

**STATE OF NEW MEXICO
BEFORE THE WATER QUALITY CONTROL COMMISSION**

_____)
In the Matter of:)
)
)
PROPOSED AMENDMENT)
TO 20.6.2 NMAC (Copper Rule))
)
_____)

No. WQCC 12-01(R)

EXHIBIT SHELLEY – 7



OSM/TR-82/2

Surface Mining Water Diversion Design Manual

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Office Of Surface Mining

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United States Department Of The Interior
Office Of Surface Mining

Technical Services & Research

Table 1.1. Design Requirements by Technologies.

Considerations*	Overland Flows, Shallow Groundwater Flows, Ephemeral Streams	Perennial and Intermittent Streams
Hydrology (a) <u>Recurrence Interval</u> - Design Event		
<u>Permanent</u>	10-year, 24-hour	100-year, 24-hour
<u>Temporary</u>	2-year, 24-hour	10-year, 24-hour
Hydraulics (b) <u>Channel Capacity</u>	Peak runoff from design event, 0.3 ft freeboard minimum. Protection of critical areas can be more stringent.	Must equal adjacent unmodified stream channel (floodplain capacity can be used for passing design event), but not less than (a).
(c) <u>Channel Lining</u>	Suitable to control and minimize water pollution.	To control erosion, must be stable and only require infrequent maintenance.
(d) <u>Slope or Gradient</u>	Appropriate for sediment control.	Longitudinal profile of the stream to remain stable and to prevent erosion.
(e) <u>Velocities</u>	Regulated to control and minimize water pollution.	Regulated to control and minimize water pollution.
Geotechnical (f) <u>Backstopes</u>	Stable	Stable
Ecological (g) <u>Restoration</u>		
<u>Permanent</u>	None	Restore or maintain natural riparian vegetation, including aquatic habitats (riffles, pools, drops, etc.) that approximate premining characteristics.
<u>Temporary</u>	Remove regrade topsoil & revegetate.	Same as ephemeral stream
(h) <u>Enhancement</u>	None	"Where practicable" enhance natural riparian vegetation.
(i) <u>Shape</u>	None	Establish or restore natural meandering shape of an environmentally acceptable gradient.
(j) <u>Longitudinal Profile and Cross Section</u>	(see slopes and capacity)	Establish or restore to approximate premining stream channel characteristics (including aquatic considerations below).
(k) <u>Aquatic Habitats</u>	None	"Establish or restore...usually a pattern of pools, riffles and drops...that approximate premining characteristics."

*Where not specifically indicated, temporary and permanent requirements would be the same.

Table 2.1. Possible Data Required for Channel Design.

Topographic Data

Drainage area
Stream slope
Watershed slope
Watershed shape
Longitude
Latitude
Topographic maps
Aerial photographs
Land characteristics

Hydrologic Data

Precipitation:

2-year, 24-hour rainfall amount
10-year, 24-hour rainfall amount
100-year, 24-hour rainfall amount

Hydraulic

Average velocity
Boundary roughness
Flow depth
Top width
Hydraulic radius
Wetted perimeter
Backwater profile
Bedform configuration

Geotechnical

Soils:

Type
Structure
Particle size
Permeability
Infiltration
Percent organic matter
Chemical composition
Aggregate index
Soil maps

Table 3.1. Hydrologic Recurrence Interval and Design Event.

	Overland Flows, Shallow Groundwater Flows Ephemeral Streams	Perennial and Intermittent Streams
Permanent	10-year, 24-hour	100-year, 24-hour
Temporary	2-year, 24-hour	10-year, 24-hour