

CHAPTER 20

RECLAMATION SCHEDULE

CHAPTER 20

INDEX

	<u>Page</u>
Introduction	1
Timing of Reclamation Activities	1
Projected Reclamation Schedules	4
Completion of Mining Operations and Final Reclamation	9

LIST OF FIGURES

	<u>Page</u>
Figure 1 Reclamation Timetable	2

LIST OF TABLES

	<u>Page</u>
Table 1 Projected Reclamation Schedule for the N-9 Coal Resource Area, Years 2013-2020	5
Table 2 Projected Reclamation Schedule for the J-19 Coal Resource Area, Years 2013-2020	6
Table 3 Projected Reclamation Schedule for the J-21 Coal Resource Area, Years 2013-2020	7

CHAPTER 20
RECLAMATION SCHEDULE

Introduction

Chapter 20 presents a projected timetable based on the life of mine (LOM) permit revision of 10/12/2012. Phases of the reclamation plan and projected reclamation schedules for 2013-2020 mining in the N-9, J-19, and J-21 coal resources areas and support facility disturbances in these areas are presented in Tables 1-3. Supporting information regarding the timing of reclamation activities may be found in the chapters that discuss the components of the reclamation plan. For example, revegetation best practice application periods are discussed in Chapter 23, Revegetation Plan. Drawings 85210 (Mine Plan) and 85360 (Jurisdictional Permit and Affected Lands) show the projected mining blocks for 2013 through 2015, 2015 through 2020 and then the mining block beyond 2020. Normally, the reclamation schedule covers the planned five year permit term. The remaining time of the current permit term has been included with the next planned five year permit term. Drawing 85360 identifies the lands that are pre-SMCRA (December 16, 1977) and those lands under interim and permanent regulatory programs.

Timing of Reclamation Activities

A generalized timetable of reclamation activities within a year is shown in Figure 1. The timetable outlines the sequence and timing of each major phase of reclamation normally conducted within the year. Precise specification of the timing or area for each reclamation phase in each mining area is not possible for the following reasons: (1) variables such as NGS annual coal supply requirements, coal quality, unanticipated mining conditions, overburden characteristics, operational considerations and consequent manpower and equipment availability can affect the rate of progress of mining activities; and (2) weather conditions, the availability of materials, laboratory analytical delays and the rate of mining advance affect the progress of grading, topsoiling and seeding in each mining area. The reclamation process is affected by the rate of mining conditions and production, spoiling of material and the amount of acres graded, topsoiled, and revegetated each year and which can vary somewhat. Once spoils are graded, the reclamation sequence will follow that presented in Figure 1 and as described in Chapters 22, 23 and 26.

Figure 1
Reclamation Timetable

Sequence of Activities	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sedimentation Pond & Diversión Construction	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Site Clearing	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Topsoil Salvage	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Blasting	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Overburden Removal	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Coal Removal	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Backfilling and Grading	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Topographic Manipulation	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Measures Used in Conjunction w/Drainage Features & Overland Conveyances	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Topsoil Redistribution,	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Graded Spoil Sampling, First Order Terrace and Drainage Construction Spoil or Soil Surface Mechanical Manipulation Measures	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Seeding/Vegetation Measures	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Mulching	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Cultural Plant and Habitat Area Planting	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Fencing	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Maintenance & Management	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Notes: ——— Operations performed during periods indicated. Primary revegetation season.
 ----- Operations performed, weather permitting. Secondary revegetation season.

Sedimentation pond construction or diversion structures are completed prior to any other surface disturbances. These activities insure sediment control and protection of the hydrologic system (Chapters 6 and 26).

Clearing of woody or other site materials to facilitate topsoil removal is performed immediately prior to topsoil removal and ahead of mining or associated activities. Site clearing and topsoil salvage operations (Chapter 22) are typically conducted from March to November. These activities may be conducted in other months if mining conditions warrant and site conditions are not adversely affected by weather.

Following coal removal, backfilling and grading activities as described in Chapters 21 and 26 are conducted. These activities are performed throughout the year. They include grading of the landform to the approved PMT, the designs for the primary drainages, and the guidelines for drainages and landform characteristics presented in Chapter 26 and Attachment A to that chapter. The designs are installed during the course of the reclamation grading process. These activities are typically conducted from March through November or as site conditions allow.

Associated graded spoil suitability determinations (Chapter 22), topsoil or suitable plant growth media replacement, and the construction or installation of surface stabilization features follow the same timetable as topsoil salvage operations. If ground and weather conditions permit, topsoil material redistribution may be conducted in months other than those indicated in the reclamation timetable (Figure 1).

Mechanical manipulation of the plant growth media or topsoil, including seedbed preparation, is conducted following the redistribution of the media or topsoil material. These activities entail deep ripping and contour furrow disking and are described in detail in Chapters 21, 22, 23 and 26. These operations are performed from March through October, or at other times when weather and surface conditions permit.

Seeding and mulching of topsoiled areas is conducted during the primary seeding season (May to September) following topsoil redistribution and mechanical manipulation, weather permitting. Seeding and mulching may be conducted in the secondary seeding season if weather and ground conditions permit. Revegetation activities are discussed in Chapters 23 and 26. Fence construction is performed throughout the year. Fence construction is interrupted only by inclement weather.

Maintenance and management activities are conducted throughout the year. The timing of these activities is dependent upon the specific activity. Fence maintenance and removal of trespass livestock are conducted throughout the year as needed. Interseeding and reseeding is conducted either during the primary or secondary seeding seasons based on needed remedial work. Surface stability monitoring and remedial actions are conducted as required and as described in Chapter 26.

Projected Reclamation Schedules

Projected annual reclamation schedules are presented in Tables 1 through 3 for the coal resource areas in which mining and reclamation will occur through 2020 at the Kayenta Complex. The projected acres disturbed, backfilled and graded, and topsoiled and seeded for the 2013-2015 and 2015-2020 year mine blocks are included. Remaining areas of active coal resource areas included in Tables 1 through 3 and two LOM coal resources areas (N-10 and N-11 Extension) will be mined and reclaimed beyond 2020 (See Drawing 85210, Mine Plan).

The projections for acres disturbed are based on the current mine plan and operational considerations. The projections of acres backfilled and graded and topsoiled and seeded are based upon three basic assumptions. First, approximately three to four spoil rows are normally rough graded simultaneously once the pit configuration stabilizes in order to achieve the desired postmining land configuration and to effectively maintain topographic continuity between grading sequences. The number of spoils associated with irregular box cuts, certain inside and outside curves, haulage ramps and when needed to develop the approved PMT (Chapters 21 and 26) these may exceed four to facilitate grading. Second, the point in time at which grading of specific spoils can begin is based upon coal recovery, pit configuration and operational considerations. In addition, factors such as excavator performance, unforeseen geologic conditions, overburden thickness, the number and thicknesses of partings, and customer demand affect backfilling and grading (see Drawing No. 85210, Mine Plan). In a multi-seam operation with varying coal quality, overburden ratios, and pit inventories, compounded further at times by significant distances between operational pits and reclamation areas, schedules for reclamation can be affected. Third, once initial operations are significantly advanced and grading begins, the amount of acres graded, topsoiled, and seeded annually in a given

TABLE 1

Projected Annual Reclamation Schedule, N-9 Coal Resource Area, Years 2013-2020

Year	Acres Disturbed	Acres Graded	Acres Topsoiled and Seeded
Status as of 09/30/12 ¹	845	72	(57) ²
Projected schedule for disturbance and reclamation through 2020:			
2012 (remainder of year)	20	0	0
2013 - 2015			
2013	40	145	120
2014	110	140	115
2015	100	100	125
2016 - 2020			
2016	145	75	60
2017	130	120	90
2018	70	80	50
2019	80	100	75
2020	50	150	100

Mining continues in the N-9 pit after 2020

¹Status for total acres currently disturbed, graded and topsoiled and seeded in the N-9 pit area as of 09/30/12. Disturbed acres include facilities, ponds, roads, and stockpiles that will remain operational beyond 2020. Disturbed acres shown in each of the years for 2013 through 2020 are the additional mining or related disturbances in each year.

²Acres topsoil as of 09/30/12 but not yet seeded.

TABLE 2

Projected Annual Reclamation Schedule, J-19 Coal Resource Area, Years 2013-2020

Year	Acres Disturbed	Acres Graded	Acres Topsoiled and Seeded
As of 09/30/2012 ¹	1914	336	1248(237) ²
Projected schedule for disturbance and reclamation through 2020:			
2012 (remainder of year)	0	210	5 ³
2013 - 2015			
2013	40	210	260
2014	90	110	95
2015	95	160	120
2016 - 2020			
2016	90	150	120
2017	0 ⁴	175	130
2018	0	40	80
2019	0	100	75
2020	0	80	50

Mining continues in the J-19 pit after 2020

¹Status for total acres currently disturbed, graded, and topsoiled and seeded in the J-19 pit area as of 09/30/12. Disturbed acres include facilities, ponds, roads, and stockpiles that will remain operational beyond 2020. Disturbed acres shown in each of the years for 2013 through 2020 are the additional mining or related disturbances in each year.

²Acres in parenthesis are topsoiled as of 09/30/12 but not yet seeded.

³Topsoiled only

⁴All areas in advance of the existing pit have been disturbed by this date due to the narrow horseshoe pit configuration.

TABLE 3

Projected Annual Reclamation Schedule, J-21 Coal Resource Area, Years 2013-2020

Year	Acres Disturbed	Acres Graded	Acres Topsoiled and Seeded
Status as of 09/30/12 ¹	545	288	3111(141) ²
Projected schedule for disturbance and reclamation through 2020:			
2012 (remainder of year)	20	0	10 ³
2013 - 2015			
2013	125	0	85
2014	110	60	20
2015	85	30	15
2016 - 2020			
2016	90	80	60
2017	80	60	30
2018	15	70	40
2019	50	40	80
2020	50	70	90

Mining continues in the J-21 pit after 2020

¹Status for total acres currently disturbed, graded, and topsoiled and seeded in the J-21 pit area as of 09/30/2012. Disturbed acres include facilities, ponds, roads, and stockpiles that will remain operational beyond 2020. Disturbed acres shown in each of the years for 2013 through 2020 are the additional mining or related disturbances in each year.

²Acres in parenthesis are topsoiled as of 09/30/12 but not yet seeded.

³Topsoiled only

pit may roughly approximate the acres disturbed annually. However this may vary each year within each mine area with the pit progression and the spoil area available for backfilling and grading. Further, the amount of time needed to complete grading, topsoiling, and seeding after mining ceases is approximately equal to the lag time between the initiation of mining and the initiation of grading. In certain circumstances, this generalization may not apply because of the spoil material needed to achieve the designed postmining landform. For example, the backfilling and grading of box cut spoil and deep ramps typically requires the movement of large volumes of spoil over great distances. In summary, the reclamation process and schedules will be largely dependent on annual mining operations, coal production requirements, and the availability of areas for regrading. The reclamation schedule is a reflection of the general mine plan and conscientious consideration of the above factors.

Completion of Mining Operations and Final Reclamation

All facilities will be reclaimed when mining operations are completed and the site is decommissioned unless approved as an element of the postmining land use plan. After completion of any necessary regrading, the reclaimed facility areas will be topsoiled or covered with suitable plant growth media and revegetated. It is estimated that three to five years will be needed to completely reclaim all facilities and structures following the cessation of mining. Decommissioning of mine facilities will commence when the facilities are no longer required to support mining activities. The structures and equipment, including concrete foundations and sub-bases, will be removed unless approved by the regulatory authority to be reclaimed in-place (a minimum of four feet below the finished reclamation surface) or they have been approved as part of the post mine land use. Materials having economic value will be salvaged. Materials that are not salvageable will be buried in accordance with the non-coal mine waste disposal plan as required by 30 CFR 816.89 and in accordance with regulatory approval. All structure and facility sites will be contoured to conform with the natural landform. Cut and fill slopes which are compatible with the postmining land use and which are approved by the regulatory authority will be retained but with edges blended into the topography.