ponds
- Management of future accumulated sediment in the traps and ponds by periodic removal and deposition in the repository or, if needed, additional repository(s)
- Regular inspections and repairs of facilities as needed
- Periodic dredging of Swift Creek as necessary and depositing this sediment in the repository(s)
- Controlling future use and access to the levees, sediment capture facilities and repository(s) to prevent disturbance of, and exposure to, the sediment and airborne asbestos. This will require fencing off all of these areas to control access, imposing legal restrictions on future use of the properties (institutional controls), and frequent inspections to ensure compliance. It may also require acquisition of additional property or easements.
- Monitoring of air and surface water during active management of the sediments and long term groundwater and sediment quality

The construction and operation elements of these actions are described in detail in the 2012 Swift Creek Sediment Management Action Plan (SCSMAP), 2012 Phase 1 Project Plan, and Phase I Implementation Plan and EIS. Figure 7 conceptually illustrates the facilities that would be constructed to implement this remedy. This figure does not show a repository outside of the area of the sedimentation ponds. There will be a need for one or more additional repositories; these repositories will be reviewed in a future supplemental EIS. The SCSMAP will be amended to include an implementation plan for repository development prior to initiation of the supplemental EIS process. If additional strategies are identified to implement the SCSMAP, specific strategy implementation plans will be prepared and incorporated into the SCSMAP, in conjunction with appropriate environmental review processes.
Figure 7: Conceptual Layout of MTCA Selected Action (supplemental repository not shown)
4.3 Analysis of Selected Remedy for Compliance with MTCA

Remedies selected under MTCA must meet the requirements for cleanup actions in WAC 173-340-360. A discussion of how this selected remedy meets those requirements follows:

360(2)(a)(i) Protect Human Health and the Environment
The selected remedy involves stabilization and capping of the existing levees, consolidation of existing sediment piles and excess sediment, and future capture and removal of sediment and subsequent deposition in a dedicated repository. Handling of sediment will be done in a manner to minimize dust generation, and all structures will have access restricted and final covers consisting of asbestos-free materials. The water quality in Swift Creek and the Sumas River downstream of the sediment management structures is expected to improve except perhaps during extreme flood events. And based on current groundwater monitoring data, significant groundwater impacts are not anticipated. As such, this remedy will be protective of human health and the environment.

360(2)(a)(ii) Comply with Cleanup Standards
The selected remedy will comply with the performance goals summarized in Table 9. Groundwater monitoring has similarly shown that the above activities will not cause exceedances of groundwater cleanup levels. Previous construction experience and observations and monitoring data show that suspended sediment quickly settles out. Thus, the water quality in Swift Creek and the Sumas River downstream of the sediment management structures is expected to improve except perhaps during extreme flood events. Sediment contaminated with levels of asbestos and metals reported in Table 1 will remain on site but will be capped, protected with institutional controls, and monitored. The biggest challenge will be compliance with air standards for asbestos. Monitoring during past construction has shown that using standard dust control measures (minimizing areas of disturbance, wet handling of material) results in very low asbestos air concentrations during construction. Limiting access to the site should provide further protection for the general public. Ultimately, areas of permanent sediment deposition will be covered with clean soil and revegetated, eliminating airborne asbestos.

360(2)(a)(iii) Compliance with applicable state and federal laws
Levee and repository construction and operation and maintenance will require compliance with several local, state and federal laws. The most significant current known laws are summarized in Section 6. It is anticipated this list will be updated through consultation with permitting agencies during the design process.

360(2)(a)(iv) Provide for compliance monitoring
The proposed remedy includes monitoring of the air, surface water and groundwater for compliance. The locations and monitoring schedule will be determined in final design.
360(2)(b)(i) Use permanent solutions to the maximum extent practicable

The selected remedy is permanent to the maximum extent practicable, as demonstrated by the discussion of the criteria in WAC 173-340-360(3)(f) as follows:

**Protectiveness.** As discussed above, the selected remedy will be protective of human health and the environment. It will significantly reduce human health risks by reducing exposures and will improve water quality downstream of the sediment capture facilities. Covering the levees and repository with clean soil will enable restoration of vegetation and wildlife habitat.

**Permanence.** The selected remedy will not reduce the toxicity or volume of contaminants in the sediment. As was noted earlier, an experimental process for treatment of the sediment to destroy the asbestos was tried in 2009 and found to be unsuccessful. However, the levees and sediment capture facilities will be designed with a significant factor of safety to withstand flood events. While it is possible that an extreme flood or debris flow event could overwhelm these facilities, it is unlikely this will happen. If so, the inspection and maintenance elements of the selected remedy should result in quick repairs. The option of stabilizing the slide through construction of a toe buttress would be a more permanent solution but the enormous cost of this makes it disproportionate to the added benefit.

**Cost.** The cost of the selected remedy of $16.5 million in capital cost and $1.3 million average annual operating cost, while substantial, is significantly less than alternatives such as construction of a toe buttress to stabilize the slide or letting the sediment accumulate unimpeded and purchasing the impacted lands and facilities.

**Effectiveness over the long term.** The selected remedy will be effective over the long term. The primary limitations are the lack of availability of suitable land for future sediment repository capacity and funding to construct and operate future facilities.

**Management of short term risks.** Short term risks associated with implementation of the remedy include risk to the workers and nearby public during grading, excavation and hauling of sediment, primarily due to potential for exposure to asbestos dust. These risks can be controlled through proper construction and maintenance techniques to minimize dust generation.

**Technical and administrative implementability.** There are no technical constraints to implementation of the selected remedy. From an administrative perspective the biggest challenges will be acquisition of land for construction of the repository and controlling unauthorized public access to these facilities.

**Public concerns.** All of the elements of the selected remedy, with the exception of the repositories, have been subject to public review and comment through Whatcom County’s EIS process on the Swift Creek Sediment Management Plan. A supplemental EIS for the repositories will be prepared by Whatcom County prior to implementation. If additional strategies are identified to implement the SCSMAP, specific strategy implementation plans will be prepared and incorporated into the SCSMAP, in conjunction with appropriate environmental review.
processes. An additional opportunity for public review and comment will be provided before this plan is finalized.

**360(2)(b)(ii) Provide for a reasonable restoration timeframe**
The selected remedy provides for a reasonable restoration timeframe.

During 2014, Whatcom County conducted emergency levee stabilization work and dredging in response to flooding in March, 2014 that caused a Swift Creek avulsion at Goodwin Road and nearly breaching of the levee between Goodwin and Oat Coles Road. The selected remedy anticipates additional similar work may need to be conducted in response to future flood events until the sediment ponds are constructed.

Construction of the sediment traps and upper Goodwin reach deflection levee is anticipated to occur in the 2019-21 biennium, provided Ecology’s budget request is passed by the legislature.

Construction of the sediment basin(s) and development of repositories is anticipated to occur in the 2021-23 biennium, again subject to approval of legislative appropriation.

Permanent stabilization and covering of the levees between Goodwin and Oat Coles Road, removal of excess sediment and construction of the sediment pond(s) is anticipated to occur in the 2023-25 biennium, again subject to approval of legislative appropriation.

**360(2)(b)(iii) Consider public concerns**
All of the elements of the proposed remedy, with the exception of the repositories, have been subject to public review and comment through Whatcom County’s EIS process on the Swift Creek Sediment Management Action Plan. The development of repositories will be made subject to public review and comment through a future supplement to the existing EIS. If additional strategies are identified to implement the SCSMAP, specific strategy implementation plans will be prepared and incorporated into the SCSMAP, in conjunction with appropriate environmental review processes. Additionally, in compliance with MTCA, a public notice of the availability of this SCAP will be issued and an opportunity provided for additional comment. Comments received will be responded to in a responsiveness summary and adjustments made to the action plan, if deemed appropriate.

**360(2)(c) Groundwater cleanup actions**
Groundwater cleanup actions that do not achieve cleanup levels throughout the site must take some minimal steps to treat or remove the source and contain the residual contamination. Since groundwater is not contaminated at this site, or anticipated in the future, this provision is not applicable.

**360(2)(d) Soils in residential areas and at schools and child care centers**
The site as defined in this SCAP (active sediment management area) currently contains no residential structures, schools or child care facilities. Land use restrictions will prevent the location of such facilities within these areas in the future. Thus, this provision is complied with.
360(2)(e) Institutional controls
Sites that use institutional controls are required to meet certain minimum requirements under this provision. This includes compliance with WAC 173-340-440, that they must demonstrably reduce risk, and that they cannot be used where it is technically possible to implement a more permanent cleanup action for all or a portion of the site. All of these requirements will be complied with in the selected remedy.

360(2)(f) Releases and migration
This provision requires the selected remedy to minimize present and future releases and migration of hazardous substances. By containing the sediment in controlled, facilities covered with clean soil ("capped") or otherwise stabilized, the selected remedy complies with this provision.

360(2)(g) Dilution and dispersion
Remedies that rely primarily on dilution and dispersion have an additional level of demonstration that must be met. The proposed remedy does not rely primarily on dilution and dispersion and thus this requirement is met.

360(2)(h) Remediation levels
Remedies that use remediation levels have an additional level of demonstration that must be met. The proposed remedy does not rely on remediation levels and thus this requirement is met.
5.0 Environmental Standards

The goal of this SCAP is to improve the existing water quality and to reduce environmental and human health risks. A pilot study will be conducted to determine the feasible contaminant removal efficiencies. Metrics for performance are listed in Table 9. For these metrics, the point of measurement is throughout the site except for ambient asbestos, this will be taken at the fence line where public access is controlled.

Table 9: Performance Goals

<table>
<thead>
<tr>
<th>Media</th>
<th>Parameter</th>
<th>Improvement Goal</th>
<th>Notes</th>
<th>Point of Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient Air</td>
<td>Asbestos</td>
<td>0.0001 f/cc</td>
<td>Based on PQL. Equals 1 X 10-5 risk for a 30 year residential exposure.</td>
<td>During construction, at fence line; after construction, throughout the site.</td>
</tr>
<tr>
<td>Groundwater</td>
<td>Asbestos</td>
<td>7 MFL &gt; 10 um</td>
<td>All based on drinking water standards WAC 246-290-310</td>
<td>Throughout the site.</td>
</tr>
<tr>
<td></td>
<td>Chromium</td>
<td>100 µg/L</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nickel</td>
<td>100 µg/L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface Water</td>
<td>pH</td>
<td>6.5 – 8.5</td>
<td>WAC 173-201A constituents known to be elevated in water exposed to Swift Creek sediment.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Turbidity</td>
<td>(a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Asbestos</td>
<td>(a)</td>
<td>Based on improvements to pre-action water quality (see table 4)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chromium</td>
<td>Hardness</td>
<td>See Table 4 concentrations using current hardness data</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nickel</td>
<td>dependent goal</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Soil 1 Even though two activity-based sampling events have been conducted by EPA at this site, it isn’t possible to correlate soil asbestos concentrations with corresponding air concentrations, which is the primary exposure pathway of concern. However, it is likely that any areas where Swift Creek sediment is located contain significant levels of asbestos and heavy metals. Rather than set a specific numeric limit, this plan requires any areas within the footprint of the levees, former Swift Creek sediment piles and repository(s) not protected by rip rap to be covered by a sufficient thickness of clean soil to establish and maintain vegetative growth that will prevent erosion of the cover. Final specifications for cover thickness, quality and vegetative cover will be developed in the final design and permitting process. Areas to be determined from historic photos and documentation and physical observations.

Sediment No sediment cleanup level has been established. While sediment metal concentrations are elevated above trivalent chromium and nickel freshwater sediment screening levels, these are naturally occurring concentrations, and not considered part of a “release” under MTCA. As such, no cleanup of sediment within the creek bed is required by the selected action and thus no sediment cleanup standard has been established for the selected remedy. Not applicable.

As used in this Table, the term “soil” is intended to include the sediment that has been dredged from the creek and deposited upland.

A pilot study will be conducted to determine feasible sediment removal efficiencies.
6.0 Applicable Local, State and Federal Laws

There are multiple federal, state and local laws that will need to be complied with during implementation of this remedy. Some laws require a permit or compliance with specific requirements. Under MTCA, these are called “legally applicable requirements”. Other laws may have technical provisions that make sense to apply to the remedy but may not be a legal requirement. Under MTCA, these are called “relevant and appropriate requirements”. Both of these together are typically referred to as “applicable, relevant and appropriate requirements” or “ARARs” that must be complied with, in addition to the other requirements in MTCA.

In addition, under RCW 70.105D.090, cleanup actions conducted by Ecology, or by a potentially liable person under a MTCA order or consent decree, and requiring a state or local permit under RCW 70.94 (air), 70.95 (solid waste), 70.105 (hazardous waste), 77.55 (hydraulic permit), 90.48 (water quality), 90.58 (shoreline management act) are exempt from having to obtain these permits and comply with procedural requirements under these statutes. Under this same statute (70.105D.090), such cleanups are also exempt from all local permits and procedural requirements. However, this statute does not exempt cleanups from federal permits, or state or local permits that implement federal laws. And any substantive requirements in these laws, whether or not exempt, must still be complied with. Ecology will work closely with permitting agencies to identify any substantive requirements that this remedy needs to comply with.

Comprehensive lists of potential ARARs were identified in the Draft EIS (2013) and Draft Engineering Evaluation / Cost Analysis (2013). This list may be supplemented by additional ARARs during the design and permitting process. The most significant ARARs relating to proposed remedy are:

**Federal Clean Water Act, Sections 404 & 401**

As with past dredging of Swift Creek, remedial actions requiring dredging, filling, diversion and/or construction within Swift Creek will require a 404 Permit from the Corps of Engineers and Ecology to certify the work complies with state water quality law under Section 401. It is presumed this will include construction, operation and maintenance of the check dams, sedimentation ponds and levees. Repository construction should not require a 404 permit unless the repository requires diverting Swift Creek or filling in wetlands. This is a federal law and is not exempt under MTCA.

**Federal Clean Water Act, Section 402 (NPDES), implemented under RCW 90.48**

A National Pollution Discharge Elimination System NPDES permit is unlikely to be required for the discharge from the sedimentation ponds. However, a stormwater permit will be required for stormwater runoff from any other areas where the ground has been disturbed. The need for a discharge permit, if any, and a stormwater permit is required under federal law and is not exempt under MTCA, even though Ecology implements this federal law under RCW 90.48.
State Dam Safety Permit under RCW 90.03.350
Any impoundment capable of storing more than ten acre-feet of water must obtain a Dam Safety Permit from Ecology. It is presumed the sedimentation ponds will exceed this threshold and require a permit under this law. This is a state law but not exempt under MTCA.

State Shoreline Management Act under RCW 90.58, Implemented under WCC Title 23
This act requires any substantial development within 200 feet of the high water mark of certain specified shorelines must obtain a shoreline permit. While Swift Creek does not fall within the jurisdiction of this law, the Sumas River does. As such, any work in Swift Creek that could impact the Sumas River will need to consider shoreline impacts on the Sumas River. Whatcom County implements this law under Whatcom County Code Title 23. The proposed remedy is expected to fall within the permit exemption for RCW 90.58 and local laws under MTCA. As such, this work would be exempt from having to obtain a shoreline permit and the associated procedural requirements will not need to be complied with. However, Ecology will work with the permitting agency (Whatcom County) to identify and require compliance with any substantive requirements under this law.

Washington State Hydraulic Code, RCW 77.55
Any construction or performance of work that will use, divert, obstruct, or change the natural flow or bed of any of the salt or freshwaters of the state requires a hydraulic permit. It is presumed the construction of the check dams, sedimentation ponds and levees will fall within the jurisdiction of this law. The proposed remedy is expected to fall within the permit exemption for RCW 77.55 under MTCA. As such, this work would be exempt from having to obtain a hydraulic permit and the associated procedural requirements will not need to be complied with. However, Ecology will work with the permitting agency (WA State Fish and Wildlife) to identify and require compliance with any substantive requirements under this law.

Federal Clean Air Act (implemented under RCW 70.94, RCW 49.26, and NWCAA rules)
Construction of the proposed remedy has the potential to generate dust. Furthermore, Swift Creek sediment has been found to be above the 1% threshold for asbestos containing material. Thus, the proposed remedy will fall within the jurisdiction of the Northwest Clean Air Agency (NWCAA). With proper handling techniques, it is expected dust generation will be minimal and not trigger a federal permit requirement. However, there are specific worker protection requirements for handling asbestos contaminated material enforced by the Washington Department of Labor and Industries that will need to be complied with during construction.

Federal Safe Drinking Water Act (implemented under RCW 43.20)
Based on information in the EIS, it is not expected any public water systems regulated under the Federal and State Safe Drinking Water Acts will be impacted by the proposed remedy. However, public water
system drinking water standards are identified as an applicable requirement under MTCA for groundwater impacted by a cleanup site.

**State Solid Waste Handling Standards (WAC 173-350)**

Dredge material that is the subject of a Corps 404 permit is exempt from the solid waste regulations. Furthermore, asbestos containing material is not a hazardous waste and TCLP leaching tests on the sediment pass the metals screening criteria. As such, the facilities for managing the sediment under this remedy, including the sediment repository, do not need to obtain a hazardous waste or solid waste permit. However, there are several relevant and appropriate design and operating criteria in WAC 173-350-400 for limited purpose landfills that will be applied to this remedy. The specific criteria will be identified during the design and permitting process. Note that the cost estimate provided in this plan assumes sediment berms and repositories will be capped with 6 inches of clean topsoil. While this should be sufficient to establish a grass cover and prevent the airborne asbestos if the cap is not disturbed, it would not be adequate for deep rooted vegetation like trees or for farming crops that require plowing. If a thicker cover or use of lower permeable capping materials is necessary, costs will need to be adjusted upward accordingly.

### 7.0 Institutional Controls and Site Use Restrictions

The selected remedy will permanently leave contaminated sediment in check dams, sedimentation basins, several levees, and one or more repositories. Historically, sediment piles have been an attraction for horse riders and all terrain vehicles. The selected remedy includes restricting access to these facilities through the installation of fencing and locked gates to minimize disturbance of sediments. An environmental covenant will be recorded on the impacted parcels providing a permanent record of the location of these deposits and limiting future land uses that would result in disturbance of exposed sediments and capped areas. Regular inspections will be required to ensure these restrictions are complied with.

### 8.0 Compliance Monitoring Requirements

The selected remedy includes monitoring of the air, surface water, groundwater and sediment quality. The exact monitoring locations and frequency will be determined during the final design and permitting process.
9.0 Schedule for Implementing the Swift Creek Action Plan

The project implementation rate for the implementation of the SCAP depends on several factors, some of which include extent and severity of flood events, rate of sediment deposition, available funding, and property acquisition or cooperation from private landowners.

The following is the anticipated schedule for implementing the selected remedy:

Construction of the sediment traps and upper Goodwin reach deflection levee is anticipated to occur in the 2019-21 biennium, provided Ecology’s budget request is passed by the legislature.

Construction of the sediment basin(s) and development of repositories is anticipated to occur in the 2021-23 biennium, again subject to approval of legislative appropriation.

Stabilization and covering of the levees between Goodwin and Oat Coles Road, removal of excess sediment and construction of the sediment pond(s) is anticipated to occur in the 2023-25 biennium, again subject to approval of legislative appropriation.

Channel maintenance and dredging is expected to be ongoing until the SCAP is fully implemented. Emergency work as a response to flood or debris flow events will be necessary into the future.

10.0 State Environmental Policy Act Compliance

In 2010 the Department of Ecology and Whatcom County determined the SEPA lead agency for this action to be Whatcom County, in accordance with WAC 197-11-253 and WAC 197-11-926. In 2013, Whatcom County prepared an environmental impact statement (EIS) on the Swift Creek Sediment Management Action Plan (SCSMAP). The draft EIS was released for public comment on February 15, 2013 and the final EIS was issued on June 23, 2013. The SCSMAP was approved by the Whatcom County Council on July 23, 2013.

The remedial actions and associated impacts, with the exception of the repositories, described in this Swift Creek Action Plan were analyzed in the EIS published by Whatcom County. For any future environmental review processes, including the planned supplemental EIS for repositories, the County will send Ecology a preliminary document prior to issuing it to the public in accordance with WAC 197-11-253(5).
References and Technical Investigations


Appendix A
PUBLIC COMMENT AND RESPONSES
Response to Comments

Swift Creek Action Plan, Consent Decree, and Public Participation Plan

Swift Creek Project
Everson, WA

December 2019
Publication and Contact Information

This document is available on the Department of Ecology’s Swift Creek website at:
- www.ecology.wa.gov/SwiftCreek

For more information on the Swift Creek project, visit these websites:
- Department of Ecology website: www.ecology.wa.gov/SwiftCreek
- Whatcom County website: www.whatcomcounty.us/513/Swift-Creek

En español
Si le gustaría recibir documentos en español, por favor llame a Tamara Cardona-Marek al 425-649-7058 o envíe un correo electrónico a preguntas@ecy.wa.gov

For more information contact:
Ian Fawley, Community Outreach and Environmental Education Specialist
Ecology - Bellingham Field Office
913 Squalicum Way, Unit 101
Bellingham, WA 98225
360-255-4382, Ian.Fawley@ecy.wa.gov

Cris Matthews, Project Manager
Ecology - Bellingham Field Office
913 Squalicum Way, Unit 101
Bellingham, WA 98225
360-255-4379, Cris.Matthews@ecy.wa.gov

Roland Middleton, Special Programs Manager
Whatcom County
322 N Commercial Street, Suite 210
Bellingham, WA 98225-4042
360-778-6212, RMiddleton@co.whatcom.wa.us


- Bellingham Field Office, Bellingham 360-255-4400
- Northwest Regional Office, Bellevue 425-649-7000
- Headquarters, Olympia 360-407-6000

Whatcom County — www.whatcomcounty.us

- Whatcom County Public Works 360-778-6200

To request ADA accommodation including materials in a format for the visually impaired, call Ecology at 360-255-4400 or visit https://ecology.wa.gov/accessibility. People with impaired hearing may call Washington Relay Service at 711. People with speech disability may call TTY at 877-833-6341.
Response to Comments

Swift Creek Action Plan,
Consent Decree,
and Public Participation Plan

Swift Creek Project
Everson, WA

Washington State Department of Ecology
Bellingham Field Office
Bellingham, Washington

Whatcom County
Public Works Department
Bellingham, Washington
This page is purposely left blank
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>List of Tables and Figures</td>
<td>vi</td>
</tr>
<tr>
<td>Public Outreach</td>
<td>1</td>
</tr>
<tr>
<td>Comment Summary</td>
<td>2</td>
</tr>
<tr>
<td>Next Steps</td>
<td>3</td>
</tr>
<tr>
<td>Comments and Responses</td>
<td>3</td>
</tr>
<tr>
<td>Comment from: Scott Smith</td>
<td>4</td>
</tr>
<tr>
<td>Comment from: Dennis Tjoelker</td>
<td>5</td>
</tr>
<tr>
<td>Comment from: Anonymous</td>
<td>6</td>
</tr>
<tr>
<td>Comment from: RE Sources for Sustainable Communities, Kirsten McDade</td>
<td>7</td>
</tr>
<tr>
<td>Comment from: Larry Lonegan</td>
<td>8</td>
</tr>
<tr>
<td>Comment from: Larry Lonegan</td>
<td>14</td>
</tr>
<tr>
<td>Comment from: Larry Lonegan</td>
<td>17</td>
</tr>
<tr>
<td>Comment from: Larry Lonegan</td>
<td>20</td>
</tr>
<tr>
<td>Comment from: Larry Lonegan</td>
<td>22</td>
</tr>
<tr>
<td>Appendices</td>
<td>28</td>
</tr>
</tbody>
</table>
# List of Tables and Figures

## Tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1</td>
<td>List of commenters</td>
<td>3</td>
</tr>
<tr>
<td>Table 2</td>
<td>Environmental Justice results for Swift Creek/Sumas River area, EPA EJSCREEN Report</td>
<td>13</td>
</tr>
</tbody>
</table>

## Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>USPS Every Door Direct Mail carrier route and post office map</td>
<td>10</td>
</tr>
<tr>
<td>Figure 2</td>
<td>Swift Creek/Sumas River 1- mile buffer map, EPA EJSCREEN Report</td>
<td>12</td>
</tr>
<tr>
<td>Figure 3</td>
<td>Census Tract map for Swift Creek/Sumas River area, EPA EJSCREEN Report</td>
<td>12</td>
</tr>
</tbody>
</table>
Public Outreach

From October 7 – November 5, 2019, the Department of Ecology (Ecology) and Whatcom County Public Works Department (Whatcom County) invited public review and comments the Swift Creek flood control and sediment management project located east of Everson near Sumas Mountain.

Ecology and Whatcom County accepted comments on the following documents for the Swift Creek Project:

- **Swift Creek Action Plan:** this plan describes flood control and sediment management actions to take place in the Swift Creek watershed.
- **Consent Decree:** this is a legal agreement between the State of Washington, Ecology, Whatcom County, and other parties that requires Whatcom County to:
  - Develop detailed design documents.
  - Construct and operate the project.
  - Manage deposited sediment.
  - Perform regular maintenance and monitoring.
  - Control future use and access.
  - Purchase additional property or easements, as may be required.
- **Public Participation Plan:** this document explains how people can become involved in the project.

Our public involvement activities related to this 30-day comment period included:

- **Fact Sheet:**
  - US mail distribution of a fact sheet providing information about the Swift Creek Project documents and the public comment period to approximately 4,050 people including neighboring businesses and other interested parties. Fact sheets were scheduled to arrive in mailboxes by Friday, October 4, 2019.
  - Email distribution of the fact sheet to approximately 150 people, including interested individuals, local/county/state/federal agencies, and interested community groups. An email notice was sent on Wednesday, September 25, 2019.
- **Legal Notices:**
  - Publication of two paid display ads in *The Bellingham Herald*, dated Friday, September 27, 2019 and Friday, October 4, 2019.
  - Publication of one paid display ad in *The Lynden Tribune*, dated Wednesday, October 2, 2019.
- **Newspaper Coverage:**
  - *The Lynden Tribune* ran a front page article on Wednesday, October 2, 2019 based on information from our Ecology fact sheet and blog post.
- **Social Media:**

---

Comment Summary

- **Twitter:** On Friday, September 27, 2019 Ecology – Northwest Region @ecyseattle posted a tweet connecting readers to the blog post for information on the Swift Creek project, the public meeting and how to submit comments.

- **Websites:**
  - Announcement of the public comment period and posting of the fact sheet, and associated documents for review on:
    - [Ecology's Swift Creek website](https://ecology.wa.gov/SwiftCreek)
    - [Whatcom County’s Swift Creek website](http://www.whatcomcounty.us/513/Swift-Creek)
  - The Swift Creek comment period was featured on [Ecology’s home webpage](https://ecology.wa.gov/) beginning on Wednesday, October 23, 2019 in the “Public Input & Events” section.

- **Document Repositories:**
  - Provided copies of the documents for public review through two information repositories:
    - Whatcom County Library – Everson, WA
    - Ecology’s Bellingham Field Office in Bellingham, WA

- **Public Meeting:**
  - Ecology held a public meeting on Wednesday, October 9, 2019 from 6 – 8 p.m. at the Nooksack Valley Middle School in Everson, WA. Approximately 60 attended.
  - Ecology and Whatcom County staff presented about the draft Swift Creek Action Plan and answered questions throughout the presentation. An open house followed the presentation.
  - A copy of the presentation was emailed on Tuesday, October 15, 2019 to all meeting attendees providing email addresses.

---

Comment Summary

Ecology received nine comments total during the 30-day comment period (October 7 – November 5, 2019). One comment was submitted anonymously to test attaching a PDF. Ecology responded to the other eight comments.
Table 1: List of commenters

<table>
<thead>
<tr>
<th>#</th>
<th>First Name</th>
<th>Last Name</th>
<th>Agency/Organization/Business</th>
<th>Submitted By</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Scott</td>
<td>Smith</td>
<td></td>
<td>Individual</td>
</tr>
<tr>
<td>2</td>
<td>Dennis</td>
<td>Tjoelker</td>
<td></td>
<td>Individual</td>
</tr>
<tr>
<td>3</td>
<td>Test</td>
<td>Anonymous</td>
<td></td>
<td>Individual</td>
</tr>
<tr>
<td>4</td>
<td>Kirsten</td>
<td>McDade</td>
<td>RE Sources for Sustainable Communities</td>
<td>Organization</td>
</tr>
<tr>
<td>5</td>
<td>Larry</td>
<td>Lonegan</td>
<td></td>
<td>Individual</td>
</tr>
<tr>
<td>6</td>
<td>Larry</td>
<td>Lonegan</td>
<td></td>
<td>Individual</td>
</tr>
<tr>
<td>7</td>
<td>Larry</td>
<td>Lonegan</td>
<td></td>
<td>Individual</td>
</tr>
<tr>
<td>8</td>
<td>Larry</td>
<td>Lonegan</td>
<td></td>
<td>Individual</td>
</tr>
<tr>
<td>9</td>
<td>Larry</td>
<td>Lonegan</td>
<td></td>
<td>Individual</td>
</tr>
</tbody>
</table>

Next Steps

Whatcom County will hold a public comment period (estimated Summer of 2020) on a Supplemental Environmental Impact Statement (EIS) for sediment storage repositories. Ecology and Whatcom County will seek additional funding from Washington State Legislature during 2021-2023 budget planning for project completion.

Informed by these public comments, Whatcom County will continue designing and implementing the Swift Creek Project.

Comments and Responses

Ecology has reviewed and considered all comments received on the draft Swift Creek Action Plan and associated documents. Based on Ecology’s evaluation of the comments, no changes were made to the documents, and they are considered final.

In consideration of public comments, Ecology will do these public participation actions:

**Mailing Lists**

- Ecology Action: Ecology will mail future Swift Creek Project outreach materials to any additional requested mailing addresses and re-confirm selected mailing routes and post office boxes with Whatcom County. (See pages 9-11 for response details)

**Notification Timing**

- Ecology Action: Ecology will work with the Washington State Department of Enterprise Services printing services to secure earlier delivery and confirmation of delivery for future Swift Creek Project mailings. (See page 11 for response details)
The comments are presented below, along with Ecology’s responses. Appendix A, on page 28, contains the comments in their original format.

**Comment from: Scott Smith**

With the greatest respect for the efforts of everyone, let me offer the honest reality of this problem (that you know but can't acknowledge). This is an exercise in futility: the classic, rolling a rock uphill only for it roll back down. (Humor is not intended) You are struggling to get funding to construct a system that separates solids from the suspending water at the bottom of the mountain. A bit myopic...That system requires significant maintenance through time thus its greatest flaw. Or seen another way, it's a job that can never be finished. Who would ever buy into such a ludicrous proposition? No matter the lofty, meaningful goals, no one will sign on forever or they're a fool. If this is the underlying reality of this project, then you should be searching for another answer...that does not include eternity in its solution. Futility...

If you continue your present path (and I expect you will), you must also plan for its eventual demise. THE FUNDS WILL NOT BE THERE FOREVER! So then what? What will be built into your system plans when that eventuality happens? It's imperative that this is included in your plans. IT MUST BE! Or the plans are incomplete. The project can not be open-ended, forever.

**Response**

The Swift Creek Sediment Management Action Plan (SCSMAP) was adopted by the Whatcom County Council on July 23, 2013. The SCSMAP includes several active and passive management strategies including: Flood Hazard Management, Sediment Management, Maintenance and Repair, Landslide Stabilization, Watershed Land Acquisition, Monitoring, and Education, Warning, and Emergency Response. Additional information is available from the Draft and Final Environmental Impact Statements for the SCSMAP. These background documents are located on the Whatcom County Public Works Swift Creek website:

http://www.co.whatcom.wa.us/3067/Swift-Creek-Background-Documents
Comment from: Dennis Tjoelker

Greetings
As I look at the plans that you all have worked so hard at and look great I can not help but say this will not fix the problem at its source. As Scott mentioned in his comment you will need to be prepared to continue to spend more of our hard earned moneys to maintain this plan in the future. The problem is not a major flow of mud but a gradual flow of mud and rock with the seasonal rains with the differing volumes of material which I'm sure you have figured out. I suggest stopping the solid material flow at the source and keep it on the mountain. Build a dam east of the mouth of the canyon with drainage behind and through it, there is enough material that has already come through that you can screen out rock for a natural filter behind the dam to let clean water flow through. I'm guessing there is enough clay to seal it up so at some point you will have to get the dam high enough to create a lake with a spillway that will still allow the release of water. I know I have not addressed all of the potential issues but I'm sure you have enough sharp engineers at your disposal to figure it out. As far as looks go maybe it can be a rock/earthen dam that can have trees and shrubs planted on it, then in 30 years no one will know the difference. I figure if a river can be dammed up and hold back the water it does this should be a walk in the park.
Thank You for your consideration DT

Response
Several studies were completed looking into alternative methods to address the landslide. As stated in the 1976 Converse Davis Dixon Final Geotechnical Report:

9.3 Past Studies – Conclusions and Recommendations Summary: The Swift Creek landslide and the subsequent sedimentation of the Swift Creek and Sumas River flood plain have been the subject of several previous studies and reports.

9.31 Soil Conservation Studies: The initial study was completed in June of 1964 and consisted of a reconnaissance of the area by personnel of the Soil conservation Service. It included a study of aerial photographs, grain-size analyses and settling velocities of finer sediment from the landslide. The conclusion of the study were that control of the landslide proper was not practical, a training dike to keep Swift Creek within its present channel should be given an early priority and recommendation of depositional areas and possibly settling ponds for controlling debris. Additional studies were recommended.

A second study was completed in August of 1965 by the Soil Conservation Service and consisted of a reconnaissance of the Swift Creek and Sumas River flood plains to examine effects of sedimentation. Cross-sections were completed at three locations along Swift Creek and Sumas River and compared with previous cross-sections to determine rate of sedimentation. It was estimated about 230,000 cubic yards of sediment had been deposited in the Sumas River alone from Swift Creek in 30 years. It was also estimated the total deposits from the Swift Creek landslide may vary from 300 to 400 acre-feet. A location for a debris basin was proposed.

9.32 Corps of Engineers Study: The Corps of Engineers in 1971 reported on the results of a geologic reconnaissance of the landslide, possible remedial action and an economic analysis of these actions. The possible remedial actions consisted of (a) allowing the slide to continue and construct a debris dam at the toe of the slide in the vicinity of the “narrow” or the
construction of a large debris basin downstream, or (b) attempt to stabilize the slide by
improving and detouring surface drainage and installation of subsurface drains. The debris
basin action was selected based on the assumptions the ground water or rainfall could not be
feasibly intercepted; the cost of slide stabilization was expected to be far greater than either
the debris dam or debris basin and; backwater behind a debris dam would lubricate the slide
and a stable upstream slope may be impossible to achieve. It was determined that a debris
basin should have the capacity for a maximum of one million cubic yards of debris. Cost
analysis which included construction, annual operation and maintenance costs for the debris
basin versus the estimated average flood damage cost concluded the construction of the
debris basin was not economically justified.

Converse Davis Dixon additionally looked at landslide control structures and sediment basins.
As noted in section 11.14:

It should be recognized that the problems discussed in Section 11.13 cannot be resolved until
final design is undertaken, and even then solution may not be apparent. In any event, the
final design of the buttress would reflect much higher costs because of these problems than
the costs of normal embankment design. Because of much greater quantities involved about
(14,000,000 cubic years of excavation and 13,000,000 cubic yards of fill) it is obvious that the
landslide control structure alternative cost will be on the order of several times more than the
cost of sedimentation basins. Therefore, no further consideration was given to refining the
buttress analysis.

The recommendations for maintenance of the stream bed with the addition of sediment basins
and long term repository storage was further reviewed and studied by GeoEngineers in 1998;

In addition please see response to Scott Smith above.

**Comment from: Anonymous**

[Test to attach a PDF.]

**Response**

Ecology’s online comment form successfully received the “test” PDF attachment.
Response to Comments: Swift Creek Project

Comment from: RE Sources for Sustainable Communities, Kirsten McDade

To: Cris Matthews
Project Manager
Department of Ecology
913 Squalicum Way, Unit 101
Bellingham, WA 98225

Transmitted Via Online Comment Form: http://cs.ecology.commentinput.com/?id=ic9NJ

November 5, 2019

RE: Swift Creek Project

Dear Cris Matthews,

Thank you for taking the time to consider our comment on the Swift Creek Project. I found the presentations at the public meeting to be very informative and appreciate the work that went into delivering those. Our biggest concern with the current plan is that it is an expensive, short term fix to a long-term problem that has potential adverse health effects.

RE Sources for Sustainable Communities is a local organization in northwest Washington, founded in 1982. RE Sources works to build sustainable communities and protect the health of northwest Washington's people and ecosystems through the application of science, education, advocacy, and action. Our North Sound Baykeeper program is dedicated to protecting and enhancing the marine and nearshore habitats of northern Puget Sound and the Georgia Strait. Our chief focus is on preventing pollution from entering the North Sound and Strait, while helping our local citizenry better understand the complex connections between prosperity, society, environmental health, and individual wellbeing. Our North Sound Baykeeper is the 43rd member of the Waterkeeper Alliance, with over 300 organizations in 34 countries around the world that promote fishable, swimmable, drinkable water. RE Sources has over 20,000 members in Whatcom, Skagit, and San Juan counties, and we submit these comments on their behalf.

It is well known that breathing in asbestos can lead to lung cancer, mesothelioma, or asbestosis and that exposures to heavy metals can lead to a myriad of health effects including kidney damage, neurological damage, and cancer. During the presentation it was mentioned by the Department of Health that there is no evidence of asbestos related diseases in people living in the Swift Creek drainage. Could you please provide the source of this information and explain how this will be monitored over time? Have there been any studies related to heavy metal related illnesses? Because both asbestos-related and heavy metal-related illnesses can take decades to manifest, it is important to maintain a long-term health study. The people that live in this drainage should be kept up to date on the risks.

At the public meeting it was mentioned by Whatcom County staff that this project was only expected to “manage” swift creek for about 20-25 years. This seems short sighted. Are there measures that could...
be done now that work toward long-term, long-lasting solutions? Are there incentives for people to leave the area or not move into the area? Could money be spent on relocation of people rather than trying to manage thousands of cubic yards of sediment every year in perpetuity? What other long-term solutions have been considered?

Thank you for your time in addressing our concerns and comments on this complex and difficult issue.

Sincerely,

Kirsten McDade
Pollution Prevention Specialist
RE Sources for Sustainable Communities

Response

Public health and exposure risks are addressed in numerous studies over time. The Draft Environmental Impact Statement (EIS), Appendix B, has a comprehensive assessment. Since 2008, Washington State Department of Health has conducted formal health consultations and related disease cluster investigations in response to public health concerns. Please see, for example, documents 55B, 36, 48a, 48b and 62 in the Whatcom County Public Works Swift Creek website: http://www.co.whatcom.wa.us/3067/Swift-Creek-Background-Documents

The current proposed plan includes a repository site that should contain 20-25 years of sediment. Additional potential sites for long term repositories are identified in the 2016 Sediment Repository Conceptual Site Screening by Wheeler Consulting Group. This report can be found as item 66 and 66A: http://www.co.whatcom.wa.us/3067/Swift-Creek-Background-Documents

Comment from: Larry Lonegan

Swift Creek - Public Meeting
See attached

November 5, 2019

Swift Creek Public Meeting Oct.9, 2019

Comments regarding such include, but are not necessarily limited to:

1. As an owner of property within the alluvial fan area and in close proximity to the watershed area, I am dismayed that I did not receive any indication of the meeting, etc.. While mail is not delivered and I do not have a PO Box in Everson, my address is readily available in
Response to Comments: Swift Creek Project

Whatcom assessor records. If the assessor can send me a tax bill, certainly I, and anyone in a similar situation, should receive a meeting notification.

2. As conveyed to Ian Fawley via phone conversation on Oct.25, 2019, it came to my attention that at least one member of the public did not receive notification until after the meeting. Ian indicated that he was aware that some members of the public did not receive notification until after the meeting.

3. In the copies of meeting notice that I received from Ian, there were two fact sheet attachments. One in English and one in Spanish. The English fact sheet was six (6) pages long, and the Spanish fact sheet was only two (2) pages long. At the 2010 census per Wikipedia, the Hispanic or Latino makeup of Everson was 28.9%, Nooksak was 17.9%, and Sumas was 15.8%. Why the Spanish fact sheet was only two (2) pages is beyond my comprehension, and obviously those who speak Spanish as a primary language were not fully informed via the attached fact sheet.

4. The public meeting was hosted "to provide information, answer questions, and collect comments". In response to my inquiry, I was informed that neither a transcript nor a recorded video was available. I was also informed that the meeting was not broadcast. Many people can not physically attend public meetings for various reasons, including but not necessarily limited to: attending to their children, on vacation, out of town, physically unable to attend due to personal or family health issues, employment obligations, etc. Those people that could not attend should have been accommodated via a live broadcast, a video recording, live streaming with the ability to ask questions, and/or minimally a transcript of questions, answers thereto, and comments. It appears that an effort to keep the public fully informed was/is lacking.

In conclusion, and based upon the above, it appears that one might judge the public meeting, and communications thereof, to be inadequate, and that another meeting be held recifying, minimally, the above.

And also, as a result, the comments accepted time frame should be revised/extended.

Response

"Public Meeting"

Ecology appreciated your phone call to inquire about the details of the Swift Creek Project community outreach.

Mailing Addresses

Ecology Action: Ecology will mail future Swift Creek Project outreach materials to any additional requested mailing addresses and re-confirm selected mailing routes and post office boxes with Whatcom County.

Ecology coordinated mailing lists with Whatcom County to capture all addresses used in previous Swift Creek outreach mailings to inform the community. Based on positive feedback from Whatcom County that these previous mailings reached the Swift Creek Project community, Ecology used Whatcom County’s mailing list and then expanded the postal
address list to include additional postal carrier routes. We then added other specific addresses for a total of approximately 4,050 interested individuals, local/county/state/federal agencies, and interested community groups.

Using the United State Postal Service (USPS) Every Door Direct web search tool⁶, we selected seven postal carrier routes and two post office box drops that would cover mailing addresses in the Swift Creek and Sumas River Watersheds (see lists and figure below):

**Postal Carrier Route Deliveries:**

1. 98247-R002
2. 98247-R003
3. 98247-R004
4. 98247-R005
5. 98276-R003
6. 98276-R005
7. 98276-R002

**Post Office Drops:**

1. 98247 – Everson
2. 98276 - Nooksack

⁶ https://eddm.usps.com/eddm/customer/routeSearch.action

*Figure 1: USPS Every Door Direct Mail carrier route and post office map*
Thank you as well for providing Ecology your preferred mailing address. You will now receive future Swift Creek Project mailings at your provided address.

Notification Timing

➔ Ecology Action: Ecology will work with the Washington State Department of Enterprise Services printing services to secure earlier delivery and confirmation of delivery for future Swift Creek Project mailings.

You were correct that Ecology learned from attendees at the Swift Creek Project public meeting on Wednesday, October 9, 2019 that the fact sheet had arrived in their mailboxes after our scheduled delivery date of Friday, October 4, 2019.

However, you were incorrect in quoting that Ecology knew of fact sheets arriving in mailboxes after the public meeting since the in-person conversation referenced occurred at the meeting. One meeting attendee commented that they had not checked their P.O. box the few days before the October 9, 2019 meeting. We apologize for any misunderstanding, but Ecology received no feedback from the community that mailed notifications arrived after the public meeting.

Spanish Translation

➔ Ecology Action: Ecology will make a fully-translated Spanish fact sheet available online and at all document repository locations. A Spanish insert will be mailed along with the English fact sheet providing translated information on how to obtain the fully-translated Spanish fact sheet.

Ecology screens for environmental justice concerns using the United States Environmental Protection Agency’s (EPA) EJSCREEN tool7 – an environmental justice screening and mapping tool. Ecology used this screening tool based on a 1-mile buffer of Swift Creek/Sumas River as well as a census tract area. See figures below and the “Community demographics” section on page 5 of the Swift Creek Project Public Participation Plan8.

---

7 https://ejscreen.epa.gov/mapper/index.html?wherestr=47.505875%2C+-122.290814
Figure 2: Swift Creek/Sumas River 1-mile buffer map, EPA EJSCREEN Report

Figure 3: Census Tract map for Swift Creek/Sumas River area, EPA EJSCREEN Report
The EPA establishes an 80th percentile filter as an initial starting point for early applications of the EJSCREEN tool\(^9\) “for the purpose of identifying geographic areas that may warrant further consideration, analysis or outreach.” Those demographic indicators above the 80th percentile are highlighted in the tables below.

Table 2: Environmental Justice results for Swift Creek/Sumas River area, EPA EJSCREEN Report

<table>
<thead>
<tr>
<th>Demographic Indicator</th>
<th>Percentile in WA State (by 1-mile buffer)</th>
<th>Percentile in WA State (by census tract)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minority Population</td>
<td>47</td>
<td>42</td>
</tr>
<tr>
<td>Low Income Population</td>
<td>65</td>
<td>63</td>
</tr>
<tr>
<td>Linguistically Isolated Population</td>
<td>69</td>
<td>66</td>
</tr>
<tr>
<td>Population with Less Than High School Education</td>
<td>85</td>
<td>82</td>
</tr>
<tr>
<td>Population Under 5 years of age</td>
<td>78</td>
<td>84</td>
</tr>
<tr>
<td>Population over 64 years of age</td>
<td>45</td>
<td>45</td>
</tr>
</tbody>
</table>

The EPA EJSCREEN reports a significant “population with less than high school education” (85th or 82nd percentile). “Population under 5 years of age” is also higher for the same 1-mile buffer area and census tract (78th or 84th percentile respectively).

The EPA EJSCREEN reported no significant “linguistically isolated populations” above the 80th percentile threshold (69th percentile for 1-mile buffer and 66th percentile for census tract) so based on this screening no additional translation needs for any language were identified by this screening tool.

Ecology also screens translation needs based on the most recent United States Census Bureau’s American Fact Finder website\(^10\). The 2011-2015 “Language Spoken at Home by Ability to Speak English for the Population 5 Years and Over” (B16001 Table) for Census Tract 102 identified 5.47% or 442 people “speaking English less than ‘very well’” which meets the EPA threshold criteria of population of 5% or over 1000\(^11\).

Based on this criteria for Spanish translation:

- We translated a fact sheet insert with the most pertinent information and contact information on how to request further Spanish translation.
- We had staff available at the public meeting for translation support.

---

\(^9\) https://www.epa.gov/ejscreen/frequent-questions-about-ejscreen
\(^10\) https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml
• We translated Swift Creek website\textsuperscript{12} information including the online comment form.

To date, Ecology has received no translation requests for the Swift Creek project or any other Whatcom County project.

Public Meeting Recording

\textbf{Ecology Action:} Ecology will explore methods to improve recording future Swift Creek public meetings.

We hope that the email Ian Fawley sent on Friday, October 25, 2019 following your phone conversation - which included all outreach materials, handouts, and a copy of the meeting’s PowerPoint presentation – provided more information about the Swift Creek Project.

You are correct that Ecology did not record the October 9, 2019 public meeting. However, Ecology did have correspondence with another community member who was not able to attend as you mentioned. We were able to answer their inquiry with details of the meeting and provided a copy of the meeting’s PowerPoint presentation. We also emailed a copy of the meeting’s PowerPoint presentation to meeting attendees who provided email addresses.

While Ecology strives to do effective, inclusive community outreach, our staffing and audio/visual resources are limited to be able to record public meetings while facilitating the meeting and presentation.

\textbf{Whatcom County general response to concerns}

Whatcom County is available to discuss the current plan and projects as well as the decades of background research on the Sumas Mountain Landslide and Swift Creek Sediment. See contact information after this document’s cover page ii.

\textbf{Comment from: Larry Lonegan}

Swift Creek – Activities Prior

November 5, 2019

Swift Creek \textbf{activities prior} to Public Meeting Oct 9., 2019, and Comments Accepted time frame Oct. 7 — Nov. 5, 2019

Please refer to attached "Consent Decree EXHIBIT A Site Diagram"

1. In mid September 2019, I, like many locals, set out to enjoy Sumas Mtn. by going for a walk. In doing so, I observed that the area described as a "Potential Future Repository Site" which is south of the "Canyon Reach Instream Sediment Traps" had been clear-cut.

\textsuperscript{12} http://www.ecology.wa.gov/SwiftCreek
Response to Comments: Swift Creek Project

2. Subsequently, and prior to the public meeting, I again went for a walk and observed another large clear-cut taking place, effectively from mid way of the sediment traps to the "Williams Pipelines". This clear cut approximates 1700 feet wide. This clear cut joins up with a clear area that begins at the point where the North and South forks of the Swift Creek join. This clear area approximates 900 feet wide and has piles of unprotected Naturally Occurring Asbestos (NOA). So effectively, there is now a clear area 2600 feet wide from the base of Sumas Mtn. to the William Pipelines.

Comments, questions, regarding the above include, but are not necessarily limited to:

1. Why were these clear-cuts taking place prior to the public hearing and the comments accepted time frame? These activities seem to negate any merits attributable to the meeting and comments. Apparently, the project moves ahead without consideration of the public.

2. It appears that the areas of the clear-cuts "contain critical areas, protective buffers and/or mitigation as defined by Chapter 16.16 and/or Chapter 23, Whatcom County Code" (PL4-86-002-C Rev: July 2014). The forest buffer has been eliminated. What happened here? How and why did these clear-cuts occur?

3. The rainy season is now beginning. As described in Wikipedia, "Prior to the March 2014 mudslide, the Oso area had heavy rainfall during the previous 45 days, up to 200 percent of normal". Given the loss of the forest buffer, it appears that property owners and their families have had a significant increase in the risk of a catastrophic event should the toe of the Swift Creek landslide give way. What is being done or will be done shortly to mitigate the loss of the forest buffer in this critical area?

4. The northeast winds will be coming. Given the loss of the forest buffer, what will be done to limit the NOA unprotected piles becoming airborne, and as a result, subject locals to unclean air and potentially resultant health issues?
Response

“Activities Prior”

The forest practices activity was performed by the property owner on their private property. Whatcom County does not currently own the property. Forest practices needed for future development of the sediment basins and repositories will conform to the requirements in the Consent Decree and the Swift Creek Sediment Management Action Plan including vegetative buffers, capping of sediment repositories and specific air monitoring.

Comment from: Larry Lonegan

Swift Creek – Roads

See Attached

November 5, 2019

Swift Creek — Roads per Text Explanation

Please refer to the attached Consent Decree EXHIBIT A Site Diagram, and to the attached text explanation entitled Swift Creek Action Plan engineered controls diagram.

Comments regarding such include, but are not necessarily limited to:

1. The text explanation relative to roads states: ...and LeibrantRoad (listed from west to east)". It appears that this statement is lacking. On the Site Diagram a yellow line is identified as a road that travels north of South Pass Rd, and south of South Pass Rd, and then turns to proceed west to east towards the Canyon Reach Instream Sediment Traps.

2. That section north of South Pass Rd. is indeed Leibrant Rd and is a county road maintained by the county.

3. That section that proceeds south of South pass Rd is a private way maintained privately. Utilization of this section would be inappropriate, detrimental to the private rural character of the area, detrimental to horses grazing, etc. in adjacent fields, and detrimental to members of the local community who utilize it as a safe way to exercise (walk, etc.).

4. To accomplish the objective of reaching the Sediment Traps with the least negative impact would be to utilize the way that Great Western currently uses to access that area. This Great Western way starts on the east side of the Goodwin Rd just north of Swift Creek.
Swift Creek Action Plan engineered controls diagram

This diagram appears in the Consent Decree (legal agreement) between Ecology and Whatcom County.

General Diagram Orientation

General Project Location
The Swift Creek flood control and sediment management project is located east of Everson, WA in Whatcom County.

Swift Creek Path
The North and South Forks of Swift Creek originate from the western slope of Sumas Mountain and join at the base of Sumas Mountain east of Leibrant Road. After joining as one creek, it flows westward for approximately 1,500 feet and then southwest for approximately 3,000 feet. The creek then flows generally northwest for 1,000 feet and flows underneath Goodwin Road. It continues northwest for approximately 6,000 feet and then flows underneath Oat Coles Road. It continues generally southwest another 1,500 feet where it joins the Sumas River.

Roads
Within the Swift Creek Project area, roads running east/west include South Pass Road to the north and Massey Road to the south. Roads running north/south include Oat Coles Road, Goodwin Road, and Leibrant Road (listed from west to east).

Alluvial Fan
At the confluence of Swift Creek's North and South Forks, an alluvial fan extends from the base of Sumas Mountain west of Leibrant Road, north of South Pass Road, and south of Massey Road.

Williams Pipelines
Natural gas pipelines extend from the north to the south through the project area paralleling Leibrant Road for approximately 4,000 feet before crossing Swift Creek at the base of Sumas Mountain.

Engineered Controls
Levees
- South Pass Setback Levee: This levee will be located north of Swift Creek. Oat Coles Road will border the levee to the west and South Pass Road to the north. It will be approximately 1,500 feet long.
- Lower Goodwin Reach Setback Levee: This levee will be located south of Swift Creek, extending east of Goodwin Road. It will be approximately 2,500 feet long.
- Upper Goodwin Reach Debris Flow/Setback Levee: This levee will be located north and west of Swift Creek and east of the Williams Pipeline. It will be approximately 1,500 feet long.
Comments and Responses

Response

“Roads”

Upon the transfer of the private property for the sediment management projects the current recreational use will be closed due to the requirements of the Consent Decree to ensure safety.

Comment from: Larry Lonegan

Swift Creek – Control Access

See Attached

November 5, 2009

Swift Creek - Control Access

Comments regarding such include, but are not necessarily limited to:

1. Per the attached section entitled Control Access, various items are listed as control items.

2. These control items imply that all access that has been enjoyed by the public to Sumas Mt. at the base by Swift Creek will be eliminated.

3. Based upon my observations of the clear-cuts that have been done to date, actions appear to be excessive and unreasonable. This would appear to hold true for these control access items.
4. So what have you considered and what do you propose for the continuing enjoyment of the mountain?

Response

“Control Access”

Accessing the DNR public lands on Sumas Mountain will need to be accomplished by ways of public right-of-ways.

In addition please see response to “Roads” above.
Comment from: Larry Lonegan

Swift Creek – EXHIBIT A

See attached

November 5, 2019

Swift Creek - EXHIBIT A

Please refer to the attached Consent Decree EXHIBIT A Site Diagram, and to the attached text explanation entitled Swift Creek Action Plan engineered controls diagram.

Comments regarding such include, but are not necessarily limited to:

1. Per review of Exhibit A, naturally occurring asbestos (NOA) is proposed to be accumulated in a very small and compact geographical area.

2. Such accumulations have the potential of creating serious air quality issues. What will be done to avert such and how timely will such actions be taken? Only recently have I observed capping of accumulations at the South Pass Setback Levee, while such accumulations occurred over many years.

3. Such accumulations have the potential of creating serious water quality issues. As noted on the attached Whatcom...-Critical Aquifer Recharge Areas, the accumulations will be on a critical aquifer recharge area and a wellhead protection zone. This can be observed much better on the Internet. What will be done to avert serious water quality issues?

4. The "Upper Goodwin Reach Debris Flow/Setback Levee" appears to be an excessive distance from the Swift Creek. Is there something else here that is not being disclosed?

5. Years ago alternatives such as pits were to be pursued as possible sites for accumulating the NOA. This appeared to be a potentially excellent solution. What happened?
Swift Creek Action Plan engineered controls diagram

This diagram appears in the Consent Decree (legal agreement) between Ecology and Whatcom County.

General Diagram Orientation

General Project Location
The Swift Creek flood control and sediment management project is located east of Everson, WA in Whatcom County.

Swift Creek Path
The North and South Forks of Swift Creek originate from the western slope of Sumas Mountain and join at the base of Sumas Mountain east of Leibrant Road. After joining as one creek, it flows westward for approximately 1,500 feet and then southwest for approximately 3,000 feet. The creek then flows generally northwest for 1,000 feet and flows underneath Goodwin Road. It continues northwest for approximately 6,000 feet and then flows underneath Oat Coles Road. It continues generally southwest another 1,500 feet where it joins the Sumas River.

Roads
Within the Swift Creek Project area, roads running east/west include South Pass Road to the north and Massey Road to the south. Roads running north/south include Oat Coles Road, Goodwin Road, and Leibrant Road (listed from west to east).

Alluvial Fan
At the confluence of Swift Creek's North and South Forks, an alluvial fan extends from the base of Sumas Mountain west of Leibrant Road, north of South Pass Road, and south of Massey Road.

Williams Pipelines
Natural gas pipelines extend from the north to the south through the project area paralleling Leibrant Road for approximately 4,000 feet before crossing Swift Creek at the base of Sumas Mountain.

Engineered Controls

Levees
- South Pass Setback Levee: This levee will be located north of Swift Creek. Oat Coles Road will border the levee to the west and South Pass Road to the north. It will be approximately 1,500 feet long.
- Lower Goodwin Reach Setback Levee: This levee will be located south of Swift Creek, extending east of Goodwin Road. It will be approximately 2,500 feet long.
- Upper Goodwin Reach Debris Flow/Setback Levee: This levee will be located north and west of Swift Creek and east of the Williams Pipeline. It will be approximately 1,500 feet long.
Goodwin Reach Sediment Basins
Two sediment basins will be located east of Goodwin Road, west of the Williams Pipeline, and north of the Lower Goodwin Reach Setback Levee. Swift Creek flows generally flows westward through the sediment basins. The two sediment basins will cover approximately 80 acres.

Canyon Reach Instream Sediment Traps
Multiple sediment traps will be located west of the confluence of Swift Creek’s North and South Forks. The sediment traps will extend approximately 1,000 feet before the creek reaches the sediment basins.

Existing Stockpile Levees
Existing stockpile levees are located on both sides of Swift Creek from the confluence of Swift Creek’s North and South Forks on Sumas Mountain to west of Oat Coles Road and within approximately 1,000 feet of the confluence with the Sumas River.

Potential Future Repository Sites
The diagram estimates two potential future repository locations. The first repository could be located north of the Goodwin Reach sediment basins and east of Goodwin Road. This first repository could be 16 acres. The second repository could be located south of the confluence of Swift Creek’s North and South Forks and east of the Williams Pipelines. This second repository could be 90+ acres.
Response

“Exhibit A”

Air and groundwater impacts were investigated in the Draft and Final Environmental Impact Statements. Monitoring protocols are in place to ensure mitigation. Detailed information may be found in documents 55B and 77, Swift Creek Health Impact Assessment, and Health Consultation, Asbestos and Metals in Groundwater and Leachate, respectively: http://www.co.whatcom.wa.us/3067/Swift-Creek-Background-Documents

The location of the “Upper Goodwin Reach Debris Flow/Setback Levee” is currently in design. The exact location is similar to the general location shown on the exhibit. The final design will be posted on the website upon its completion.

Whatcom County researched the idea of utilizing “old” gravel pits as a potential location for long term repository. This appeared to be a potential solution. Unfortunately due to the environmental hazards and exorbitant cost this idea was set aside. For further detailed information please see reports 66 and 66A; 2016 Sediment Repository Conceptual Site Screening by Wheeler Consulting Group: http://www.co.whatcom.wa.us/3067/Swift-Creek-Background-Documents
Appendices

Appendix A. Public Comments in Original Format
With the greatest respect for the efforts of everyone, let me offer the honest reality of this problem (that you know but can't acknowledge). This is an exercise in futility: the classic, rolling a rock uphill only for it roll back down. (Humor is not intended) You are struggling to get funding to construct a system that separates solids from the suspending water at the bottom of the mountain. A bit myopic...That system requires significant maintenance through time thus its greatest flaw. Or seen another way, it's a job that can never be finished. Who would ever buy into such a ludicrous proposition? No matter the lofty, meaningful goals, no one will sign on forever or they're a fool. If this is the underlying reality of this project, then you should be searching for another answer...that does not include eternity in its solution. Futility...

If you continue your present path (and I expect you will), you must also plan for its eventual demise. THE FUNDS WILL NOT BE THERE FOREVER! So then what? What will be built into your system plans when that eventuality happens? It's imperative that this is included in your plans. IT MUST BE! Or the plans are incomplete. The project can not be open-ended, forever.
Dennis Tjoelker

Greetings
As I look at the plans that you all have worked so hard at and look great I can not help but say this will not fix the problem at its source. As Scott mentioned in his comment you will need to be prepared to continue to spend more of our hard earned moneys to maintain this plan in the future. The problem is not a major flow of mud but a gradual flow of mud and rock with the seasonal rains with the differing volumes of material which I'm sure you have figured out. I suggest stopping the solid material flow at the source and keep it on the mountain. Build a dam east of the mouth of the canyon with drainage behind and through it, there is enough material that has already come through that you can screen out rock for a natural filter behind the dam to let clean water flow through. I'm guessing there is enough clay to seal it up so at some point you will have to get the dam high enough to create a lake with a spillway that will still allow the release of water. I know I have not addressed all of the potential issues but I'm sure you have enough sharp engineers at your disposal to figure it out. As far as looks go maybe it can be a rock/earthen dam that can have trees and shrubs planted on it, then in 30 years no one will know the difference. I figure if a river can be dammed up and hold back the water it does this should be a walk in the park. Thank You for your consideration DT
To: Cris Matthews  
Project Manager  
Department of Ecology  
913 Squalicum Way, Unit 101  
Bellingham, WA 98225  

Transmitted Via Online Comment Form: [http://cs.ecology.commentinput.com/?id=ic9NJ](http://cs.ecology.commentinput.com/?id=ic9NJ)  

November 5, 2019  

RE: Swift Creek Project  

Dear Cris Matthews,  

Thank you for taking the time to consider our comment on the Swift Creek Project. I found the presentations at the public meeting to be very informative and appreciate the work that went into delivering those. Our biggest concern with the current plan is that it is an expensive, short term fix to a long-term problem that has potential adverse health effects.  

RE Sources for Sustainable Communities is a local organization in northwest Washington, founded in 1982. RE Sources works to build sustainable communities and protect the health of northwest Washington’s people and ecosystems through the application of science, education, advocacy, and action. Our North Sound Baykeeper program is dedicated to protecting and enhancing the marine and nearshore habitats of northern Puget Sound and the Georgia Strait. Our chief focus is on preventing pollution from entering the North Sound and Strait, while helping our local citizenry better understand the complex connections between prosperity, society, environmental health, and individual wellbeing. Our North Sound Baykeeper is the 43rd member of the Waterkeeper Alliance, with over 300 organizations in 34 countries around the world that promote fishable, swimmable, drinkable water. RE Sources has over 20,000 members in Whatcom, Skagit, and San Juan counties, and we submit these comments on their behalf.  

It is well known that breathing in asbestos can lead to lung cancer, mesothelioma, or asbestosis and that exposures to heavy metals can lead to a myriad of health effects including kidney damage, neurological damage, and cancer. During the presentation it was mentioned by the Department of Health that there is no evidence of asbestos related diseases in people living in the Swift Creek drainage. Could you please provide the source of this information and explain how this will be monitored over time? Have there been any studies related to heavy metal related illnesses? Because both asbestos-related and heavy metal-related illnesses can take decades to manifest, it is important to maintain a long-term health study. The people that live in this drainage should be kept up to date on the risks.
At the public meeting it was mentioned by Whatcom County staff that this project was only expected to “manage” swift creek for about 20-25 years. This seems short sighted. Are there measures that could be done now that work toward long-term, long-lasting solutions? Are there incentives for people to leave the area or not move into the area? Could money be spent on relocation of people rather than trying to manage thousands of cubic yards of sediment every year in perpetuity? What other long-term solutions have been considered?

Thank you for your time in addressing our concerns and comments on this complex and difficult issue.

Sincerely,

Kirsten McDade
Pollution Prevention Specialist
RE Sources for Sustainable Communities
Larry Lonegan

Swift Creek - Public Meeting

See attached
November 5, 2019

Swift Creek Public Meeting Oct.9, 2019

Comments regarding such include, but are not necessarily limited to:

1. As an owner of property within the alluvial fan area and in close proximity to the watershed area, I am dismayed that I did not receive any indication of the meeting, etc.. While mail is not delivered and I do not have a PO Box in Everson, my address is readily available in Whatcom assessor records. If the assessor can send me a tax bill, certainly I, and anyone in a similar situation, should receive a meeting notification.

2. As conveyed to Ian Fawley via phone conversation on Oct.25, 2019, it came to my attention that at least one member of the public did not receive notification until after the meeting. Ian indicated that he was aware that some members of the public did not receive notification until after the meeting.

3. In the copies of meeting notice that I received from Ian, there were two fact sheet attachments. One in English and one in Spanish. The English fact sheet was six (6) pages long, and the Spanish fact sheet was only two (2) pages long. At the 2010 census per Wikipedia, the Hispanic or Latino makeup of Everson was 28.9%, Nooksak was 17.9%, and Sumas was 15.8%. Why the Spanish fact sheet was only two (2) pages is beyond my comprehension, and obviously those who speak Spanish as a primary language were not fully informed via the attached fact sheet.

4. The public meeting was hosted “to provide information, answer questions, and collect comments”. In response to my inquiry, I was informed that neither a transcript nor a recorded video was available. I was also informed that the meeting was not broadcast. Many people can not physically attend public meetings for various reasons, including but not necessarily limited to: attending to their children, on vacation, out of town, physically unable to attend due to personal or family health issues, employment obligations, etc. Those people that could not attend should have been accommodated via a live broadcast, a video recording, live streaming with the ability to ask questions, qand/or minimally a transcript of questions, answers thereto, and comments. It appears that an effort to keep the public fully informed was/is lacking.

In conclusion, and based upon the above, it appears that one might judge the public meeting, and communications thereof, to be inadequate, and that another meeting be held recifying, minimally, the above.
And also, as a result, the comments accepted time frame should be revised/extended.
Larry Lonegan

Swift Creek - Activities Prior
November 5, 2019

Swift Creek activities prior to Public Meeting Oct. 9, 2019, and Comments Accepted time frame Oct. 7 – Nov. 5, 2019

Please refer to attached “Consent Decree EXHIBIT A Site Diagram”

1. In mid September 2019, I, like many locals, set out to enjoy Sumas Mtn. by going for a walk. In doing so, I observed that the area described as a “Potential Future Repository Site” which is south of the "Canyon Reach Instream Sediment Traps" had been clear-cut.

2. Subsequently, and prior to the public meeting, I again went for a walk and observed another large clear-cut taking place, effectively from mid way of the sediment traps to the “Williams Pipelines”. This clear cut approximates 1700 feet wide. This clear cut joins up with a clear area that begins at the point where the North and South forks of the Swift Creek join. This clear area approximates 900 feet wide and has piles of unprotected Naturally Occurring Asbestos (NOA). So effectively, there is now a clear area 2600 feet wide from the base of Sumas Mtn. to the William Pipelines.

Comments, questions, regarding the above include, but are not necessarily limited to:

1. Why were these clear-cuts taking place prior to the public hearing and the comments accepted time frame? These activities seem to negate any merits attributable to the meeting and comments. Apparently, the project moves ahead without consideration of the public.

2. It appears that the areas of the clear-cuts “contain critical areas, protective buffers and/or mitigation as defined by Chapter 16.16 and/or Chapter 23, Whatcom County Code” (PL-4-86-002-C Rev: July 2014). The forest buffer has been eliminated. What happened here? How and why did these clear-cuts occur?

3. The rainy season is now beginning. As described in Wikipedia, "Prior to the March 2014 mudslide, the Oso area had heavy rainfall during the previous 45 days, up to 200 percent of normal”. Given the loss of the forest buffer, it appears that property owners and their families have had a significant increase in the risk of a catastrophic event should the toe of the Swift Creek landslide give way. What is being done or will be done shortly to mitigate the loss of the forest buffer in this critical area?

4. The northeast winds will be coming. Given the loss of the forest buffer, what will be done to limit the NOA unprotected piles becoming airborne, and as a result, subject locals to unclean air and potentially resultant health issues?
Larry Lonegan

Swift Creek - Roads

See attached
November 5, 2019

Swift Creek – Roads per Text Explanation

Please refer to the attached Consent Decree EXHIBIT A Site Diagram, and to the attached text explanation entitled Swift Creek Action Plan engineered controls diagram.

Comments regarding such include, but are not necessarily limited to:

1. The text explanation relative to roads states: “…and Leibrant Road (listed from west to east)”. It appears that this statement is lacking. On the Site Diagram a yellow line is identified as a road that travels north of South Pass Rd, and south of South Pass Rd, and then turns to proceed west to east towards the Canyon Reach Instream Sediment Traps.

2. That section north of South Pass Rd. is indeed Leibrant Rd and is a county road maintained by the county.

3. That section that proceeds south of South Pass Rd is a private way maintained privately. Utilization of this section would be inappropriate, detrimental to the private rural character of the area, detrimental to horses grazing, etc. in adjacent fields, and detrimental to members of the local community who utilize it as a safe way to exercise (walk, etc.).

4. To accomplish the objective of reaching the Sediment Traps with the least negative impact would be to utilize the way that Great Western currently uses to access that area. This Great Western way starts on the east side of the Goodwin Rd just north of Swift Creek.
Swift Creek Action Plan engineered controls diagram

This diagram appears in the Consent Decree (legal agreement) between Ecology and Whatcom County.

General Diagram Orientation
General Project Location
The Swift Creek flood control and sediment management project is located east of Everson, WA in Whatcom County.

Swift Creek Path
The North and South Forks of Swift Creek originate from the western slope of Sumas Mountain and join at the base of Sumas Mountain east of Leibrant Road. After joining as one creek, it flows westward for approximately 1,500 feet and then southwest for approximately 3,000 feet. The creek then flows generally northwest for 1,000 feet and flows underneath Goodwin Road. It continues northwest for approximately 6,000 feet and then flows underneath Oat Coles Road. It continues generally southwest another 1,500 feet where it joins the Sumas River.

Roads
Within the Swift Creek Project area, roads running east/west include South Pass Road to the north and Massey Road to the south. Roads running north/south include Oat Coles Road, Goodwin Road, and Leibrant Road (listed from west to east).

Alluvial Fan
At the confluence of Swift Creek's North and South Forks, an alluvial fan extends from the base of Sumas Mountain west of Leibrant Road, north of South Pass Road, and south of Massey Road.

Williams Pipelines
Natural gas pipelines extend from the north to the south through the project area paralleling Leibrant Road for approximately 4,000 feet before crossing Swift Creek at the base of Sumas Mountain.

Engineered Controls
Levees
- South Pass Setback Levee: This levee will be located north of Swift Creek. Oat Coles Road will border the levee to the west and South Pass Road to the north. It will be approximately 1,500 feet long.
- Lower Goodwin Reach Setback Levee: This levee will be located south of Swift Creek, extending east of Goodwin Road. It will be approximately 2,500 feet long.
- Upper Goodwin Reach Debris Flow/Setback Levee: This levee will be located north and west of Swift Creek and east of the Williams Pipeline. It will be approximately 1,500 feet long.
Goodwin Reach Sediment Basins
Two sediment basins will be located east of Goodwin Road, west of the Williams Pipeline, and north of the Lower Goodwin Reach Setback Levee. Swift Creek flows generally flows westward through the sediment basins. The two sediment basins will cover approximately 80 acres.

Canyon Reach Instream Sediment Traps
Multiple sediment traps will be located west of the confluence of Swift Creek’s North and South Forks. The sediment traps will extend approximately 1,000 feet before the creek reaches the sediment basins.

Existing Stockpile Levees
Existing stockpile levees are located on both sides of Swift Creek from the confluence of Swift Creek’s North and South Forks on Sumas Mountain to west of Oat Coles Road and within approximately 1,000 feet of the confluence with the Sumas River.

Potential Future Repository Sites
The diagram estimates two potential future repository locations. The first repository could be located north of the Goodwin Reach sediment basins and east of Goodwin Road. This first repository could be 16 acres. The second repository could be located south of the confluence of Swift Creek’s North and South Forks and east of the Williams Pipelines. This second repository could be 90+ acres.
Larry Lonegan

Swift Creek - Control Access

See attached
November 5, 2009

Swift Creek - Control Access

Comments regarding such include, but are not necessarily limited to:

1. Per the attached section entitled Control Access, various items are listed as control items.

2. These control items imply that all access that has been enjoyed by the public to Sumas Mt. at the base by Swift Creek will be eliminated.

3. Based upon my observations of the clear-cuts that have been done to date, actions appear to be excessive and unreasonable. This would appear to hold true for these control access items.

4. So what have you considered and what do you propose for the continuing enjoyment of the mountain?
Background

Location

Swift Creek is in the northeastern lowlands of Whatcom County. The South Fork of Swift Creek originates from the toe (downslope end) of an ongoing, slowly moving landslide on Sumas Mountain. Swift Creek flows generally westward before joining the Sumas River near the city of Nooksack.

Landslide, flooding, and sediment

The 225-acre landslide on Sumas Mountain has resulted in a large amount of sediment containing naturally-occurring asbestos (NOA) and metals continuously filling up the creek bed. For several decades Swift Creek has been dredged to manage sediment and limit downstream flooding. When the deposited sediment material dries, NOA in the sediment can become airborne and present a risk to human health and the environment. The main concern with the metals in the sediment is the impact to plants on land and aquatic life.
Larry Lonegan

Swift Creek - EXHIBIT A

See attached
November 5, 2019

Swift Creek - EXHIBIT A

Please refer to the attached Consent Decree EXHIBIT A Site Diagram, and to the attached text explanation entitled Swift Creek Action Plan engineered controls diagram.

Comments regarding such include, but are not necessarily limited to:

1. Per review of Exhibit A, naturally occurring asbestos (NOA) is proposed to be accumulated in a very small and compact geographical area.

2. Such accumulations have the potential of creating serious air quality issues. What will be done to avert such and how timely will such actions be taken? Only recently have I observed capping of accumulations at the South Pass Setback Levee, while such accumulations occurred over many years.

3. Such accumulations have the potential of creating serious water quality issues. As noted on the attached Whatcom...-Critical Aquifer Recharge Areas, the accumulations will be on a critical aquifer recharge area and a wellhead protection zone. This can be observed much better on the Internet. What will be done to avert serious water quality issues?

4. The “Upper Goodwin Reach Debris Flow/Setback Levee” appears to be an excessive distance from the Swift Creek. Is there something else here that is not being disclosed?

5. Years ago alternatives such as pits were to be pursued as possible sites for accumulating the NOA. This appeared to be a potentially excellent solution. What happened?
Swift Creek Action Plan engineered controls diagram

This diagram appears in the Consent Decree (legal agreement) between Ecology and Whatcom County.

General Diagram Orientation

General Project Location
The Swift Creek flood control and sediment management project is located east of Everson, WA in Whatcom County.

Swift Creek Path
The North and South Forks of Swift Creek originate from the western slope of Sumas Mountain and join at the base of Sumas Mountain east of Lebrant Road. After joining as one creek, it flows westward for approximately 1,500 feet and then southwest for approximately 3,000 feet. The creek then flows generally northwest for 1,000 feet and flows underneath Goodwin Road. It continues northwest for approximately 6,000 feet and then flows underneath Oat Coles Road. It continues generally southwest another 1,500 feet where it joins the Sumas River.

Roads
Within the Swift Creek Project area, roads running east/west include South Pass Road to the north and Massey Road to the south. Roads running north/south include Oat Coles Road, Goodwin Road, and Lebrant Road (listed from west to east).

Alluvial Fan
At the confluence of Swift Creek's North and South Forks, an alluvial fan extends from the base of Sumas Mountain west of Lebrant Road, north of South Pass Road, and south of Massey Road.

Williams Pipelines
Natural gas pipelines extend from the north to the south through the project area paralleling Lebrant Road for approximately 4,000 feet before crossing Swift Creek at the base of Sumas Mountain.

Engineered Controls

Levees
- South Pass Setback Levee: This levee will be located north of Swift Creek. Oat Coles Road will border the levee to the west and South Pass Road to the north. It will be approximately 1,500 feet long.
- Lower Goodwin Reach Setback Levee: This levee will be located south of Swift Creek, extending east of Goodwin Road. It will be approximately 2,500 feet long.
- Upper Goodwin Reach Debris Flow/Setback Levee: This levee will be located north and west of Swift Creek and east of the Williams Pipeline. It will be approximately 1,500 feet long.
Goodwin Reach Sediment Basins
Two sediment basins will be located east of Goodwin Road, west of the Williams Pipeline, and north of the Lower Goodwin Reach Setback Levee. Swift Creek flows generally flows westward through the sediment basins. The two sediment basins will cover approximately 80 acres.

Canyon Reach Instream Sediment Traps
Multiple sediment traps will be located west of the confluence of Swift Creek's North and South Forks. The sediment traps will extend approximately 1,000 feet before the creek reaches the sediment basins.

Existing Stockpile Levees
Existing stockpile levees are located on both sides of Swift Creek from the confluence of Swift Creek’s North and South Forks on Sumas Mountain to west of Oat Coles Road and within approximately 1,000 feet of the confluence with the Sumas River.

Potential Future Repository Sites
The diagram estimates two potential future repository locations. The first repository could be located north of the Goodwin Reach sediment basins and east of Goodwin Road. This first repository could be 16 acres. The second repository could be located south of the confluence of Swift Creek's North and South Forks and east of the Williams Pipelines. This second repository could be 90+ acres.