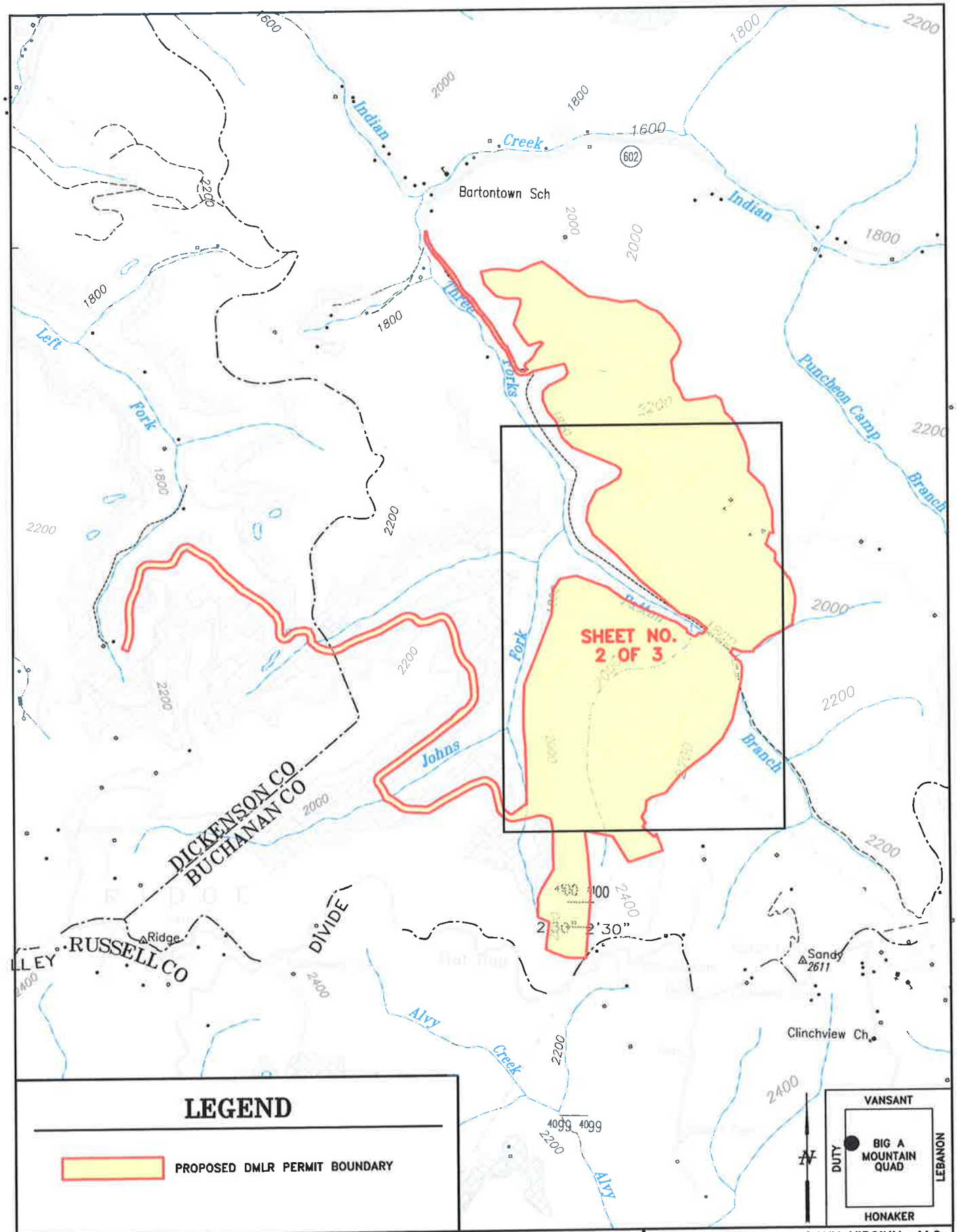

LEGEND

PROPOSED DMLR PERMIT BOUNDARY

DESIGNED LMD DRAWN ADB CHECKED LMD	DATE 06-27-12 SCALE 1" = 2000'	
PROJECT NO. 09-515B	FILE NAME LOCATION.DWG	SHEET NO. 1 OF 3

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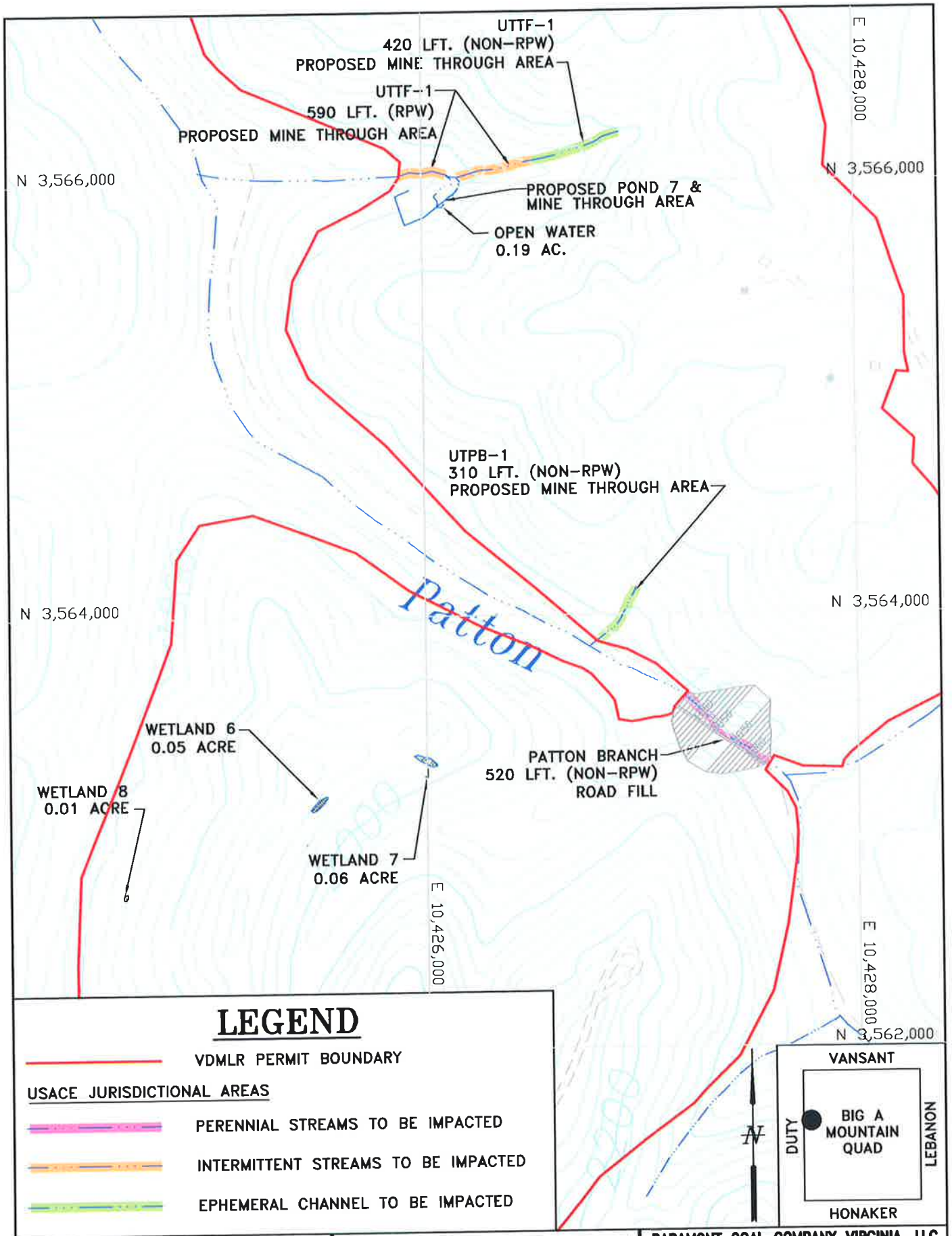
Abingdon, Virginia

PARAMONT COAL COMPANY VIRGINIA, LLC
THREE FORKS SURFACE MINE
VDMLR APP. NO. 1005775
USACE PROJECT NO. NAO-2011-01672

LOCATION MAP



LEGEND

VDMLR PERMIT BOUNDARY

USACE JURISDICTIONAL AREAS

PERENNIAL STREAMS TO BE IMPACTED

INTERMITTENT STREAMS TO BE IMPACTED

EPHEMERAL CHANNEL TO BE IMPACTED

DESIGNED LMD DRAWN ADB CHECKED LMD	DATE 06-27-12 SCALE 1" = 600'	
PROJECT NO. 09-515B	FILE NAME MAP-1.DWG	SHEET NO. 2 OF 3

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Abingdon, Virginia

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THREE FORKS SURFACE MINE
VDMLR APP. NO. 1005775
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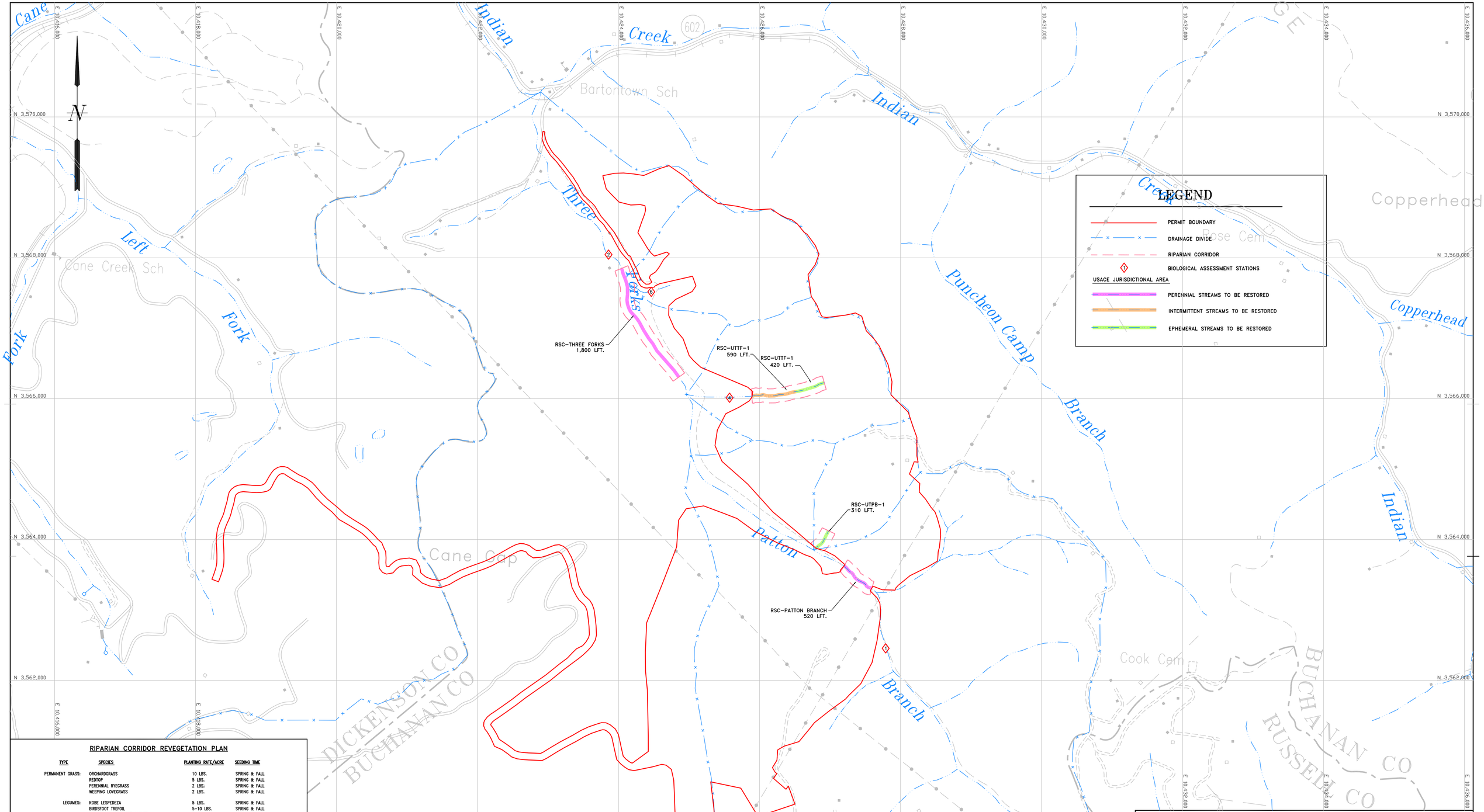
ROAD FILL, POND 7 &
MINE THROUGH AREAS



LEGEND

- PERMIT BOUNDARY
- DRAINAGE DIVIDE
- RIPARIAN CORRIDOR
- BIOLOGICAL ASSESSMENT STATIONS

USACE JURISDICTIONAL AREA

- PERENNIAL STREAMS TO BE RESTORED
- INTERMITTENT STREAMS TO BE RESTORED
- EPHEMERAL STREAMS TO BE RESTORED

RIPARIAN CORRIDOR REVEGETATION PLAN

TYPE	SPECIES	PLANTING RATE/ACRE	SEEDING TIME
PERMANENT GRASS:	ORCHARDGRASS	10 LBS.	SPRING & FALL
	REDTOP	5 LBS.	SPRING & FALL
	PERENNIAL RYEGRASS	2 LBS.	SPRING & FALL
	WEEPING LOVEGRASS	2 LBS.	SPRING & FALL
LEGUMES:	KOBE LESPEDEZA	5 LBS.	SPRING & FALL
	BIRDSFOOT TREFOIL	5-10 LBS.	SPRING & FALL
	LADINO AND/OR WHITE CLOVER	3 LBS.	SPRING & FALL
ANNUALS:	ANNUAL RYEGRASS	20 LBS.	FALL OR LATE WINTER ONLY
	FOXTAIL MILLET	5 LBS.	SPRING AND SUMMER ONLY
RIPARIAN TREES:	RIVER BIRCH, RED OAK, WHITE OAK, WILLOW OAK, PIN OAK, HAZEL ALDER RED MAPLE, SUGAR MAPLE, GREEN ASH, WHITE ASH, TULIP POPLAR, BLACK CHERRY, SYCAMORE, BLACK WILLOW, BLACK WALNUT, CRAB APPLE, SILKY DOGWOOD, GRAYSTEM DOGWOOD, INDIGOBUSH, COMMON BUTTONBUSH, SPECKELED ALDER, RED OSIER DOGWOOD, CHOKE CHERRY, CHOKEBERRY, NINEBARK, SILKY WILLOW, ELDERBERRY, WINTERBERRY HOLLY, COMMON SPICEBUSH*	APPROXIMATELY 110 EACH OF 6 SPECIES, OR APPROXIMATELY EQUAL NUMBERS TOTALING 660 IF MORE THAN 6 SPECIES ARE USED WITHIN A GIVEN AREA.	
FIBER,MULCH:	CELLULOSE OR WOOD FIBER	1,500 LBS.	

GENERAL NOTES:

* PLANTED TREES SHALL BE SELECTED FROM AMONG THESE GROUPINGS. A MINIMUM OF FIVE (5) TREE SPECIES FROM THIS LIST SHOULD BE USED.

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Civil · Environmental · Mining
Abingdon, Virginia

VANSANT
BIG A MTN QUAD
DUTY
LEBANON
HONAKER

PARAMONT COAL COMPANY VIRGINIA, LLC
THREE FORKS SURFACE MINE
VDMLR P.N. PENDING, APP. NO. 1005775
USACE PROJECT NO. NAO-2011-01672

MITIGATION MAP

DESIGNED	JES	DATE	06-29-12
DRAWN	LBJ, JES		
CHECKED	LMD	SCALE	1"=600'
PROJECT NO.	FILE NAME	DRAWING NO.	
09-515B	MITIGATION.DWG	4 OF 5	

OBJECTIVES

Mitigation Type

Stream mitigation proposed herein is permittee-responsible on-site re-establishment and off-site rehabilitation. Impacts proposed by the mining operation are temporary allowing for the re-establishment of the aquatic resources at their current locations. Off-site rehabilitation is proposed to offset temporal loss of function. Off-site rehabilitation will be conducted in advance of or concurrent with proposed impacts.

Compensation Resource Type, Quantity and Methods

Mitigation includes the on-site re-establishment of approximately 520 LFt. of perennial stream, 590 LFt. of intermittent stream and 730 LFt. of ephemeral stream. These streams will be re-established through backfilling the contour cut to meet approximate original contour. During this process all culverts and fill material will be removed from Patton Branch.

Off-site stream mitigation will consist of rehabilitating approximately 1,800 LFt. of perennial stream channel (Three Forks) disturbed by past mining activities.

The proposed compensation methods include stream restoration using Natural Stream Design (Rosgen 1996). Stream stability and functionality will be fostered through the use of in-stream habitat structures, native herbaceous and woody vegetation, and establishment of stable channel dimension, pattern and profile.

Functional Assessment

Functional Assessments using EKSAP are included in Exhibit H of this document.

SITE SELECTION

Factors considered during the selection of mitigation sites included: consideration of watershed needs, on-site alternatives, and practicability of accomplishing ecologically self-sustaining aquatic resource restoration. All Stream impacts and mitigation are located in the Three Forks watershed.

Because the impacts are temporary, on-site and in-kind mitigation alternatives exist. Reclamation of the mine will entail restoring the site to approximate original contour and removing all fill and structures from streams. The natural topography of the landscape will be re-established making stream restoration a viable alternative. Stream re-establishment is widely practiced for pond removal and day lighting piped streams. Stream and riparian buffer re-establishment is highly desired in the watershed in order to reduce channel erosion potential. Mitigation is shown on the Mitigation Map.

In order to provide offsets for temporal loss additional mitigation has been provided in the form of off-site, in-kind, stream rehabilitation. The off-site mitigation is located within the same watershed. The proposed site has been disturbed by past mining and land use practices. Rehabilitation of this site would return natural/historic functions to a former stream enhancing the watershed. This proposal includes approximately 1,800 LFt. of off-site stream rehabilitation including bank stabilization and approximately 8 acres of enhanced riparian planting.

Stream restoration can improve habitat for biota, reduce sediment supply, and enhance processes such as nutrient cycling and organic drift. Therefore, the need for and usefulness of stream restoration in these watershed is well-established.

The practicability of these stream restoration practices has been proven by existing compensation projects completed by the applicant. The goal of natural stream mitigation is the establishment of stable stream channels. Rather than describing a changeless, immobile state; "stability" refers to the dynamic equilibrium exhibited by streams that transport their watershed's water discharge and sediment load while varying within a describable range of parameters. If restored stream channels achieve stability and are not re-disturbed, they are by definition self-sustaining.

The following outlines the Watershed Approach used to select the particular compensation sites within the watershed:

Current Trends in Habitat Loss or Conversion

Due to past land use practices, sedimentation from stream bank erosion is prevalent. Stream restoration is considered a valuable part of the plans to address, in particular, the sedimentation deficiencies of the watershed. This was a primary factor in providing on-site and off-site mitigation within the same or adjacent watershed.

Cumulative Impacts of Past Development Activities

Resource development is common within the watershed. In addition to direct impacts from mining, forestry, and natural gas extraction activities, the construction of roads in close proximity to streams resulted in severe stream instability problems that are still extant. The relocation and channelization of Three Forks and Indian Creek were extensive, and severe vertical instability in the upper reaches and equally severe lateral instability in the lower reaches are prevalent.

Current Development Trends

While mining is still taking place within the watershed, improved regulation since the advent of the Surface Mining Control and Reclamation Act (SMCRA) and the 404 program limit the effects of mining or development to the stream. No major roads or additional rail lines are proposed in the watershed. New development is not prevalent within these watersheds.

Presence and Needs of Sensitive Species

Indian Creek is inhabited by one species of state-listed aquatic Threatened and Endangered species (Big Sandy Crayfish). This species may be sensitive to increased sedimentation. The miles of eroding streambank in the watershed contribute a significant amount of sediment directly into the Indian Creek.

Site Conditions that Favor or Hinder Mitigation Success

A primary factor in selecting particular mitigation sites include conditions that favor long-term success. There needed to be a reasonable level of certainty that any sites in a headwater position would remain undisturbed in the future, and there needed to be enough physical space to

correct the stream dimension, pattern, and profile deficiencies that were invariably being exhibited.

Therefore, headwater sites that were not within the vicinity of a recently completed mine that was designed to maximize coal extraction (and therefore minimize the likelihood of future redisturbance) were eliminated from consideration. Likewise, the higher-order stream reaches that did not include enough valley width due to roads or rails were also eliminated from consideration. In addition, a number of potential sites with a dense population of beavers, which can cause serious flooding, erosion, and riparian establishment problems, were also discounted.

Mitigation sites chosen are on-site and off-site. On-site mitigation will restore functions upon reclamation while off-site mitigation will provide off-sets for temporal loss. All mitigation sites have a reasonable level of certainty of success.

Chronic Environmental Problems

As previously discussed, sedimentation from streambank erosion is a chronic environmental problem within the watershed. Stream restoration can help alleviate this chronic problem within the restoration reaches.

ADEQUACY OF MITIGATION

Eastern Kentucky Stream Assessment Protocol

The Eastern Kentucky Stream Assessment Protocol (EKSAP) was used to determine if the proposed natural stream channel restoration fully mitigated for the proposed impacts within the mine site. The Pre-Impact Ecological Integrity Indices (EII's) and Ecological Integrity Units (EIU's) for the proposed impacted streams were calculated using data collected at each stream reach.

The EII calculations and the EIU outputs have been summarized on both a project and sub-watershed basis. The analyses are contained in Exhibit H.

SITE PROTECTION

As documented in this submittal and summarized in the Summary of Aquatic Resource Impacts and Mitigation Measures, no permanent impacts are proposed by this project. All project impacts are expected to be completed within 2 years from commencement of the operation. Active mining operations are expected to last for 5 years including the reclamation period. Off-site mitigation will be conducted concurrent with the development of the mine up and represents a significant amount of credits proposed by the mitigation plan.

Recognizing that the district engineer may choose to employ "other appropriate mechanisms" (Federal Register 73 p. 19646) of protection rather than real-estate instruments, the applicant proposes to provide protection through a combination of incorporating the PCN and associated permit conditions into the SMCRA permit, the mitigation success monitoring and performance criteria, and the SMCRA bond release process.

As stated below, the applicant is responsible for accomplishing, maintaining and monitoring the mitigation under the 404 permit conditions. The current plans state that the 404 permit will be incorporated into Section 8.6 of the SMCRA permit upon USACE approval. Therefore, the 404 permit, including its associated plans and conditions, will become part of the SMCRA permit and enforceable by the DMLR. This will provide for a duplication of regulatory responsibilities.

The proposed plan includes ten (10) years of mitigation performance monitoring following construction. Therefore, the applicant will be required to complete the required monitoring / success portion of the 404 permit prior to obtaining bond release from the DMLR. The DMLR inspector will be conducting monthly and (more detailed) quarterly inspections of the project area. Should any issue arise (construction of stream crossings by property owners or other resource extraction, cutting of timber within the riparian, etc.) during this ten (10) year period, the applicant will be required to take corrective action. Additionally, compliance with the stated performance criteria will be assured through submittal of monitoring reports to the Corps. The ten

year mitigation success monitoring and its incorporation into the SMCRA permit provide significant protection of the proposed mitigation areas.

Considering the temporary nature of the impacts associated with this project and the length of time the mitigation monitoring will be in place, the proposed plan provides an alternate measure of site protection that is "appropriate to the scope and degree" of the proposed impacts that is "reasonably enforceable" as required under 33 CFR 320.4(r).

BASELINE INFORMATION

The type, linear feet, and/or acreage of aquatic resources that will be impacted and restored as a part of the proposed mitigation plan, are shown on the Summary of Aquatic Resource Impacts and Mitigation Measures, located in Exhibit B. Baseline information for on-site resources is contained in Exhibits D & H.

MITIGATION WORK PLAN

Geographic Boundaries

The locations and boundaries of the proposed stream channels and riparian areas are depicted on the Mitigation Map.

Design

Stream channels to be constructed will be designed in accordance with the fluvial geomorphological principles contained in Rosgen, 1996. Cross-sectional area and discharge for the channels were determined using existing stream cross-sections or regional curves. Key design parameters were obtained by using both dimensionless ratios from a reference reach located on a similar valley type and from published data. All design dimensions are found on the Restored Stream Channel Details drawing and in this item.

The stream deficiencies to be addressed by this restoration include restoring the dimension, pattern, and profile of the existing stream, all of which have been altered by historic channelization. The stream dimension will be corrected by the establishment of a channel of the proper cross-sectional area and width/depth ratio that has access to the floodplain.

Generally, the type of proposed stream channel was chosen by determining the stable form expected for the existing or anticipated valley type, slopes, and material. Type A & B channels are proposed. Step-pool structures, will be utilized to aid in energy dissipation, as well as to provide grade control, habitat, and sediment transport.

Construction Methods

Generally, the stream channels will be constructed using heavy equipment to shape the proper channel dimension, pattern and profile and to place stone to create the step-pool structures, as appropriate. Where practicable, the new channel will be constructed in the dry. Native material will be used to line the new channels, where available. Otherwise, the riffles will be lined with properly sized cobble or gravel, according to design specifications.

Timing/Sequencing

On-Site

On-Site mitigation will be constructed during the reclamation of the mine site. The site will be reclaimed to approximate original contour using the material originally generated by the contour cuts.

Off-Site

Off-site mitigation will be constructed concurrent with the development of the mine area.

Sources of Water

Water sources for the restored stream channels will be runoff from rainfall events, ground waters originating from within the permit area and groundwaters originating from upstream undisturbed areas.

The Mitigation Map depicts the location of restored stream channels relative to upland areas and receiving streams. As depicted by the Mitigation Maps, the continuum between upland areas of the watershed and receiving streams is being maintained or restored.

The VDMLR permit requires the site to be restored to its approximate original contour (AOC). Restoration of the site to AOC will restore the continuum between the restored stream channels and uplands areas.

Vegetation Establishment

Herbaceous seeding of the riparian areas and near-bank zones will take place upon completion of or concurrently with stream channel construction. Planting of woody species, along with live stake and brush mattress installation, will take place during the first dormant season following construction of each compensation site. In addition, native woody vegetation, as practicable, will be transplanted during construction to supplement the plantings. Planting schedules are included on the Mitigation Map.

Invasive Species Control

Invasive species are not proposed for use in the compensation sites. However, should invasive species become established and prevent the attainment of the success criteria, invasive species control through physical or chemical measures will be conducted in consultation with the appropriate agencies.

Grading Plan

Grading within the stream compensation sites will entail the establishment of a proper stream and valley cross-section and profile as site-specifically appropriate. See the Restored Stream Channel Details for typical cross sections.

Soil Management

Topsoil will be salvaged and stockpiled in accordance within the DMLR permit. The salvaged topsoil will be used to cover the site during reclamation. Care will be taken to reduce compaction of the topsoil material.

Erosion Control Measures

Erosion control measures in the compensation areas will include construction in the dry, silt fence, and straw bale barriers, as appropriate.

MAINTENANCE PLAN

The monitoring period for the proposed compensatory mitigation extends for 10 years after construction or until the restoration has achieved stability, and can consequently be considered self-sustaining. During this monitoring period, the compensation sites will be walked yearly, and instabilities will be corrected as necessary.

PERFORMANCE STANDARDS

Duration and Reporting

Performance monitoring will be conducted on a yearly basis for the first five years of the permit term and continue biennially (every two years) from year five up to the year prior to permit expiration. Performance monitoring will begin in the fall or spring following completion of construction. Performance monitoring will be conducted in the same season and, to the extent practicable, after similar climatic events. Monitoring reports will be submitted annually for the initial five year monitoring period and biennially thereafter. The permittee will be responsible for the monitoring program. Performance standards monitored will be indicators that demonstrate the mitigation is developing or has developed. As-Built data will be submitted when construction is substantially different from design drawings.

Streams

As outlined in the Goals and Objectives portion of this section, the goal of stream mitigation is to reestablish the function of drift and, to the extent practicable, benthic macro-invertebrate habitat. This goal shall be met when the restored stream channels are determined to be stable. Because the restored stream channels were designed in accordance with fluvial geomorphological principles, stable stream channels should provide adequate aquatic habitat. Stream stability will be gauged by performing analysis, in accordance with Rosgen (1996).

Five representative stream reaches have been selected for monitoring. The approximate Geomorphological Monitoring Stations of each reach are shown on the Mitigation Maps. During

the 1st monitoring event, a permanent bench mark and permanent points for riffle and pool cross section will be established.

Riffle and pool cross sections and the longitudinal profile of each reach will be measured and documented at years one, three, and five years. Channel material classification will be performed on each reach utilizing the "pebble count" method developed by Wolman, 1954.

In order to monitor the biological recovery of the streams over time, biological sampling will be conducted at the representative reach locations. The benthic macro-invertebrate population will be sampled in each reach and habitat quality will be assessed using RBP protocol. Sampling will be conducted in the fall or early spring in order to obtain the best benthos assemblages. If fish are observed in any of the representative reaches then their presence will be documented, and the population will be sampled using RBP protocol. Benthic macro invertebrates or water chemistry will not be sampled on ephemeral reaches.

LONG TERM MANAGEMENT PLAN

According to 33 CFR 332.7(b), long-term management is required for compensatory mitigation projects that are not self-sustaining. The proposed projects are designed to be self-sustaining once the success criteria are met. Natural hydrology and landscape position will support the proposed projects, so pumps or other engineering features will not be needed. Therefore, long-term management (beyond the success monitoring) is not proposed.

ADAPTIVE MANAGEMENT PLAN

If unforeseen site conditions prevent the compensatory mitigation projects from being constructed as proposed, the permittee will notify the appropriate agencies and seek approval for significant modifications. Insignificant changes will be reflected in the as-built surveys.

The appropriate agencies will also be notified if, during the course of the performance monitoring period, the projects are found to not be progressing towards meeting the success criteria. After evaluation of the deficiencies, appropriate measures will be determined and taken. Depending on the severity of the particular deficiency, appropriate measures may include site or design modifications and revisions to

maintenance or monitoring requirements. Performance standards may be revised to account for these measures.

Per 33 CFR 332.7(c)4, performance standards will be revised if natural disasters compromise the compensatory mitigation projects.

FINANCIAL ASSURANCES

PCCV provides financial assurances to the VDMLR through a performance bond. The performance bond is made payable to the VDMLR and conditioned upon the faithful performance of all the requirements of the Virginia Coal Surface Mining Control and Reclamation Act of 1979 (Chapter 19(§45.1-226 et seq.) of Title 45.1 of the Code of Virginia), the permit, and the reclamation plan. Performance bond liability is for the duration of the surface coal mining reclamation operation and for a period which is coincident with the permittee's period of extended responsibility for successful vegetation. The period of extended responsibility is five (5) years.

The VDMLR releases bond after it determines that all reclamation obligations have been fulfilled. In the case of the mitigation, bond may be reduced or released once the project has been demonstrated to functionally mature and self-sustaining in accordance with the performance standards.

PCCV will ensure that the Corps' Mitigation Plan is incorporated in the VDMLR permit. Incorporation of the Corps' Mitigation into the VDMLR permit makes the Corps' Mitigation a condition of the VDMLR permit.