

**Appendix 5.11A**  
**Soil Loss Calculations**

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## APPENDIX 5.11A

TABLE 5.11-3.  
Estimate of Soil Loss by Water Erosion Using Revised Universal Soil Loss Equation (RUSLE2)

Feature (acreage) <sup>2</sup>	Activity	Duration (months)	Estimates Using Revised Universal Soil Loss Equation <sup>1</sup>		
			Soil Loss (tons) without BMPs	Soil Loss (tons) with BMPs	Soil Loss (tons/yr) No Project
Project Site (3097 acres)	Grading	6	195	2.3	0.43
	Construction	23	328	8.9	---
Temporary Construction Area (180 acres)	Grading	6	14.5	0.17	0.03
	Construction	23	24.5	0.67	---
<b>Project Soil Loss Estimate</b>	<b>TOTAL</b>	<b>29</b>	<b>562</b>	<b>12.1</b>	<b>0.5</b>

**Notes:**

- Soil losses (tons/acre/year) are estimated using RUSLE2 software available online [[http://fargo.nserl.purdue.edu/rusle2\\_dataweb/RUSLE2\\_Index.htm](http://fargo.nserl.purdue.edu/rusle2_dataweb/RUSLE2_Index.htm)].
  - The soil characteristics were estimated using RUSLE2 soil profiles corresponding to the mapped soil unit.
  - Soil loss (R-factors) were estimated using 2-year, 6-hour point precipitation frequency amount for the nearest National Weather Service station to the HHR site [online at [http://hdsc.nws.noaa.gov/hdsc/pfds/sa/sca\\_pfds.html](http://hdsc.nws.noaa.gov/hdsc/pfds/sa/sca_pfds.html)].
  - Estimates of actual soil losses use the RUSLE2 soil loss times the duration and the affected area. The No Project Alternative estimate does not have a specific duration so loss is given as tons/year.

**Other Project Assumptions as follows:**

It is assumed that grading for the project site will take 6 months and construction will take 23 months.

It is assumed that grading of the temporary construction area will take 6 months, then the site will be covered with temporary buildings and materials so soil loss will be negligible during the remaining 23 month construction period.

**RUSLE2 Assumptions as follows:**

100-ft slope length. Estimated soil unit slope is the midpoint of the minimum and maximum of the unit slope class.

**Construction** soil losses assume the following inputs: Management - Bare ground; Contouring - None, rows up and down hill;

Diversion/terracing - None; Strips and Barriers - None.

**Grading** soil losses assume the following inputs: Management - Bare ground/rough surface; Contouring - None, rows up and down hill;

Diversion/terracing - None; Strips and Barriers - None.

**Construction with BMP** soil losses assume the following inputs: Management - Silt fence; Contouring - Perfect, no row grade;

Diversion/terracing - None; Strips and Barriers - 2 fences, 1 at end of RUSLE slope.

**No Project** soil losses assume the following inputs: Management - Dense grass, not harvested; Contouring - None, rows up and down hill;

Diversion/terracing - None; Strips and Barriers - None.

Soil Type	Acreage	Slope	Soil Loss Estimates Using RUSLE2 software (tons/ac/year)			
			Grading	Construction w/o BMPs	Construction with BMPs	No Project
Site (s5740)	3097	1.0	1.0	0.4	0.012	0.0011
<b>subtotal</b>	<b>389</b>	<b>Subtotal</b>	<b>389</b>	<b>171.2</b>	<b>4.7</b>	<b>0.43</b>
Temporary Construction Area (s5740)	180	1	1.0	0.4	0.012	0.0011
<b>subtotal</b>	<b>29</b>	<b>Subtotal</b>	<b>29</b>	<b>12.8</b>	<b>0.35</b>	<b>0.03</b>

**Assumptions:**

The No Project soil loss assumes a 'dense grass, not harvested' management scenario in RUSLE2.

This scenario is very conservative for sparse native desert scrub condition.

Assumes project site and temporary construction area would have 10% bare soil during construction.