

# SMCRA Requirements for Stream Protection

How to have fun for 2 years



# Presentation Outline

- 30 CFR Reg Review
- SPR concepts
- Stream Specific Requirements
  - Baseline
  - Avoidance/minimization
  - Restoration
  - Enhancement



# 30 CFR Review and Requirements

- Exceptions: coal preparation plants, stream channel diversions
  - Governed by other provisions
- Separate by:
  - SBZ incursions – not in stream
  - In stream activities
- Evaluate activity
  - Coal refuse disposal, excess spoil, mining through



# SBZ Incursions – CRDA

## Coal Refuse Disposal, Waste Impoundments

- Explain why avoidance is not possible
- Identify range of alternative locations and/or configurations
- Alternatives must:
  - Conform to engineering, safety, construction requirements
  - Be capable of being done considering cost, logistics, technology
  - Be consistent with coal recovery provisions of SMCRA
  - Analyze impacts on fish, wildlife and other environmental values
    - Consider both aquatic and terrestrial



# SBZ Incursions – Surface Mining

## Surface Mining

- Explain why avoidance is not possible
- Identify a lesser buffer
- Explain how lesser buffer will:
  - Prevent additional TSS
  - Minimize disturbance and adverse impacts on fish, wildlife, and related environmental values



# SBZ Incursions – Excess Spoil

## Excess Spoil

- Explain why placement in stream or SBZ is not possible
- Demonstrate volume of excess spoil has been minimized
- Maximum amount of spoil has been returned to mined out area considering PMLU, AOC, safety, stability, and environmental protection
- Identify range of alternative locations, size, and/or configurations
- Alternatives must:
  - Conform to engineering, safety, construction requirements
  - Be capable of being done considering cost, logistics, technology
  - Be consistent with coal recovery provisions of SMCRA
  - Analyze impacts on fish wildlife and other environmental values
    - Both aquatic and terrestrial



# SBZ Incursions – Excess Spoil

- Perform Geotechnical Analysis on:
  - Character of bedrock and any adverse geologic conditions
  - Survey of all springs, seeps, ground water flows
  - Analysis of potential effects from subsidence
  - Description of rock materials used to construct rock chimney cores or rock drainage
  - Stability analysis of the fill
  - Fill construction must be certified by engineer



## Activities in streams – Surface Mining

- Only perennial and intermittent – ephemeral exempt from protections
- Explain why avoidance is not possible
- Demonstrate that activity will not cause/contribute to violation of CWA standards under 402/404





# Activities in streams – CRDA

- Explain why avoidance is not possible
- Evaluate impacts on physical, chemical, biological characteristics downstream of site
  - Analyze seasonal variation (temp, volume, TSS)
  - Introduction of contaminants
  - Affects to aquatics and wildlife that depend on stream
- Select alternative with least adverse impact on fish/wildlife
- Coal Waste Impoundments
  - Evaluate geotechnical characteristics of foundation
  - Id all springs, seeps, ground water flows
  - Consider possibility of mud/debris flows into impoundment



# Activities in streams – Excess Spoil

- Explain why avoidance is not possible
- Evaluate impacts on physical, chemical, biological characteristics downstream of site
  - Analyze seasonal variation (temp, volume, TSS)
  - Analyze introduction of contaminants to system
  - Affects of aquatics and wildlife that depend on stream
- Select alternative with least adverse impact on fish/wildlife



# Performance Standards

Excess Spoil/Coal Refuse placement in SBZ or in streams:

- May not cause or contribute to the violation of applicable State/Federal water quality standards
- Minimize adverse effects of leachate and surface water runoff on surface and ground waters
- Ensure mass stability and prevent mass movement
- Ensure final fill is suitable for reclamation and vegetation and compatible with natural surroundings
- Minimize disturbance to and adverse impacts on fish, wildlife, and related environmental values to the extent possible and using BAT
- Construction shall be regularly inspected, certified by registered engineer, and photographed
- No permanent impoundments on top of completed fills
- Final configuration must be compatible with PMLU



# Performance Standards

- Excess Spoil – Must have a 1.5 long term static safety factor
- Excess Spoil – When slope exceeds 2.8:1 (36%), operator must construct keyway cuts or rock toe buttress to ensure fill stability
- Excess Spoil – Underdrains must be constructed of durable rock
- Excess Spoil – transported and placed in lifts not to exceed 4 feet
- Coal Refuse – prevent combustion
- Coal Refuse – must be covered with 4 feet of best available cover material, non-toxic, noncombustible
- Excess Spoil/Coal Refuse – shall be non-toxic and non-acid forming



# Performance Standards

Surface mining in SBZ or in stream:

- May not cause or contribute to the violation of applicable State/Federal water quality standards
- Must handle earth materials, ground water discharges, and runoff in a manner that prevents, to the extent possible using BAT, additional contributions of TSS, and prevents water pollution
- Must minimize disturbance to, enhance where possible, restore or replace wetlands, habitats of unusually high value for fish/wildlife, and riparian vegetation along rivers and streams and bordering ponds and lakes



# Performance Standards

## Stream Channel Diversions

- Temporary
  - Must be promptly removed when no longer need to achieve purpose they were authorized for
- Permanent
  - Must use natural design techniques to restore original pre-mine characteristics of the channel, including natural vegetation and hydrologic characteristics, to promote and enhance aquatic habitat, and minimize adverse alteration of stream channels, both on and off the site
  - Must be certified design, construction, and restoration
  - RA may specify additional design requirements



# SRA Approval

- SRA must find in writing that:
  - Explain why avoidance is not possible
  - Plans submitted meet requirements set out in application
  - Site has been designed to minimize disturbance and adverse impacts on fish, wildlife, and related environmental values
  - Measures to be used are BAT to prevent additional TSS and prevent pollution
  - Include a permit condition requiring compliance with CWA before activities can be undertaken in stream



# Current SMCRA Summary

## SBZ incursions

- Explain how avoidance is not possible
- Identify a range of reasonable alternatives
- Considering that alternatives must:
  - Conform to engineering, safety, construction requirements
  - Be capable of being done considering cost, logistics, technology
  - Be consistent with coal recovery provisions of SMCRA
  - Analyze impacts on fish wildlife and other environmental values
    - Both aquatic and terrestrial
- Excess spoil – minimize footprint, volume, impact





# Current SMCRA Summary

## Activities in intermittent/perennial streams

- Explain how avoidance is not possible (fills, mining)
- Evaluate downstream impacts (fills, mining)
  - Analyze seasonal variation (temp, volume, TSS)
  - Introduction of contaminants
  - Affects of aquatics and wildlife that depend on stream
- Identify a range of reasonable alternatives (fills)
  - Alternatives must:
    - Conform to engineering, safety, construction requirements
    - Be capable of being done considering cost, logistics, technology
    - Be consistent with coal recovery provisions of SMCRA
    - Analyze impacts on fish wildlife and other environmental values
      - Both aquatic and terrestrial
- Minimization – minimize footprint, volume, impact (fills)



# SPR Concepts Under Consideration

## Activities in/near streams

- Primarily aimed at fills
- Prohibition on fill placement within 100 feet of perennial and intermittent streams – unless applicant demonstrates and SRA finds:
  - No reasonable alternative to placement in stream
  - Minimize length of stream impacted
  - Enhancement fully offset impacts
  - Fill activity result in more than *de minimus* impact outside the permit boundary
  - Activity not cause/contribute to violation of CWA
  - Considering fill must be reforested



# SPR Concepts Under Consideration

## Activities in/near streams

- All other activities in/near streams
  - Not preclude pre-mining CWA designated use
  - Activity result in more than *de minimus* impact of the affected stream segment
  - Result in conversion of stream segment to next lower category (perennial to intermittent)
  - Activity not cause/contribute to violation of CWA
  - Considering 300 foot forested buffer on each side of stream in previously forested areas



# SPR Concepts Under Consideration

Mining through streams:

- All items listed under activities in/near streams, plus considering:
  - Alternatives analysis
  - Restoration of stream form and function
  - Bonding of restoration



# SPR Concepts Under Consideration

- Fill specific items under consideration:
  - Landforming principles when bringing site back to AOC to blend with topography
  - Elevation not vary by more than 20% of change
    - Post-mining elevation can exceed pre-mining elevation
  - Controlled placement, compacted 4 foot lifts
  - Requires ephemeral re-construction on fills
  - Elimination of flat topped fills – unless necessary to achieve PMLU



# Specific Stream Items

- Baseline sample considerations
  - 12 regularly spaced monthly samples
  - Full chemical suite (Mg, Na, Ca, K, Cl, SO<sub>4</sub>, HCO<sub>3</sub>)
  - Location – minimum up/down stream, every stream within permit boundary to be mined
  - Biological condition
  - Applies to areas overlying underground mines
- Avoidance/minimization
  - All activities must explain why avoidance not possible
  - All fills must evaluate alternatives
  - All fills minimize footprint, volume, impact



# Specific Stream Items

- Restoration
  - Considering mine throughs must restore stream form/function
  - All mine throughs require bonding
- Enhancement
  - Considering enhancement leaving 300 foot buffer replanted with natives vegetation, preferably trees
  - Enhancement occur outside mined out area
  - Provisions for prohibition of mining in areas of exceptionally high value for fish and wildlife habitat



# SPR Considerations

- What are exact stream restoration criteria?
- How to make them permit conditions?
- OSM evaluating stream restoration success, performance standards for success, lessons learned
- OSM soliciting on-the-ground conditions for SPR concepts
- Nexus between CWA and SMCRA – both 402 and 404





# Questions/Comments/Concerns