

California Regional Water Quality Control Board
Lahontan Region

Maps and Tables

South Shore Project Waste Discharge Requirements

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Table E1 - Soil Moisture Operability Protocol for Ground-Based Equipment

Conditions to be evaluated at the 2 to 10-inch depth
(see Attachment F, BMP No. 6)

Soil Moisture % Increases Downward	Coarse Soils	Light Soils	Med. Soils (<35% clay)	Heavy Soils (>35% clay)
	Loamy sands, fine sand loam, very fine sands, coarse sands	Fine sandy loams, sandy loams, very fine sandy loam	Sandy clay loam, loam, silt loam, sandy clay loam, clay loam	Clay loam, sandy loam, silty clay loam, clay
Dry Soils	Dry, loose, single grained flows thru fingers	Dry, loose, flows thru fingers	Powdery, dry, sometimes slightly crusted but breaks down into powdery conditions	Hard, baked, cracked sometimes has loose crumbs on surface
Moist Soil	Still appears dry, will not form a ball with pressure	Still appears to be dry; will not form a ball		
Moist Soil	Still appears dry, will not form a ball with pressure			

Table E2 – Waterbody Buffer Zones

(see Attachment F, BMP No. 15)

Slope of land adjacent to watercourse or lake (%)	Class I	Class II (includes special aquatic features)	Class III	Class IV
<30	75 feet	50 feet	25 feet	25 feet
30-50	100 feet	75 feet	50 feet	50 feet
>50	150 feet	100 feet	50 feet	50 feet

Table E3a - WDRs' Best Management Practices (BMPs) to FEIS' Resource Protection Measures (RPMs) Crosswalk

WDRs BMP requirements are equal to or more stringent than the FEIS RPMs and are therefore to be followed throughout the Project, per WDR section B4.
(See also Table E3b and Attachment F)

	WDRs' BMPs	FEIS' RPMs (page numbers refer to FEIS)
General BMPs	1	WS-1: page 2-28, WS-25; page 2-34
	2	R-5: page 2-38
	3	-
	4	-
Vegetation Treatments in Uplands	5	WS-2, 3, 5: pages 2-28 and 2-29; WS-12, WS-16: pages 2-31, 2-32
	6	WS-3: page 2-28; App. D
	7	-
	8	-
	9	-
	10	WS-6: page 2-29
	11	WS-5: page 2-29
	12	WS-7, 8: page 2-30
	13	WS-5, WS-7, WS-12: pages 2-30, 2-31; Appendix C
	14	WS-13: page 2-31; WS-33: page 2-37
	15	WS-11, WS-14 to WS-16: pages 2-30 through 2-32
	16	WS-7: page 2-30; WS-30
	17	AR-1: page 2-25
	18	AR-2: page 2-25; AR-4, page 2-26
	19	-
	20	AR-3: page 2-26
	21	WS-6: page 2-29; WS-16: page 2-32
	22	WS-28: page 2-36; WS-33: page 2-37
	23	WS-2: page 2-28 and WS-31, WS-32: page 2-36
	24	WS-28, WS-29: page 2-36; WS-34, page 2-37
	25	WS-4: page 2-28; WS-17 to 22: pages 2-33, 4-2
	26	WS-4: page 2-28; WS-17,

		18: pages 2-33, 4-2
	27	WS-4: page 2-28; 4-2
	28	WS-4: page 2-28; WS-9: page 2-30; WS-19: page 2-33; WE-5: page 2-45
	29	WS-4: page 2-28; WS-21: page 2-33
	30	WS-4: page 2-28; WS-22: page 2-33
	31	WS-20: page 2-33
	32	Consistent with Project Description
	33	R-1: page 2-38; R-3: page 2-38
	34	R-1: page 2-38; R-4: page 2-38
	35	R-1: page 2-38; R-6: page 2-39
	36	R-1, R-2, and R-7: pages 2-38, 2-39
	37	R-1: page 2-38; R-6 through R-10: page 2-39; and narrative on page 2-5
	38	R-1: page 2-38; R-7, R-8, R-9, and R-10: page 2-39; R-18, R-19: page 2-41
	39	R-1: page 2-38; R-18 to R-20: page 2-41
	40	R-1: page 2-38; R-20: page 2-42
	41	R-1: page 2-38; R-18: page 2-42
	42	R-1: page 2-38; R-7: page 2-39; R-11: page 2-40
	43	R-1: page 2-38; R-12 and R-14: page 2-40
	44	R-1: page 2-38; R-13: page 2-40
	45	R-1: page 2-38; R-15: page 2-40
	46	R-1: page 2-38; R-16: page 2-40
	47	R-1: page 2-38; R-17: page 2-41
	48	WS-23: page 2-34
	49	WS-24: page 2-34
	50	WS-25: page 2-34

	51	WS-26: page 2-36
	52	WS-27: page 2-35; WE-6: page 2-45
	53	WS-11: page 2-30
	54	R-8, R-9, R-10: page 2-39; Monitoring page 4-3
	55	-
	56	R-8, R-9: page 2-39; Narrative on page 2-7
	57	R-9: page 2-39; Narrative on pages 2-6 to 2-7
	58	Narrative on pages 2-7 to 2-8; Monitoring page 4-5
Aesthetics	59	SR-1: page 2-47
	60	SR-2: page 2-47
	61	SR-3: page 2-47
	62	SR-4: page 2-47
Air Quality	63	AQ-1: page 2-20
Biological Resources	64	WL-1: page 2-23
	65	WL-2: page 2-23
	66	WL-3: page 2-23
	67	WL-4: page 2-23
	68	WL-5: page 2-23
	69	WL-6: page 2-24
	70	WL-7: page 2-24
	71	WL-8: page 2-24
Cultural Resources	72	HR-1: page 2-48
	73	HR-2: page 2-48
	74	HR-3: page 2-48
	75	HR-4: page 2-48
Pest Management	76	P-1: page 2-21
	77	WE-1: page 2-44
	78	WE-2: page 2-44
	79	WE-3: page 2-45
	80	WE-4: page 2-45
	81	WE-5: page 2-45
	82	WE-6: page 2-45
Recreation	83	Rec-1: page 2-46
	84	Rec-2: page 2-46
	85	Rec-3: page 2-46
Sensitive and Special Interest Plants and	86	SP-1: pages 2-42 to 2-43

Fungi		
	87	SP-2: page 2-43
	88	SP-3: page 2-43
	89	SF-1

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**Table E3b - FEIS' Resource Protection Measures (RPMs)
to WDRs' Best Management Practices (BMPs) Crosswalk**

WDRs BMP requirements are equal to or more stringent than the FEIS RPMs and
are therefore to be followed throughout the Project, per WDR section B4.
(See also Table E3a and Attachment F)

Category	Issue	FEIS' RPMs	WDRs' BMPs
General BMPs	field discretion tracking	-	3
	cooperative review of undisclosed plans	-	4
	upland ground-based equipment operations - restrictions	-	7
	protection of riparian vegetation	-	19
	crossing protections	-	55
Air Quality		AQ-1	63
Pest Management		P-1	76
Focal Wildlife Species		WL-1	64
		WL-2	65
		WL-3	66
		WL-4	67
		WL-5	68
		WL-6	69
		WL-7	70
		WL-8	71
Aquatic Resources	removal of LWD / CWD	AR-1	17
	removal of trees near streambanks	AR-2	18
	directional falling; LWD / CWD deficiencies	AR-3	20
	stream shade	AR-4	18
Soil, Water, Riparian	spills	WS-1	1
	BMP placement before storms	WS-2	5, 23
	operable soil conditions	WS-3	5, 6
	fire prescriptions	WS-4	25 through 31
	water bars	WS-5	11
	end-lining	WS-6	10, 21
	flagging exclusion buffers	WS-7	12, 13c, 16, 26, 31a
	flagging special aquatic features	WS-8	12
	flame heights, ignition	WS-9	28
	crossing SEZs with inoperable soil moisture conditions	WS-10	6
	equipment ops in watercourses	WS-11	15, 53
	CTL equipment ops in SEZs	WS-12	13
	CTL / waterbody exclusion zone	WS-13	14
	waterbody buffer zones	WS-14	15

	WT equipment waterbody exclusions	WS-15	15
	WT equipment SEZ exclusions	WS-16	15, 21
	burn pile waterbody buffer zones (excluding ephemeral channels)	WS-17	25, 26
	burn pile ephemeral channel buffer zone	WS-18	25, 26
	fire creep	WS-19	25, 28
	piling within SEZs	WS-20	25, 31
	re-piling burn piles	WS-21	25, 29
	hot piling of burn piles	WS-22	25, 30
	landing construction	WS-23	48
	landing and fuel exclusions in SEZs	WS-24	49
	landing and fuel restrictions in RCAs	WS-25	1, 50
	landing drainage	WS-26	51
	landing decommissioning	WS-27	52, 21b, 39
	operations outside normal operating period	WS-28	22, 24, 3
	operations on lesser snow depths with operable soil moisture	WS-29	22, 24, 3
	flagging wet areas that do not freeze well	WS-30	13c, 16, 26
	monitoring conditions when approaching inoperable	WS-31	11, 22, 23
	timely removal of equipment and materials before conditions become inoperable	WS-32	23
	Over-snow operations in SEZs	WS-33	13b, 14, 22a
	temporary crossings when adequate snow or frozen soil conditions are not present	WS-34	24
Roads	implementation and maintenance of road BMPs	R-1	33 through 47
	rocking native surface roads at intersections with paved roads (normal operating period and dry conditions)	R-2	36
	reconstructing / maintaining USFS System Roads	R-3	33, 35
	dust abatement	R-4	34
	concrete storage, mixing, and wastes	R-5	2
	hydrologically disconnecting new temp roads from waterbodies	R-6	35, 37
	determination of permits and extent/type of stabilization at FS roads with City or County roads	R-7	36, 42
	construction and removal of temporary crossings on ephemeral channels.	R-8	38, 53, 54, 55, 56

	construction and removal of temporary crossings on intermittent channels.	R-9	38, 54, 55
	design flow for, and removal of temporary crossings on intermittent channels	R-10	38, 54, 55
	rocking native surface roads at intersections with paved roads (during wet conditions or outside of normal operating period)	R-11	42
	use of a rutted native surface road	R-12	43
	plowing paved roads for use	R-13	22, 44
	minimum snowpack on, & plowing of, native surface roads for use	R-14	22, 43, 44
	marking roads for plowing; avoiding plowing into sensitive areas	R-15	45
	identifying and protecting sensitive areas before winter operations commence	R-16	46
	providing adequate drainage during plowing	R-17	11, 47
	restoration of decommissioned roads to specified standards	R-18	41
	reconstruction of decommissioned roads	R-19	21b, 33, 37, 38, 39, 40
	blocking decommissioned roads and trails	R-20	39, 40
Sensitive Plants		SP-1	86
		SP-2	28, 76c, 87
		SP-3	88
Sensitive Fungi		SF-1	89
Noxious Weeds		WE-1	77
		WE-2	78
		WE-3	79
		WE-4	80
		WE-5	28, 81
		WE-6	52b, 82
Recreation		Rec-1	83
		Rec-2	84
		Rec-3	85
Scenic Resources		SR-1	59
		SR-2	60
		SR-3	61
		SR-4	62
Heritage Resources		HR-1	72
		HR-2	73
		HR-3	74

		HR-4	75
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Table E4 - Stream Classification Crosswalk

California Term	USFS Term	Definition
Class I	Perennial or Intermittent	Fish always or seasonally present onsite, includes habitat to sustain fish migration and spawning.
Class II	Perennial or Intermittent	1) Fish always or seasonally present offsite within 1000 feet downstream; and/or 2) Contains aquatic habitat for non-fish aquatic species, including springs, fens, etc.; and 3) Excludes Class III tributaries to Class I waters.
Class III	Intermittent or Ephemeral	No aquatic life present, but watercourse shows evidence of being capable of sediment transport to Class I or II waterbody under normal high water flow conditions.
Class IV	Ephemeral	Man-made watercourses which provide beneficial uses downstream of project sites.
Unclassified	Ephemeral	Channel present, but no aquatic life or connection to Class I, II, or III waterbody exists.

The US Forest Service categorizes waterbodies as watercourses which tend to have permeable beds which connect surface waters to groundwater. A **perennial stream** is expected to flow throughout the year, albeit with only small dry-weather flows in some cases. An **intermittent stream** ceases to flow in dry periods. The flow may occur when the groundwater table is seasonally high, but there will not be flow when the groundwater table is significantly below the stream channel bed level. An **ephemeral stream** flows only after rain or snow-melt and has no base flow component. The WDRs, for the most part, uses these same terms to provide consistency between the WDRs and the FEIS/ROD.

However, it may be difficult at times to determine when a watercourse is responding to specific groundwater conditions. Additionally, that classification system does not impart an immediate sense for the potential long-term threat to water quality, aquatic species, or beneficial uses. Therefore, where Project activities potentially may cause impacts, the BMPs incorporated into these WDRs require the identification of waterbodies by biological habitat and ability to transport sediment, as defined in the California Code of Regulations, title 14 (2009 Forest Practice Rules) Watercourse and Lake Protection Zones (WLPZs).

**Table E5 - Summary of Permanent Fill and Excavation on System Roads in
or adjacent to SEZs, including Crossings**

Road Number	Station	Excavation (CY)	Fill (CY)	Comments
11N13	308 to 723	0	60	Place road base on existing road through SEZ
12N01A	1873	10	200	Low water crossing – includes permeable fill material and surfacing of approaches
12N02	609	0	28	Rocking of low spot in roadway
12N08	713	0	12	Rocking of low spot in roadway
	2100	10	75	Culvert replacement – includes fill and road base
	6000	0	12	Rocking of low spot in roadway
	7540	0	24	Rocking of low spot in roadway
12N19	1312	0	12	Rocking of low spot in roadway
12N20	548	60	160	Culvert replacement - includes permeable fill material and surfacing of approaches
12N27 Seg A	827	0	12	Rocking of low spot in roadway
	1722	0	24	Road base required due to proximity to SEZ*
12N27 Seg B	N/A	0	50	Road base required to drain wet area in road
Temporary roads	various	5	5	
TOTALS		85	674	

Table E6 – Disturbance in Uplands and SEZs (in acres)

	Pre-Existing within the entire Project Area, to be Used During Project Activities		New Disturbance Due to Project Activities		Total Disturbance within Project area (existing + new) During Activities	Disturbance After Project Mitigation Measures are applied		Total New Disturbance in SEZs	Total SEZ Acres Restored
	Upland	SEZ	Upland	SEZ	Acres	Upland	SEZ	SEZ	SEZ
System Roads	251	25	0	0	276	251	25	0	0
Road Maintenance			6.22	0.6	6.82	6.22	0	0.6	0
Road Reconstruction			8.34	0.67	9.01	8.34	0.67	0.67	0
Road Decommissioning (other than Temp Rds below)		8.24			na		na		8.24
Landings - reconstructed	36.4	0			36.4	0	0	0	
Landings - new construction			24.3	0	24.3	0	0	0	
Temporary Roads - reconstructed	11.51	0.18			11.69	0	0		0.18
Temporary Roads - new construction			5.75	0.31	6.06	0	0	0.31	0.31
Forwarder/Skid trail Crossings		0		0.12	0.12		0	0.12	0
System Trails	81.75	10.7	0	0	92.45	81.75	10.7	0	
Burn Piles in SEZ				42	42		0	42	42*
Aspen restoration									251**
TOTALS	380.66	35.88	44.61	1.7	462.85	341.09	36.37	1.7	8.73**
TOTAL OF PROJECT-RELATED "ROAD" DISTURBANCE	416.54		46.31		499.25	377.46			

- 1) All numbers are estimates. Discrepancies in totals between these numbers and that reported in the FEIS (as miles) are attributable to the following:
 - a. width estimates in calculating acreages (FEIS acreage is based on 14-foot widths; accurate assumed road widths, which vary between 4 [trails] and 40 [State and Federal Highways] feet, are shown in FEIS Table 3-46, p. 3-114),
 - b. maximum road length vs. actual sections of road requiring maintenance or reconstruction,
 - c. maintenance which could extend beyond current road widths (brushing, minor blading , etc.),
 - d. ground-truthing following publication of the FEIS, and/or
 - e. recent conversion of WT or CTL Units to Hand Treatment Units (thereby reducing the numbers of roads requiring maintenance or reconstruction).
- 2) Road decommissioning estimates are based on Forest Service GIS/INFRA database information within the South Shore Project area. Estimate includes decommissioned area from SEZ (combined road and trail acreage) since 2004. Assumed road width averages 14 feet and trail widths assumed width averages 4 feet.
- 3) All disturbance in SEZ is assumed to be creating 100% new land coverage, This is a conservative assumption as many SEZ crossings for the project involve existing land coverage in SEZs

*The 42 acres of burn piles in SEZ is estimated based on a total 138 acres of SEZ in the project area that are planned to receive burn pile treatment. The WDR mandates a cap of no more than 30 percent of an SEZ area to be covered in burn piles and only 15 percent of the SEZ area may be burned in any given year. The 30 percent covered in piles equates to 42 acres.

**All Aspen restoration areas are assumed to be entirely within SEZ. The 251 acres of Aspen restoration is conservatively assumed to not involve restoration of existing disturbance or land coverage, and therefore, is not added to the total SEZ restored.

"SEZ" columns include stream crossings on Temp Roads and Forwarder/Skid Trails Crossings.

Table E7 - Maximum Distance Between Waterbreaks

(see Attachment F, BMP No. 11)

Estimated Erosion Hazard Rating	US Equivalent Measure Road or Trail Gradient			
	10% or less	11-25%	26-50%	>50%
	feet	feet	feet	feet
Extreme	100	75	50	50
High	150	100	75	50
Moderate	200	150	100	75
Low	300	200	150	100