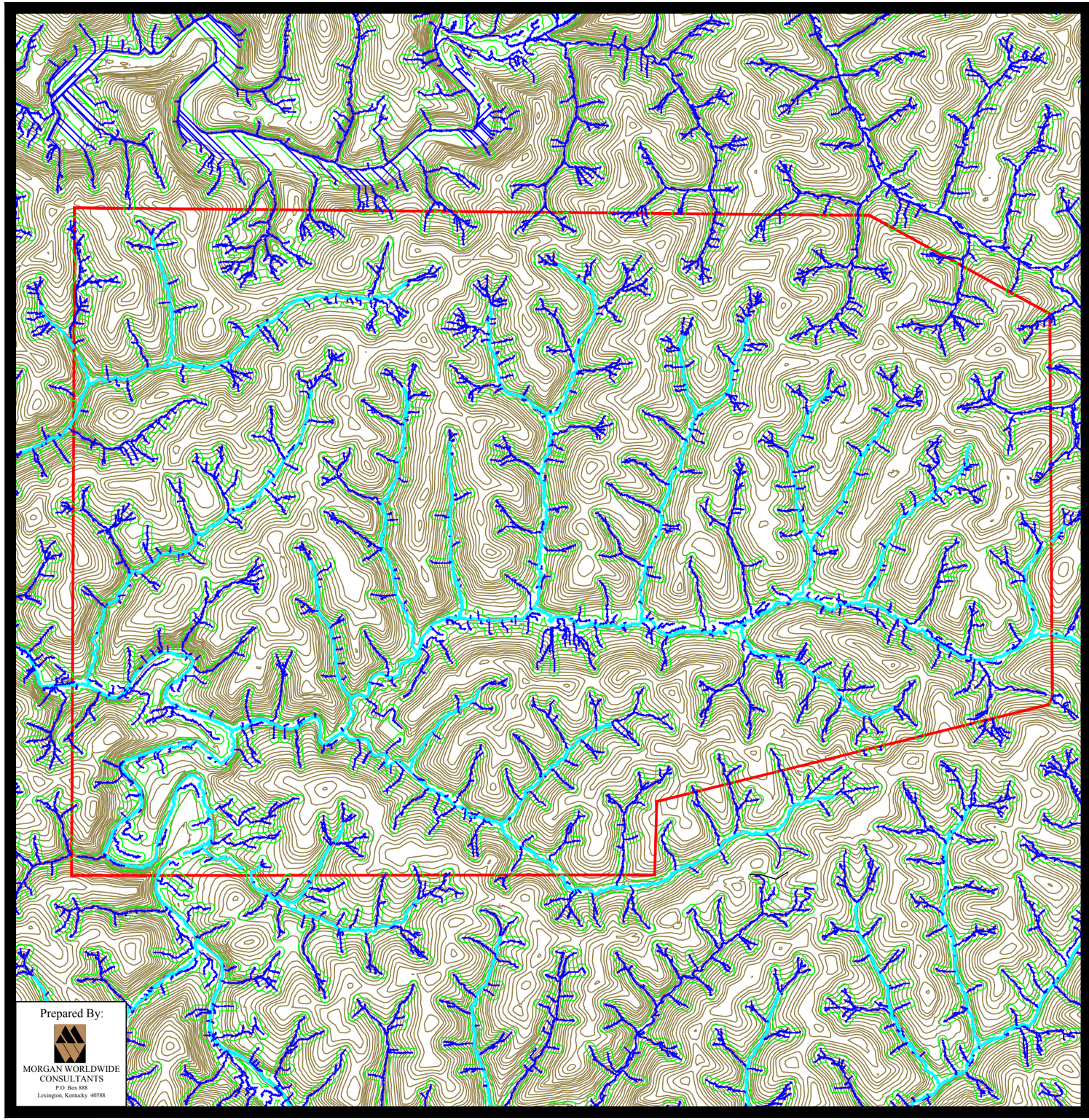
Appendix C contains numerous maps showing the model mines used in the analysis and is not Section 508 compliant. Please contact Mark Gehlhar at OSMRE 202-208-2716 for assistance.

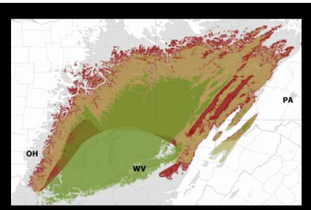


Prepared By:

MORGAN WORLDWIDE CONSULTANTS
P.O. Box 888
Lexington, Kentucky 40588

Pre-Mining

- 20 ft contours taken from USGS Seamless Server
- 1.4 acre ephemeral drainage requirement based on original streams delineated within permit files. Streams were generated based on drainage requirement until stream length was within 1% of the streams sampled from the permit file. This drainage requirement was then applied to the sample mine topography to generate the final streams.



Legend

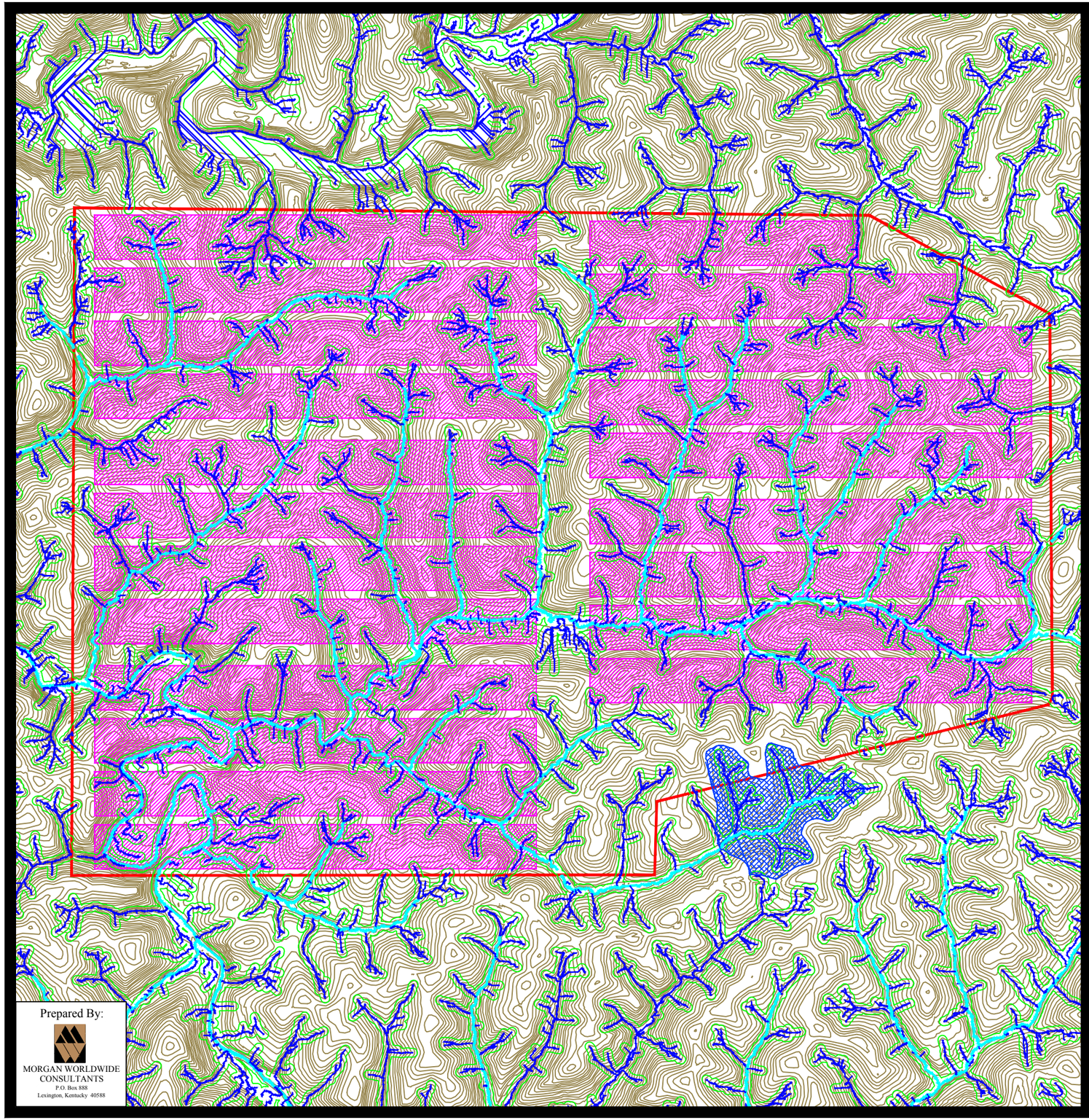
- Original Topography (20 ft Ctrs)
- Generated Ephemeral Streams (1.4 acre drainage)
- Intermittent Streams
- 100 ft stream offset
- Mineral Removal Area

Northern Appalachia Region

Underground Mine Pre-Mining

Scale 1"=2500'

0 2500 feet



Prepared By:

MORGAN WORLDWIDE CONSULTANTS
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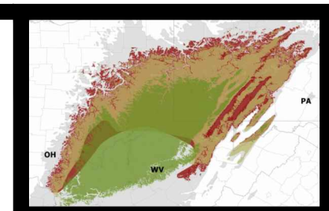
Lexington, Kentucky 40588

Alternative 1

- 4.6 million tpy
- 84.7 million tons coal resource
- 69.3 million tons recoverable coal
- 6,954 mine acres
- 145 disturbed acres
- Stream Impacts
  - 3,529 ft intermittent stream filled
  - 10,542 ft ephemeral stream filled



Legend

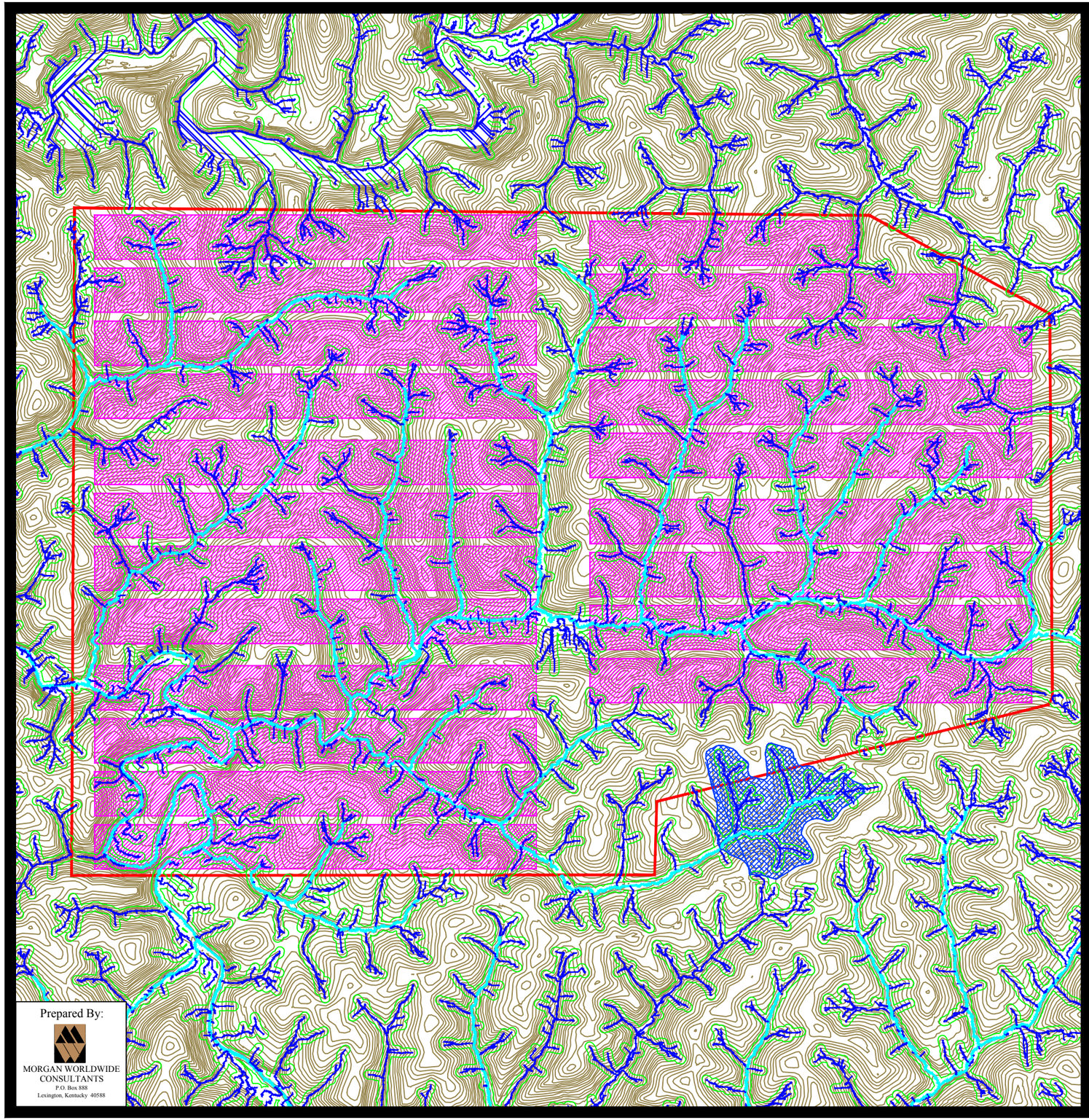
- Original Topography (20 ft Ctrs)
- Generated Ephemeral Streams (1.4 acre drainage)
- Intermittent Streams
- 100 ft stream offset
- Mineral Removal Area
- Longwall Panel
- Refuse Impoundment

Northern Appalachia Region

Underground Longwall Mine Alternative 1

Scale 1"=2500'

0 2500 feet



Prepared By:

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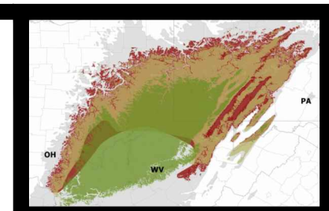
Lexington, Kentucky 40588

Alternative 2

- 4.6 million tpy
- 84.7 million tons coal resource
- 69.3 million tons recoverable coal
- 6,954 mine acres
- 145 disturbed acres
- Stream Impacts
  - 3,529 ft intermittent stream filled
  - 10,542 ft ephemeral stream filled



Legend

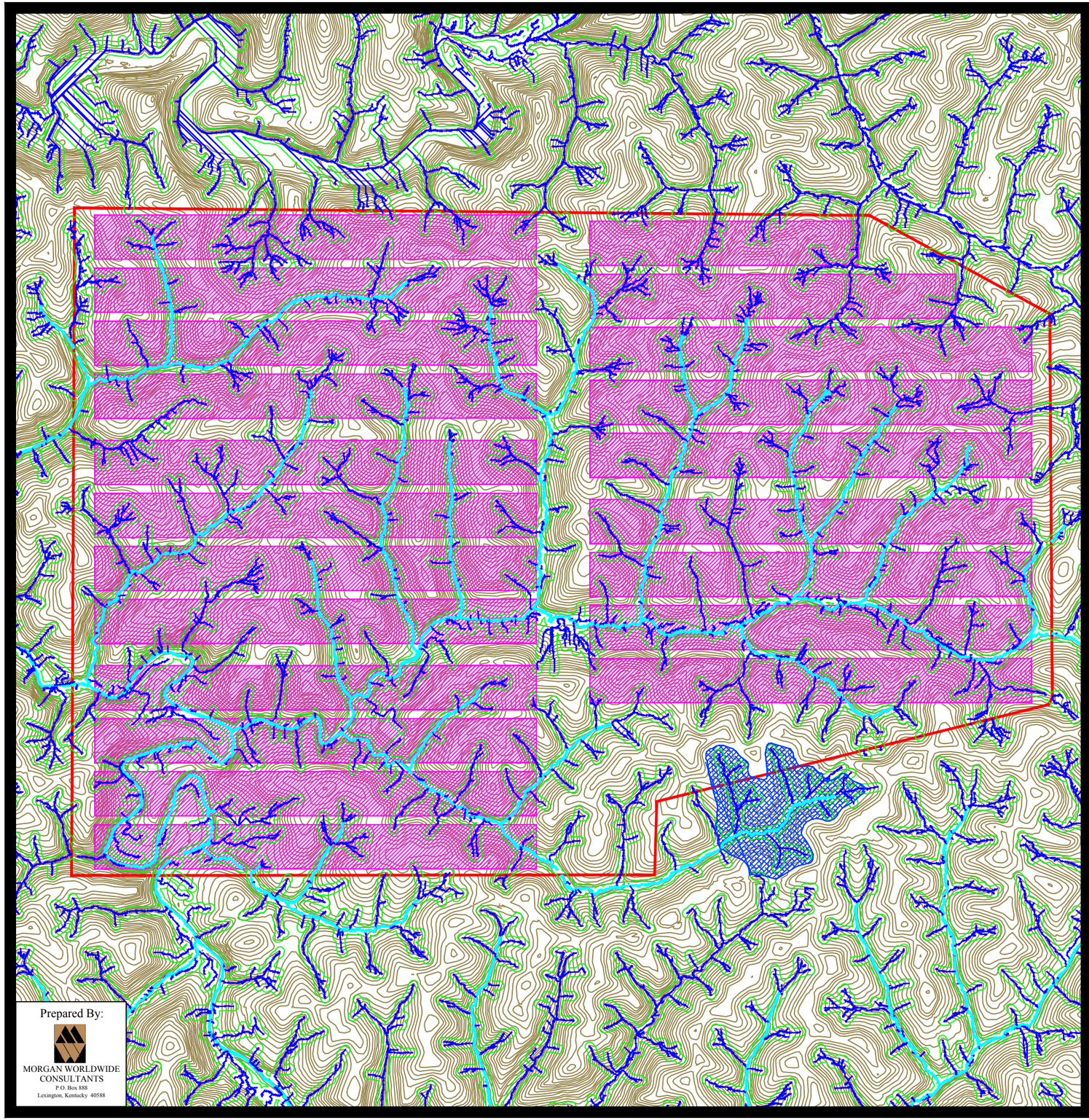
- Original Topography (20 ft Ctrs)
- Generated Ephemeral Streams (1.4 acre drainage)
- Intermittent Streams
- 100 ft stream offset
- Mineral Removal Area
- Longwall Panel
- Refuse Impoundment

Northern Appalachia Region

Underground Longwall Mine Alternative 2

Scale 1"=2500'

0 2500 feet



Prepared By:

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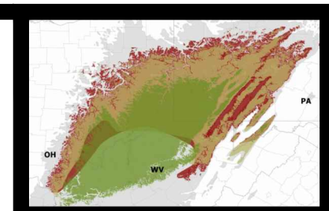
Lexington, Kentucky 40588

Alternative 3

- 4.6 million tpy
- 84.7 million tons coal resource
- 69.3 million tons recoverable coal
- 6,954 mine acres
- 145 disturbed acres
- Stream Impacts
  - 3,529 ft intermittent stream filled
  - 10,542 ft ephemeral stream filled



Legend

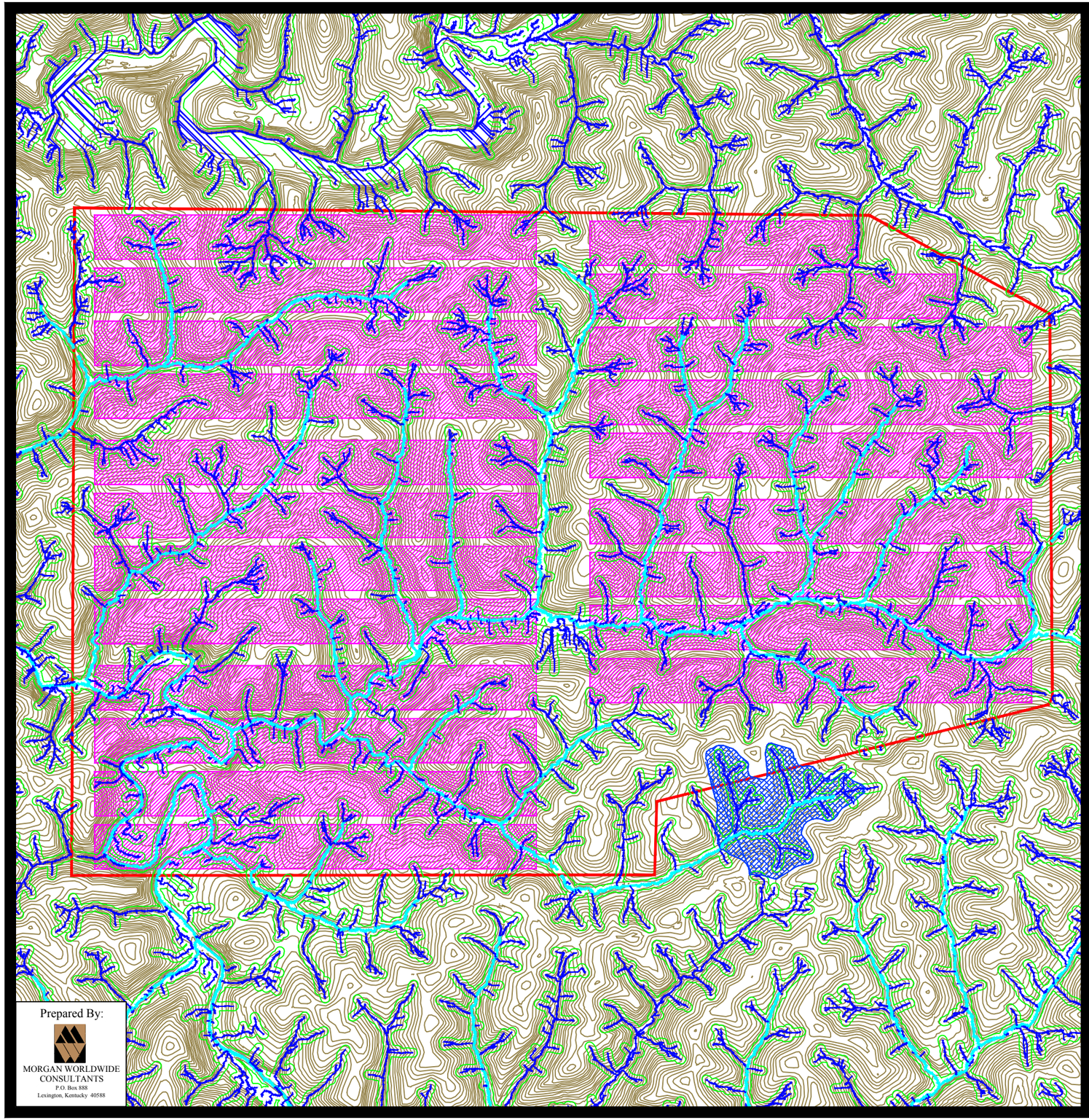
- Original Topography (20 ft Ctrs)
- Generated Ephemeral Streams (1.4 acre drainage)
- Intermittent Streams
- 100 ft stream offset
- Mineral Removal Area
- Longwall Panel
- Refuse Impoundment

Northern Appalachia Region

Underground Longwall Mine Alternative 3

Scale 1"=2500'

0 2500 feet



Prepared By:

MORGAN WORLDWIDE CONSULTANTS
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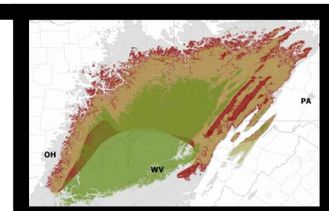
Lexington, Kentucky 40588

Alternative 4

- 4.6 million tpy
- 84.7 million tons coal resource
- 69.3 million tons recoverable coal
- 6,954 mine acres
- 145 disturbed acres
- Stream Impacts
  - 3,592 ft intermittent stream filled
  - 10,542 ft ephemeral stream filled



Legend

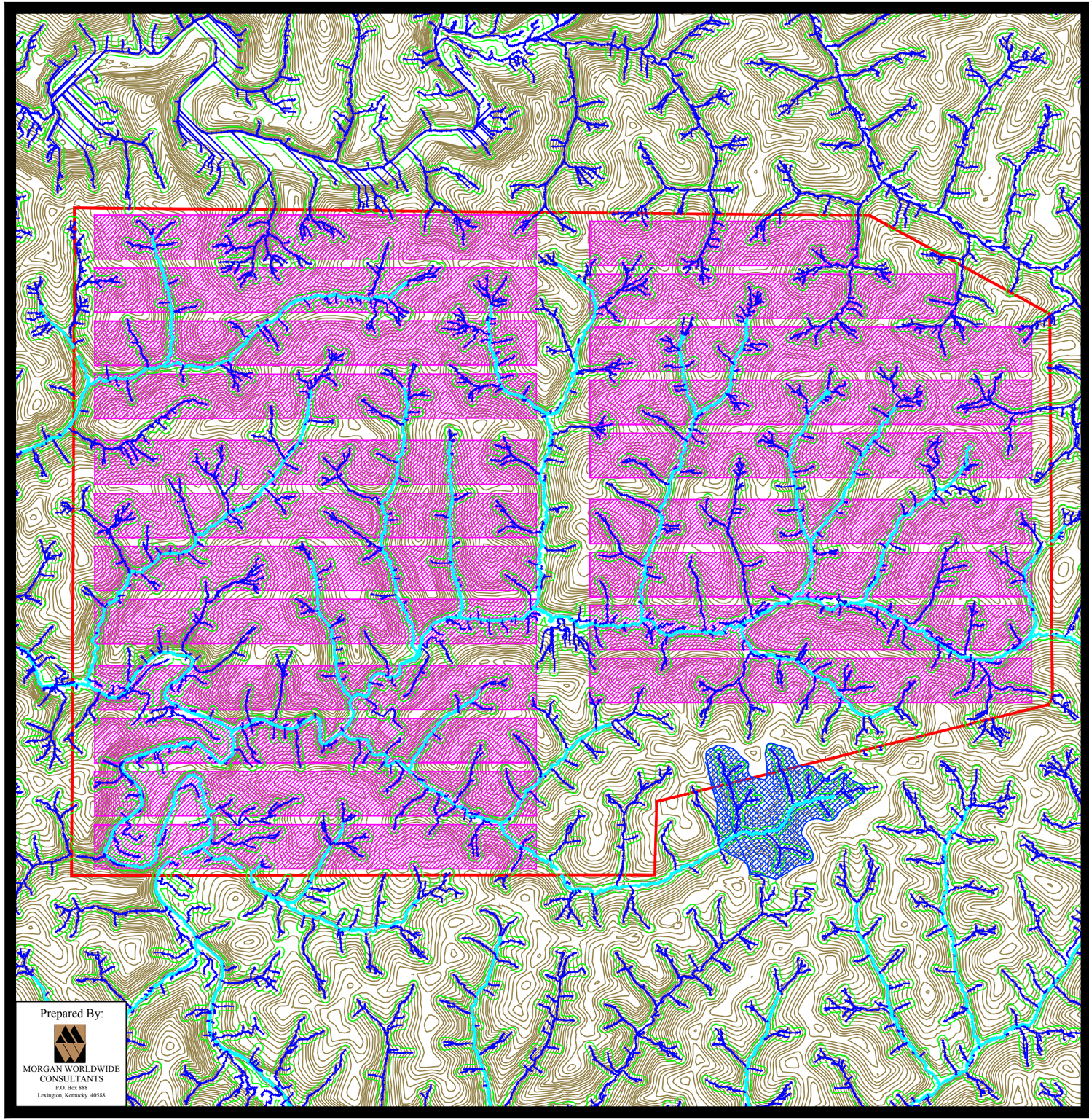
- Original Topography (20 ft Ctrs)
- Generated Ephemeral Streams (1.4 acre drainage)
- Intermittent Streams
- 100 ft stream offset
- Mineral Removal Area
- Longwall Panel
- Refuse Impoundment

Northern Appalachia Region

Underground Longwall Mine Alternative 4

Scale 1"=2500'

0 2500 feet



Prepared By:

MORGAN WORLDWIDE CONSULTANTS
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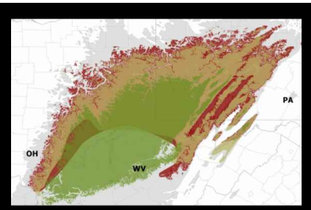
Lexington, Kentucky 40588

Alternative 5

- 4.6 million tpy
- 84.7 million tons coal resource
- 69.3 million tons recoverable coal
- 6,954 mine acres
- 145 disturbed acres
- Stream Impacts
  - 3,529 ft intermittent stream filled
  - 10,542 ft ephemeral stream filled



Legend

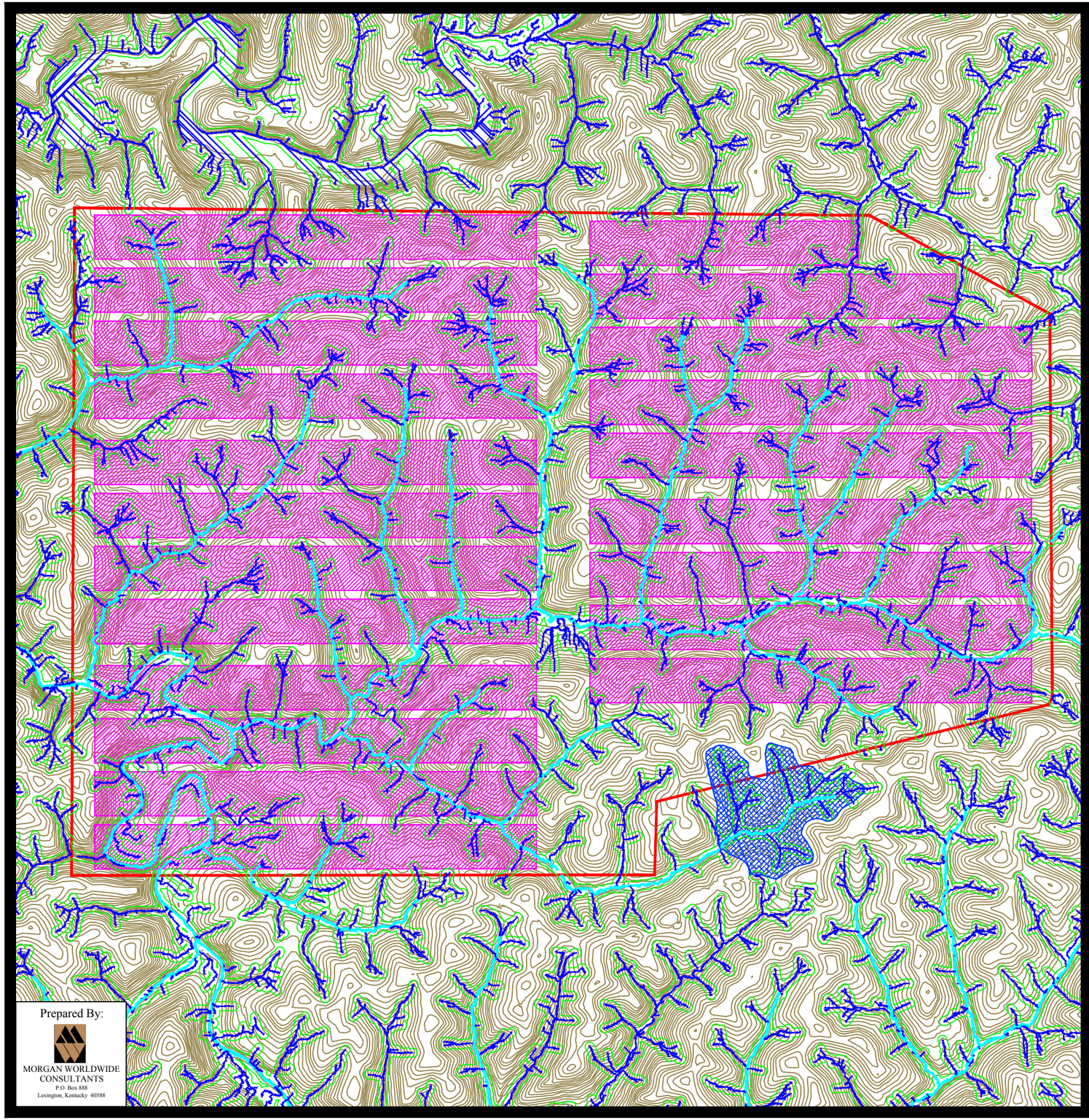
- Original Topography (20 ft Ctrs)
- Generated Ephemeral Streams (1.4 acre drainage)
- Intermittent Streams
- 100 ft stream offset
- Mineral Removal Area
- Longwall Panel
- Refuse Impoundment

Northern Appalachia Region

Underground Longwall Mine Alternative 5

Scale 1"=2500'

0 2500 feet

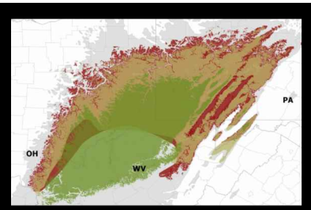


Prepared By:

MORGAN WORLDWIDE CONSULTANTS
P.O. Box 888
Lexington, Kentucky 40588

Alternative 6

- 4.6 million tpy
- 84.7 million tons coal resource
- 69.3 million tons recoverable coal
- 6,954 mine acres
- 145 disturbed acres
- Stream Impacts
  - 3,529 ft intermittent stream filled
  - 10,542 ft ephemeral stream filled



Legend

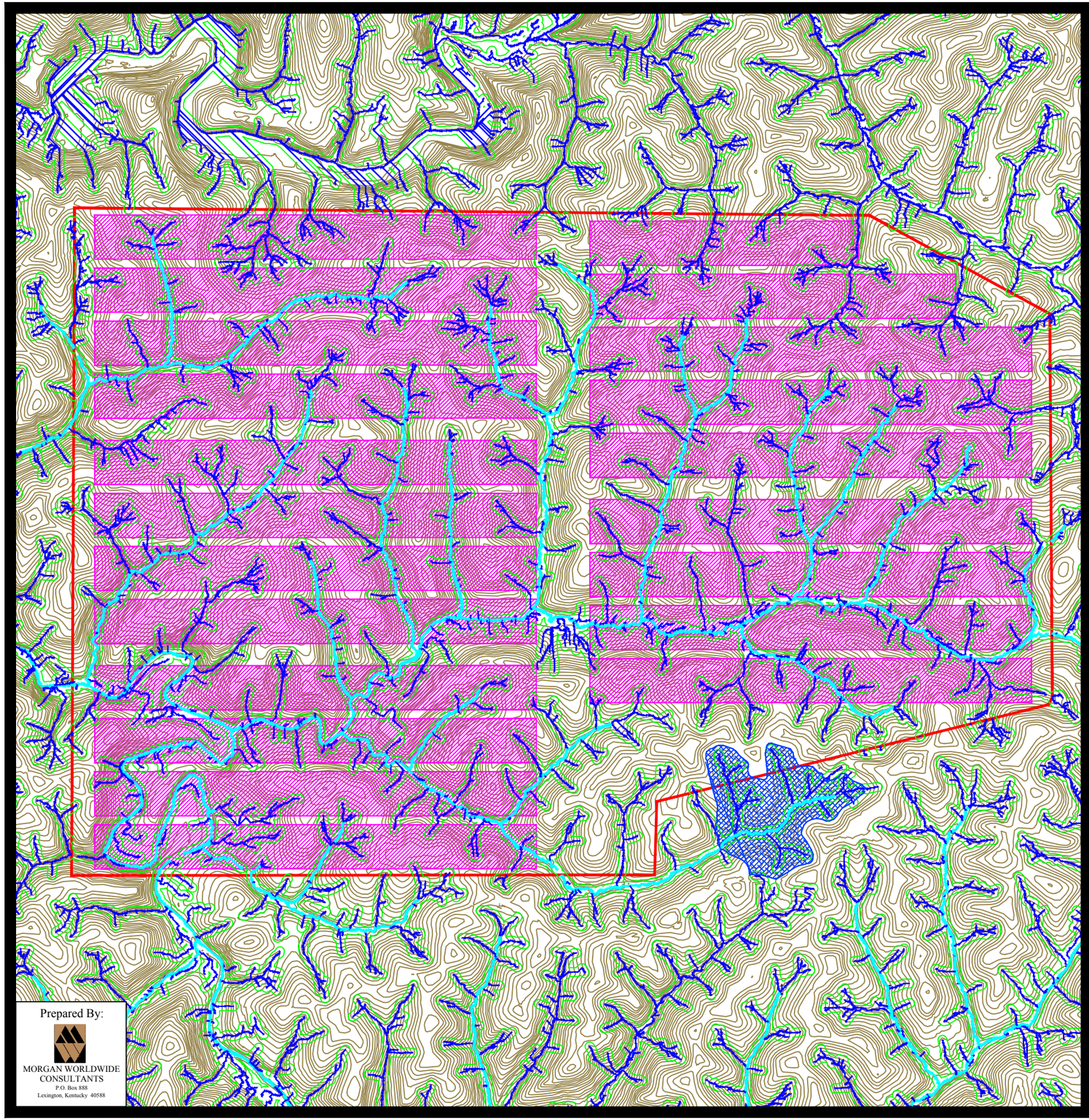
- Original Topography (20 ft Ctrs)
- Generated Ephemeral Streams (1.4 acre drainage)
- Intermittent Streams
- 100 ft stream offset
- Mineral Removal Area
- Longwall Panel
- Refuse Impoundment

Northern Appalachia Region

Underground Longwall Mine Alternative 6

Scale 1"=2500'

0 2500 feet



Prepared By:

MORGAN WORLDWIDE CONSULTANTS
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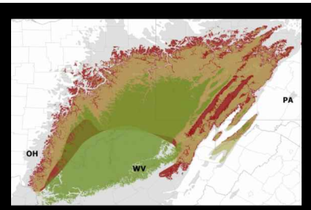
Lexington, Kentucky 40588

Alternative 7

- 4.6 million tpy
- 84.7 million tons coal resource
- 69.3 million tons recoverable coal
- 6,954 mine acres
- 145 disturbed acres
- Stream Impacts
  - 3,529 ft intermittent stream filled
  - 10,542 ft ephemeral stream filled



Legend

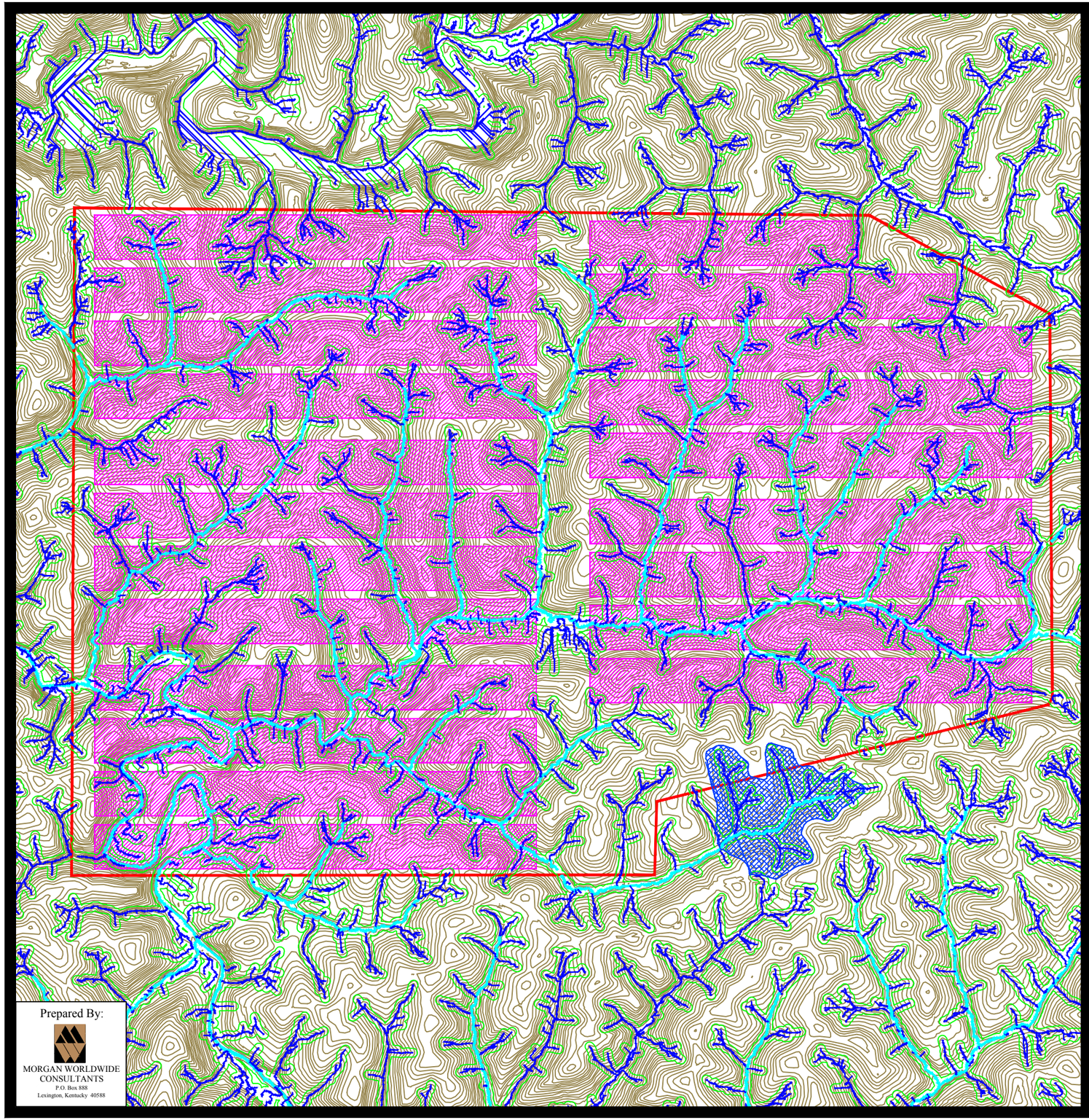
- Original Topography (20 ft Ctrs)
- Generated Ephemeral Streams (1.4 acre drainage)
- Intermittent Streams
- 100 ft stream offset
- Mineral Removal Area
- Longwall Panel
- Refuse Impoundment

Northern Appalachia Region

Underground Longwall Mine Alternative 7

Scale 1"=2500'

0 2500 feet

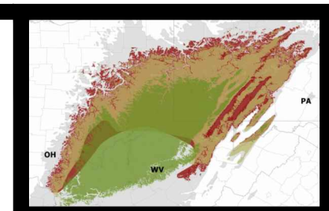


Prepared By:

MORGAN WORLDWIDE CONSULTANTS
P.O. Box 888
Lexington, Kentucky 40588

Alternative 8

- 4.6 million tpy
- 84.7 million tons coal resource
- 69.3 million tons recoverable coal
- 6,954 mine acres
- 145 disturbed acres
- Stream Impacts
  - 3,529 ft intermittent stream filled
  - 10,542 ft ephemeral stream filled



Legend

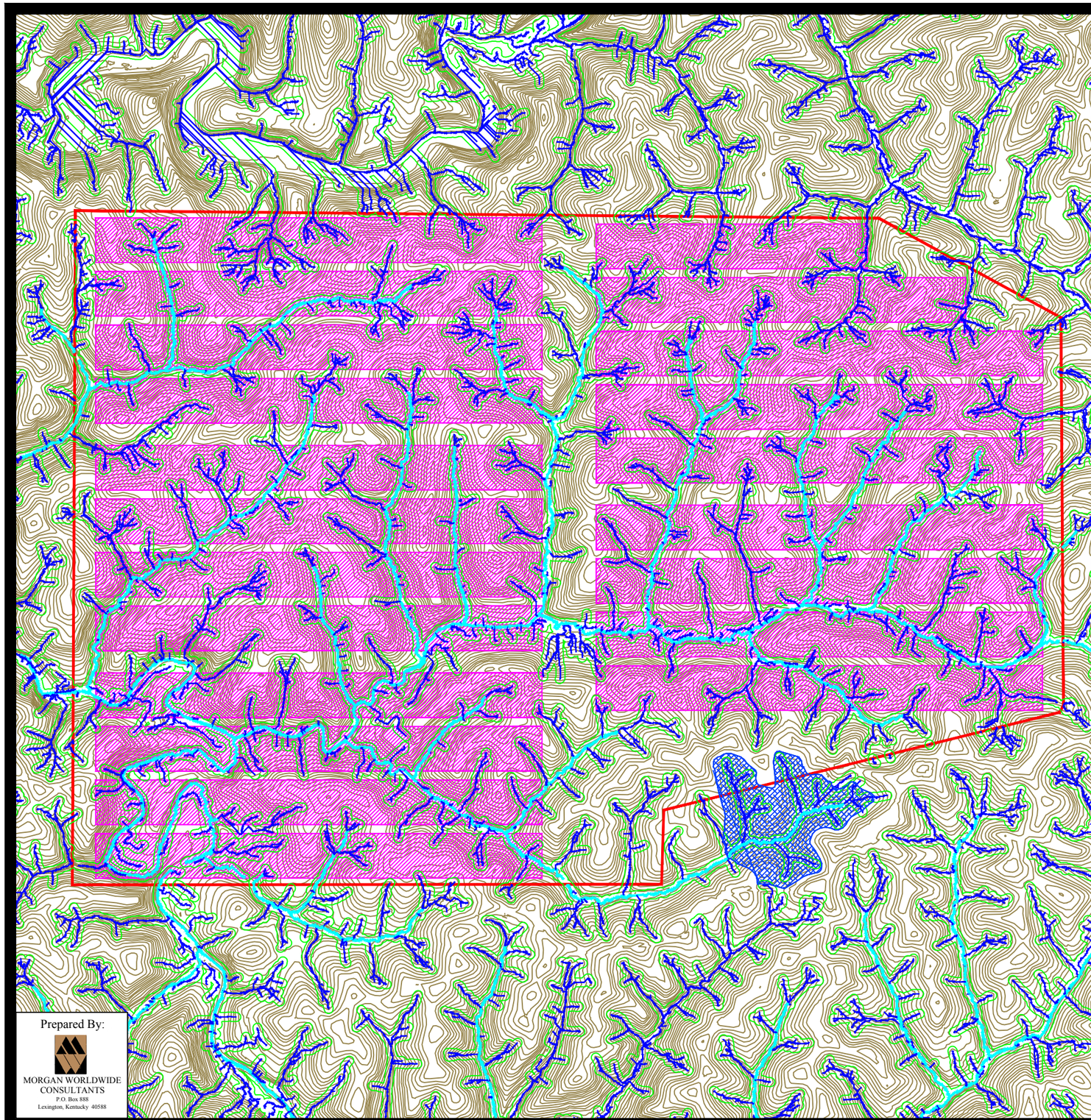
- Original Topography (20 ft Ctrs)
- Generated Ephemeral Streams (1.4 acre drainage)
- Intermittent Streams
- 100 ft stream offset
- Mineral Removal Area
- Longwall Panel
- Refuse Impoundment

Northern Appalachia Region

Underground Longwall Mine Alternative 8

Scale 1"=2500'

0 2500 feet

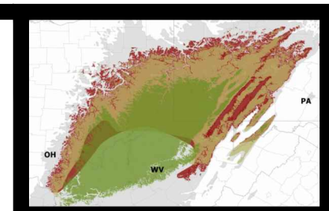


Prepared By:

MORGAN WORLDWIDE CONSULTANTS
P.O. Box 888
Lexington, Kentucky 40588

Alternative 9

- 4.6 million tpy
- 84.7 million tons coal resource
- 69.3 million tons recoverable coal
- 6,954 mine acres
- 145 disturbed acres
- Stream Impacts
  - 3,529 ft intermittent stream filled
  - 10,542 ft ephemeral stream filled



Legend

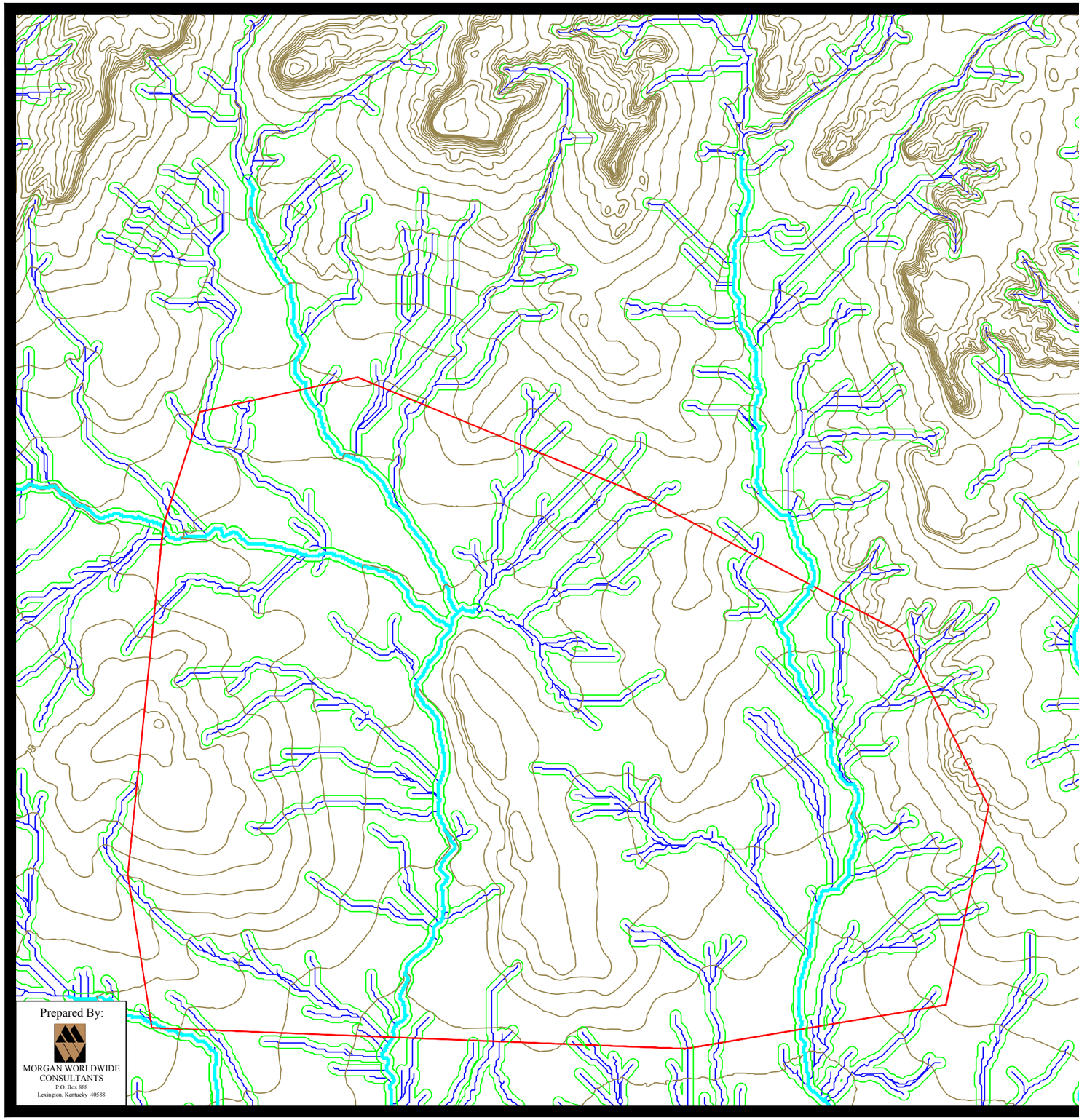
- Original Topography (20 ft Ctrs)
- Generated Ephemeral Streams (1.4 acre drainage)
- Intermittent Streams
- 100 ft stream offset
- Mineral Removal Area
- Longwall Panel
- Refuse Impoundment

Northern Appalachia Region

Underground Longwall Mine Alternative 9

Scale 1"=2500'

0 2500 feet

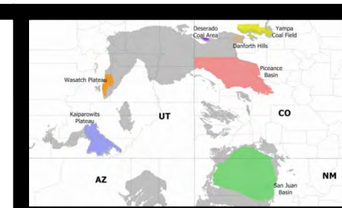


Prepared By:

MORGAN WORLDWIDE CONSULTANTS
P.O. Box 888
Lexington, Kentucky 40588

Pre-Mining

- 20 ft contours taken from USGS Seamless Server
- 7 acre ephemeral drainage requirement based on original streams delineated within permit files. Streams were generated based on drainage requirement until stream length was within 1% of the streams sampled from the permit file. This drainage requirement was then applied to the sample mine topography to generate the final streams.
- Google Maps and Virtual Earth were used to delineate intermittent and perennial points where mining would not typically occur.



Legend

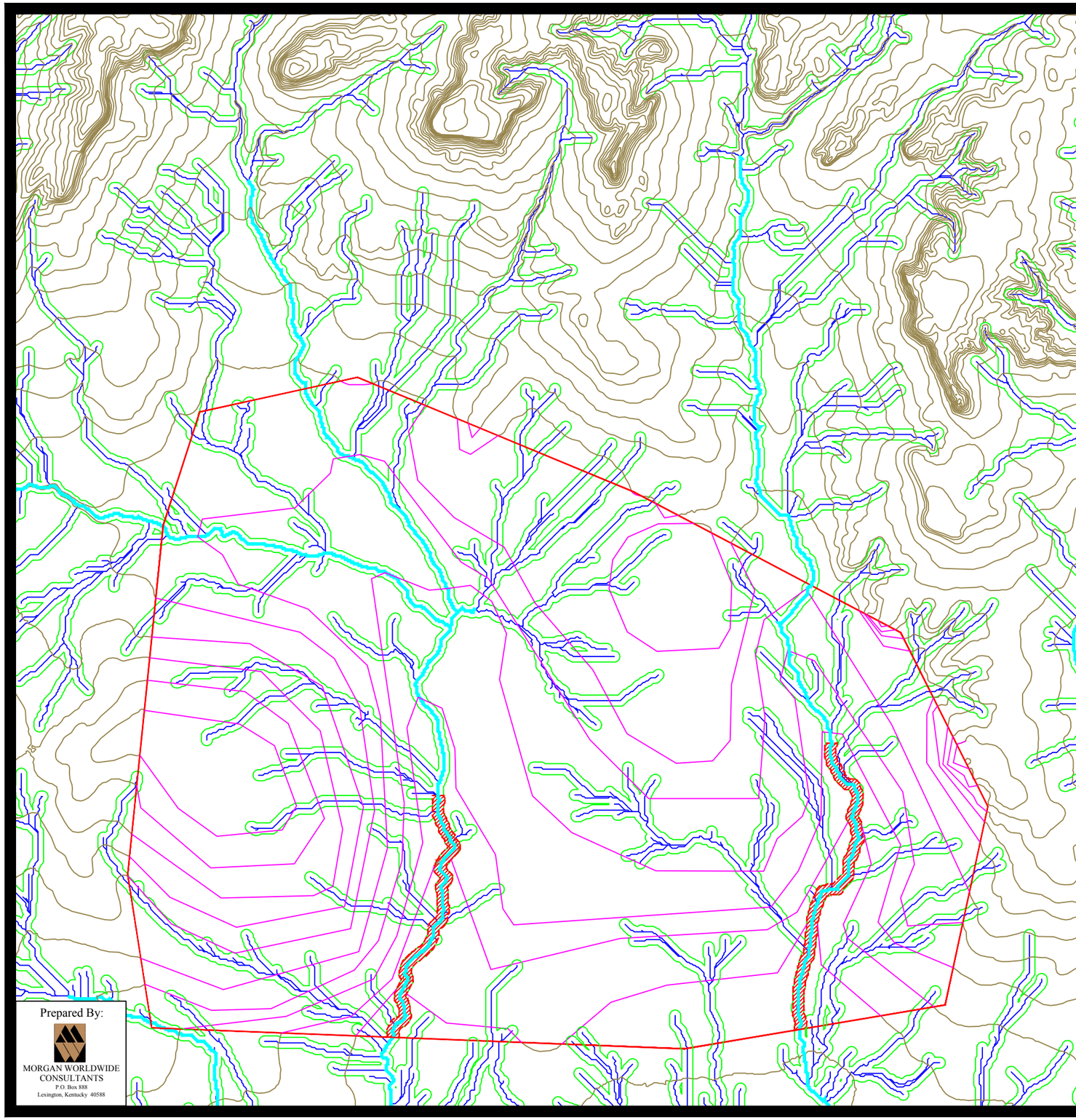
- Original Topography (20 ft Ctrs)
- Generated Streams-Intermittent (1 sq mi drainage definition)
- Generated Streams-Ephemeral (7 acre drainage)
- 100 ft stream offset
- Mineral Removal Area

Colorado Plateau Region

Surface Mine Pre-Mining

Scale 1"=2000'

0 2000 feet



Prepared By:

MORGAN WORLDWIDE CONSULTANTS
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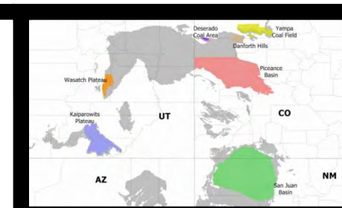
Lexington, Kentucky 40588

Alternative 1

- 3.3 million tpy mined
- 92.2 million tons coal resource
- 9.8:1 mining ratio
- 3,311 disturbed acres
- Stream Impacts:
  - 163,326 ft ephemeral stream mined through
  - 20,107 ft intermittent stream mined through (greater than one square mile of drainage)
  - 11,605 ft hydrologically defined intermittent stream mined through



Legend

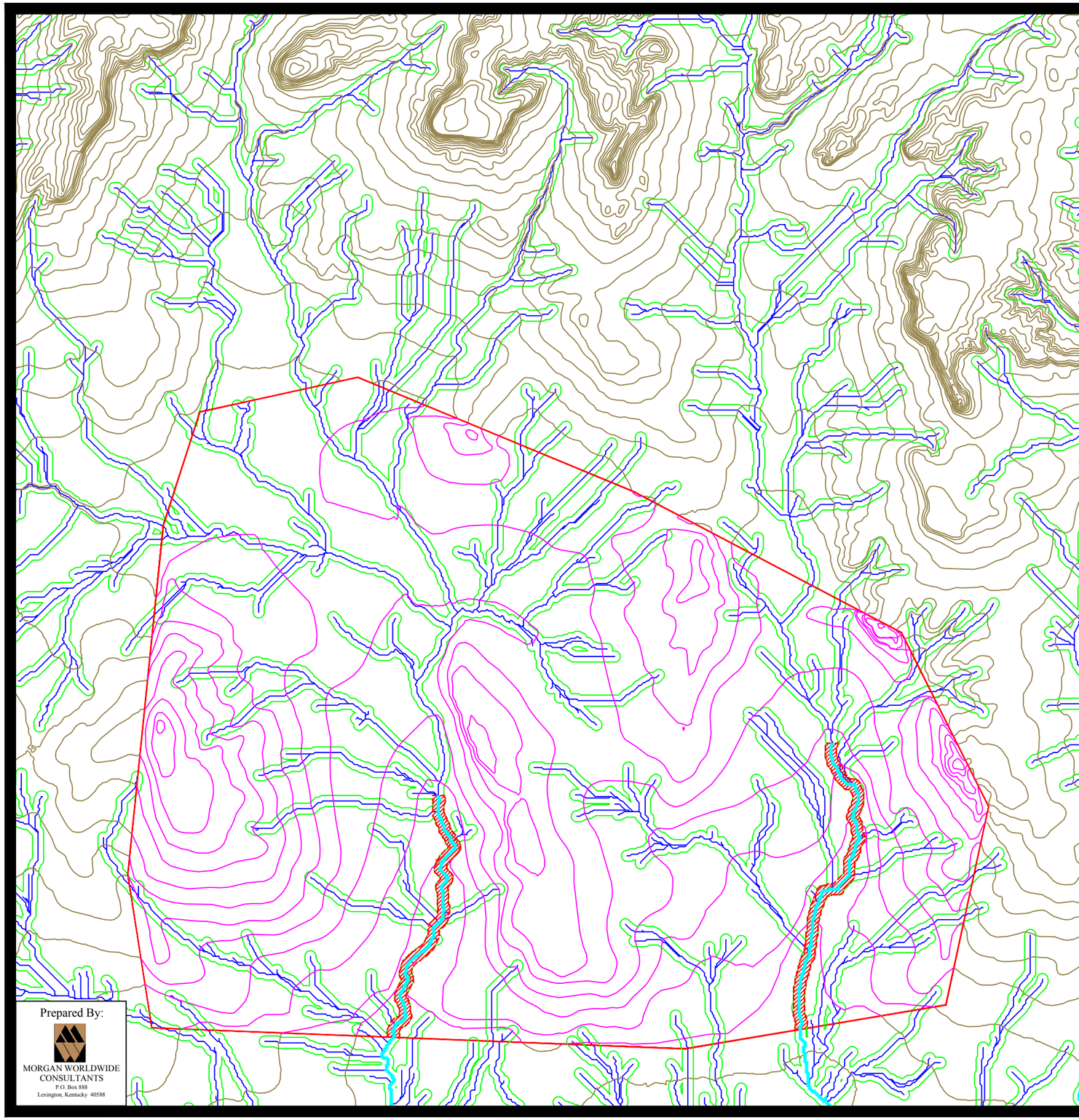
- Original Topography (20 ft Ctrs)
- Generated Streams-Intermittent (1 sq mi drainage definition)
- 100 ft stream offset
- Mineral Removal Area
- Hydrologically Defined Intermittent Streams
- Post-Mining Topography

Colorado Plateau Region

Surface Area Mine Alternative 1

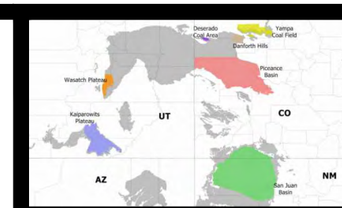
Scale 1"=2000'

0 2000 feet



Alternative 2

- 3.3 million tpy mined
- 92.2 million tons coal resource
- 9.8:1 mining ratio
- 3,311 disturbed acres
- Stream Impacts:
  - 163,326 ft ephemeral stream mined through
  - 20,107 ft intermittent stream mined through (greater than one square mile of drainage)
  - 11,605 ft hydrologically defined intermittent stream mined through



Legend

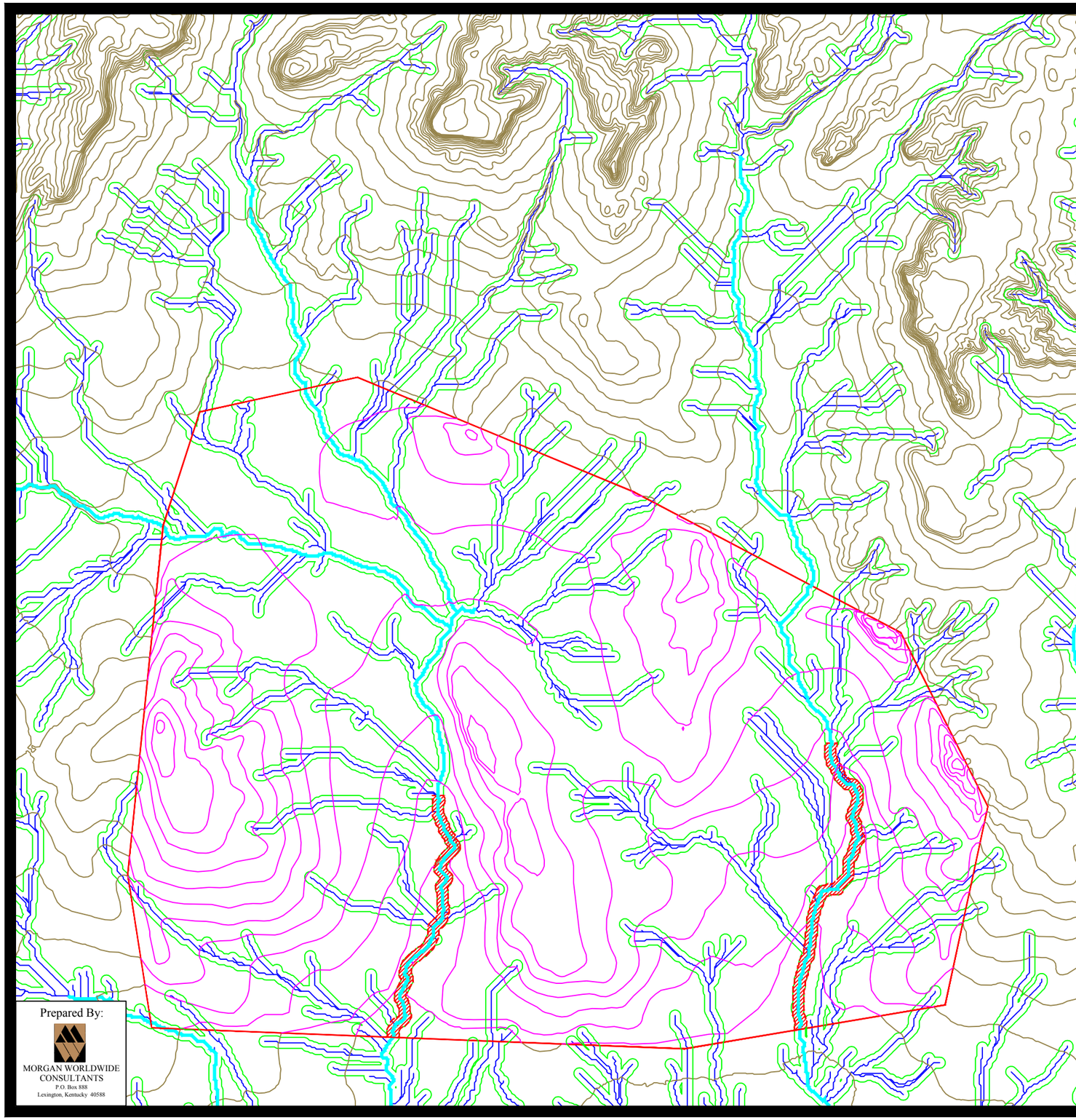
- Original Topography (20 ft Ctrs)
- Generated Streams-Intermittent (hydrologically defined)
- Mineral Removal Area
- Hydrologically Defined Intermittent Streams
- Post-Mining Topography

Colorado Plateau Region

Surface Area Mine Alternative 2

Scale 1"=2000'

0 2000 feet

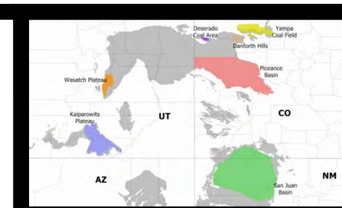


Prepared By:

MORGAN WORLDWIDE CONSULTANTS
P.O. Box 888
Lexington, Kentucky 40588

Alternative 3

- 3.3 million tpy mined
- 92.2 million tons coal resource
- 9.8:1 mining ratio
- 3,311 disturbed acres
- Stream Impacts:
  - 163,326 ft ephemeral stream mined through
  - 20,107 ft intermittent stream mined through (greater than one square mile of drainage)
  - 11,605 ft hydrologically defined intermittent stream mined through



Legend

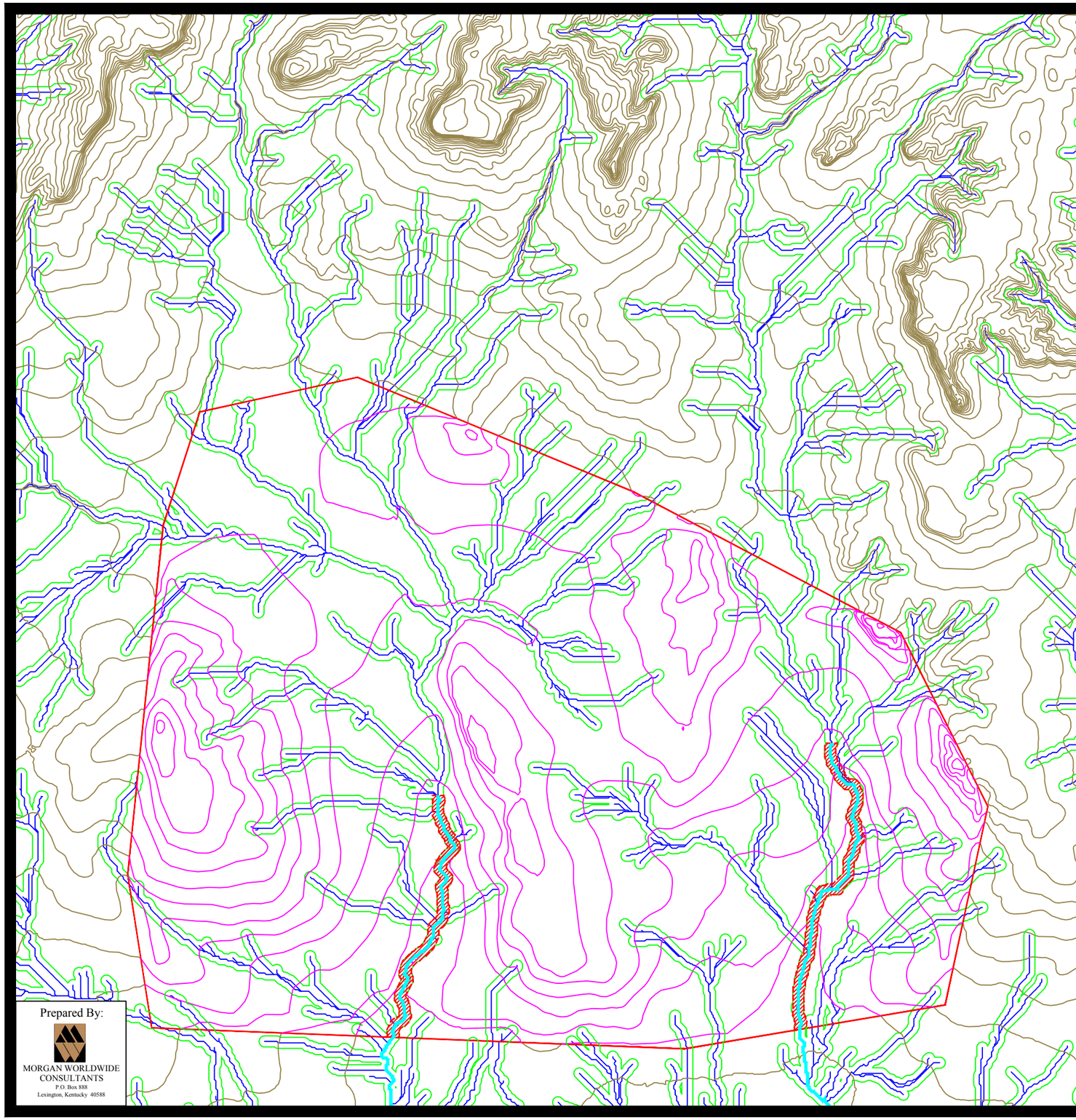
- Original Topography (20 ft Ctrs)
- Generated Streams-Intermittent (1 sq mi drainage definition)
- 100 ft stream offset
- Mineral Removal Area
- Hydrologically Defined Intermittent Streams
- Post-Mining Topography

Colorado Plateau Region

Surface Area Mine Alternative 3

Scale 1"=2000'

0 2000 feet

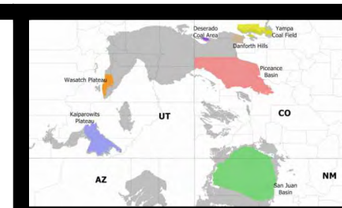


Prepared By:

MORGAN WORLDWIDE CONSULTANTS
P.O. Box 888
Lexington, Kentucky 40588

Alternative 4

- 3.3 million tpy mined
- 92.2 million tons coal resource
- 9.8:1 mining ratio
- 3,311 disturbed acres
- Stream Impacts:
  - 163,326 ft ephemeral stream mined through
  - 20,107 ft intermittent stream mined through (greater than one square mile of drainage)
  - 11,605 ft hydrologically defined intermittent stream mined through



Legend

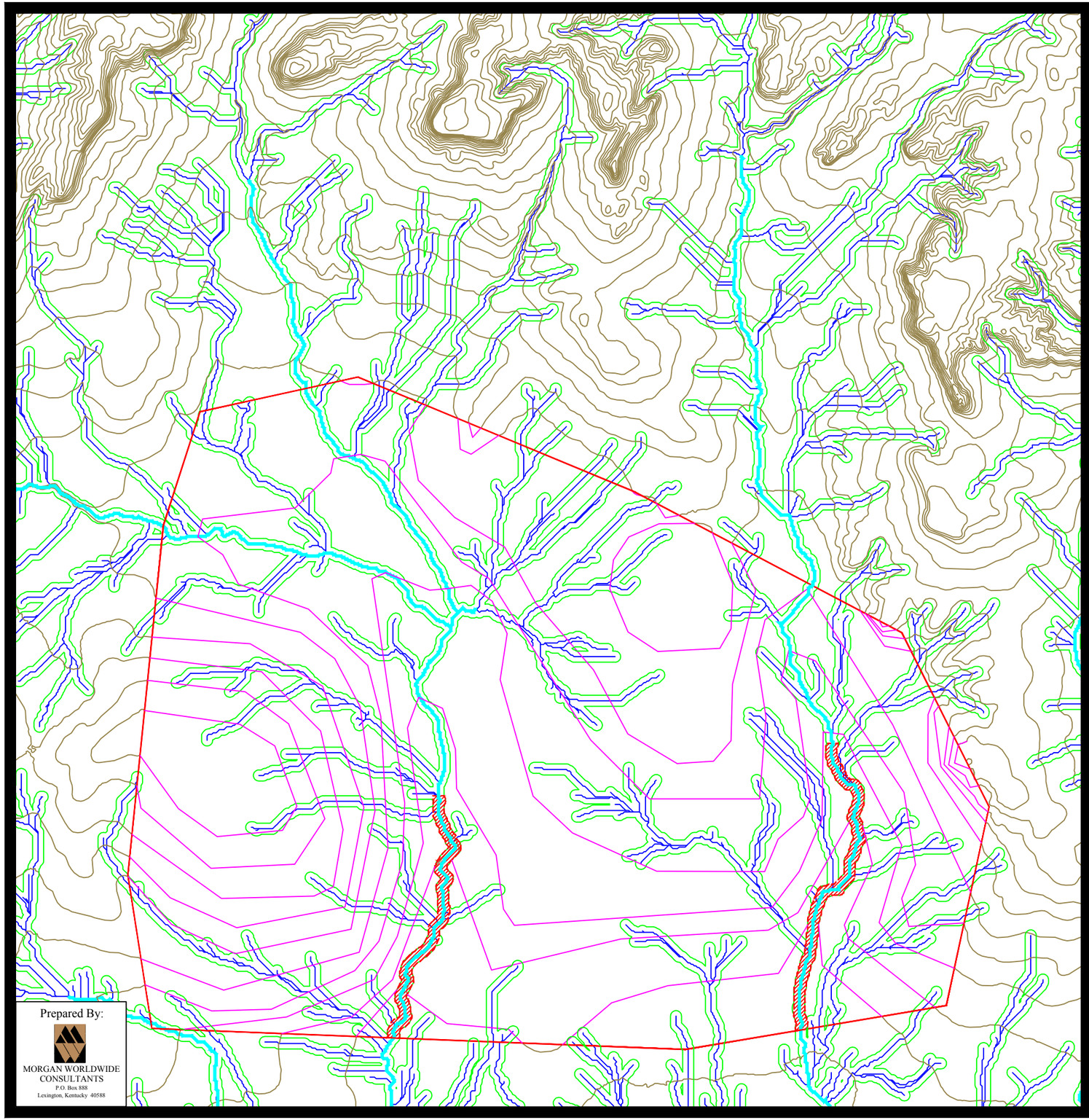
- Original Topography (20 ft Ctrs)
- Generated Streams-Intermittent (hydrologically defined)
- Mineral Removal Area
- Hydrologically Defined Intermittent Streams
- Post-Mining Topography

Colorado Plateau Region

Surface Area Mine Alternative 4

Scale 1"=2000'

0 2000 feet

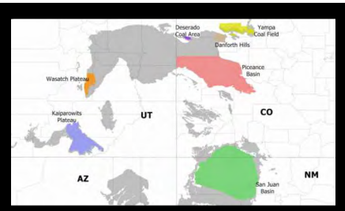


Prepared By:

MORGAN WORLDWIDE CONSULTANTS
P.O. Box 888
Lexington, Kentucky 40588

Alternative 5

- 3.3 million tpy mined
- 92.2 million tons coal resource
- 9.8:1 mining ratio
- 3,311 disturbed acres
- Stream Impacts:
  - 163,326 ft ephemeral stream mined through
  - 20,107 ft intermittent stream mined through (greater than one square mile of drainage)
  - 11,605 ft hydrologically defined intermittent stream mined through



Legend

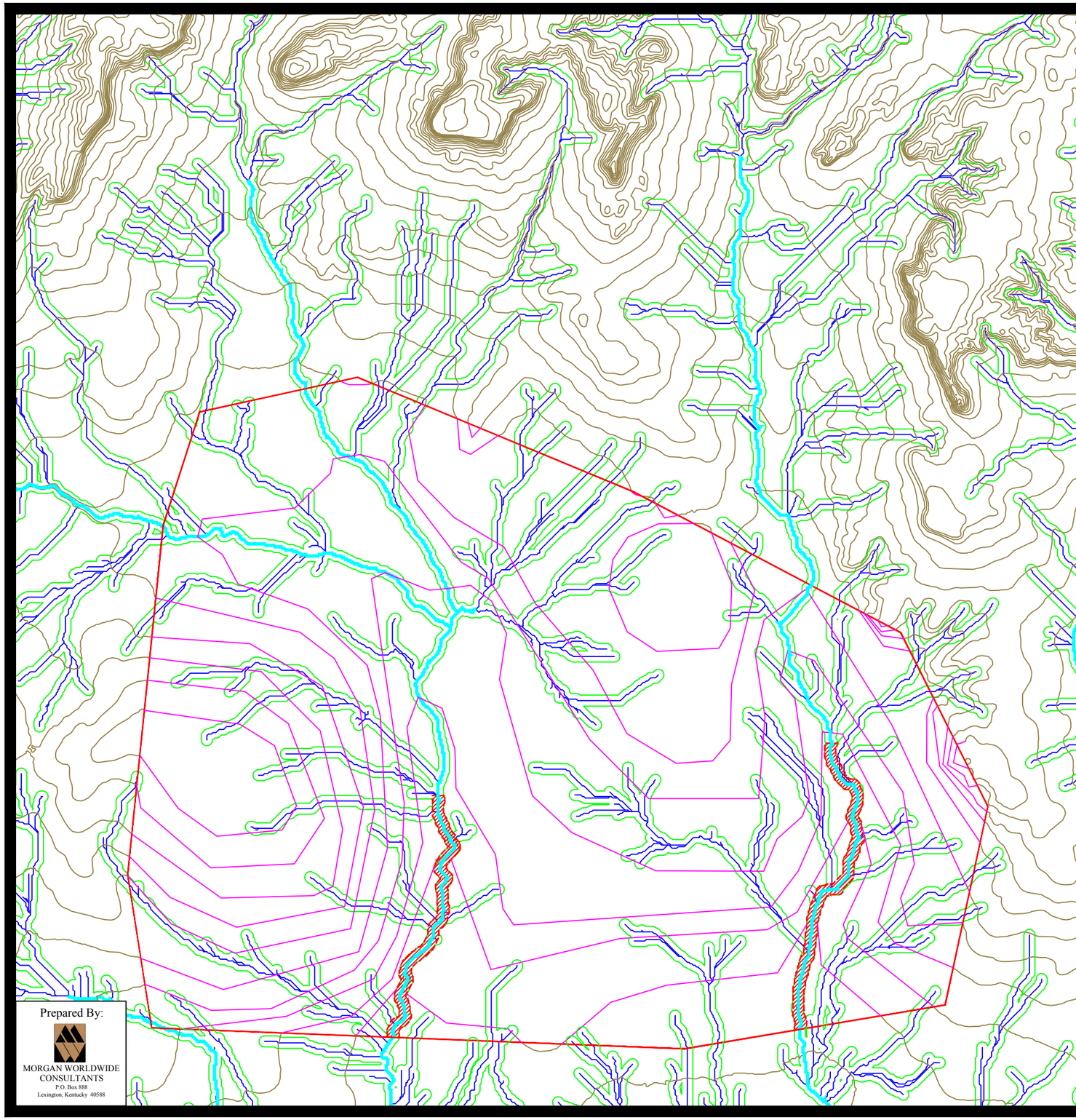
- Original Topography (20 ft Ctrs)
- Generated Streams-Intermittent (1 sq mi drainage definition)
- 100 ft stream offset
- Mineral Removal Area
- Hydrologically Defined Intermittent Streams
- Post-Mining Topography

Colorado Plateau Region

Surface Area Mine Alternative 5

Scale 1"=2000'

0 2000 feet

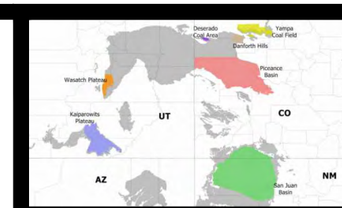


Prepared By:

MORGAN WORLDWIDE CONSULTANTS
P.O. Box 888
Lexington, Kentucky 40588

Alternative 6

- 3.3 million tpy mined
- 92.2 million tons coal resource
- 9.8:1 mining ratio
- 3,311 disturbed acres
- Stream Impacts:
  - 163,326 ft ephemeral stream mined through
  - 20,107 ft intermittent stream mined through (greater than one square mile of drainage)
  - 11,605 ft hydrologically defined intermittent stream mined through



Legend

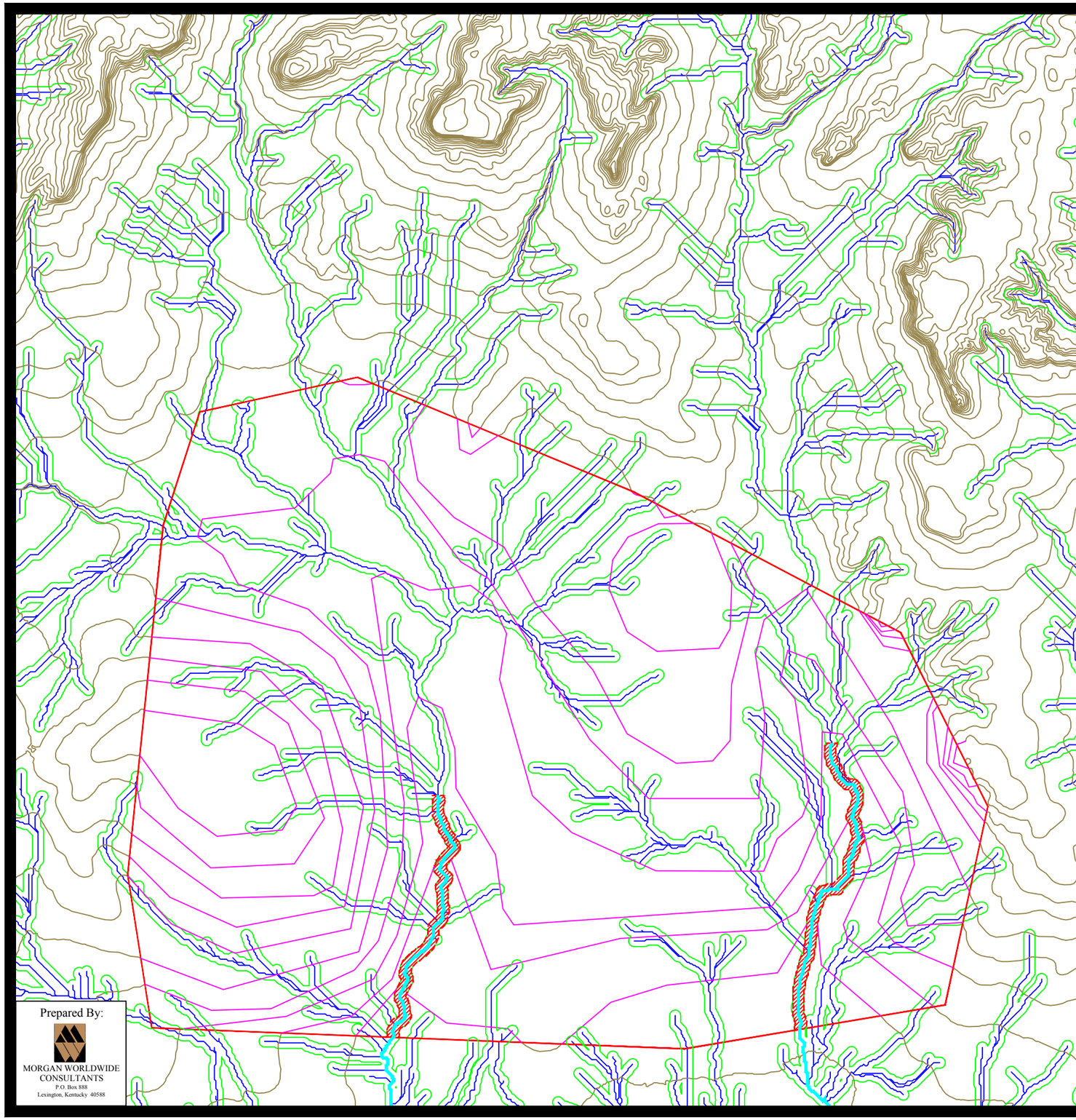
- Original Topography (20 ft Ctrs)
- Generated Streams-Intermittent (1 sq mi drainage definition)
- 100 ft stream offset
- Mineral Removal Area
- Hydrologically Defined Intermittent Streams
- Post-Mining Topography

Colorado Plateau Region

Surface Area Mine Alternative 6

Scale 1"=2000'

0 2000 feet

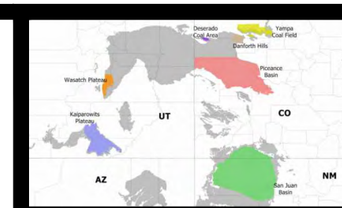


Prepared By:

MORGAN WORLDWIDE CONSULTANTS
P.O. Box 888
Lexington, Kentucky 40588

Alternative 7

- 3.3 million tpy mined
- 92.2 million tons coal resource
- 9.8:1 mining ratio
- 3,311 disturbed acres
- Stream Impacts:
  - 163,326 ft ephemeral stream mined through
  - 20,107 ft intermittent stream mined through (greater than one square mile of drainage)
  - 11,605 ft hydrologically defined intermittent stream mined through



Legend

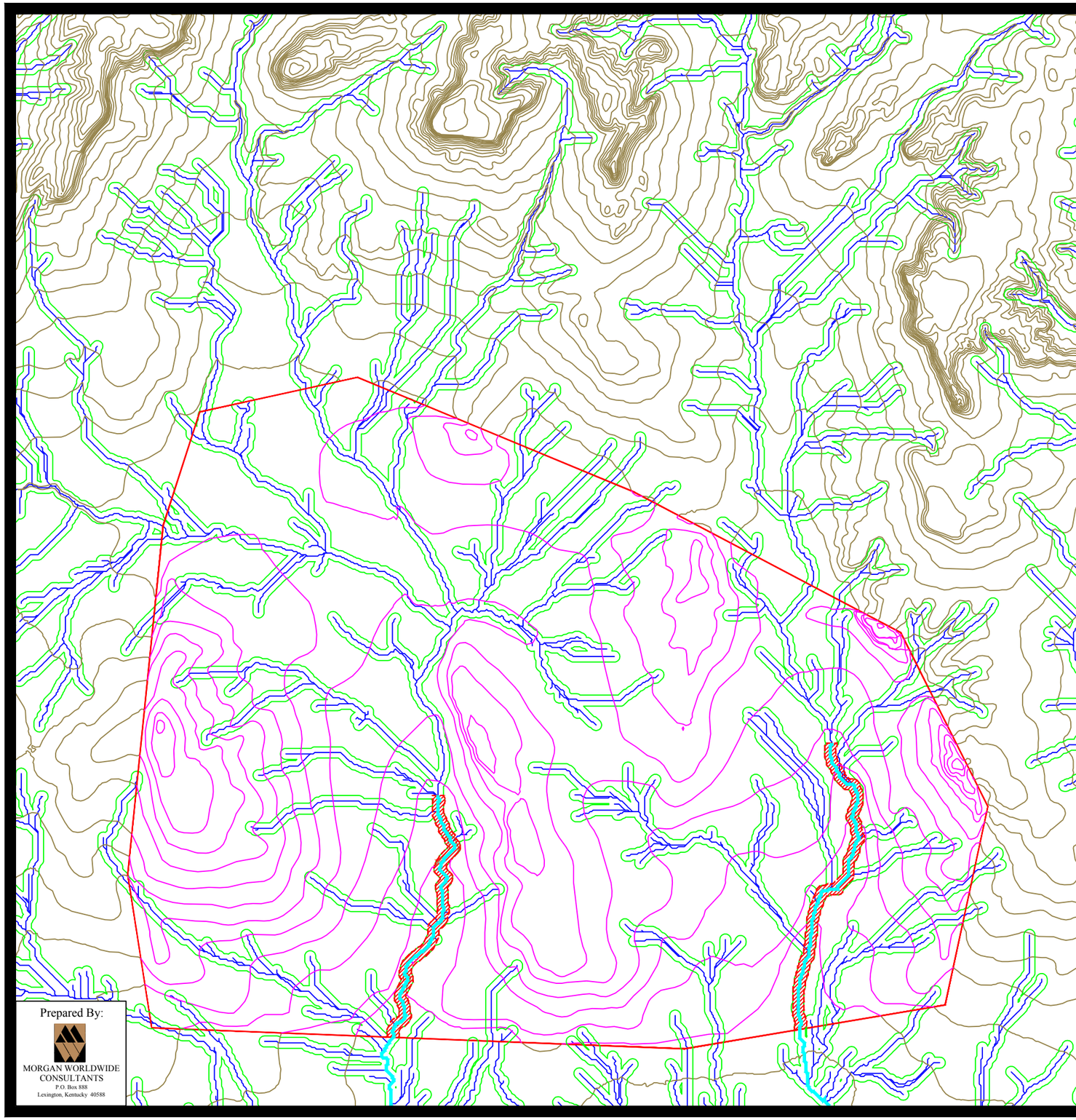
- Original Topography (20 ft Ctrs)
- Generated Streams-Intermittent (hydrologically defined)
- Mineral Removal Area
- Hydrologically Defined Intermittent Streams
- Post-Mining Topography

Colorado Plateau Region

Surface Area Mine Alternative 7

Scale 1"=2000'

0 2000 feet



Prepared By:

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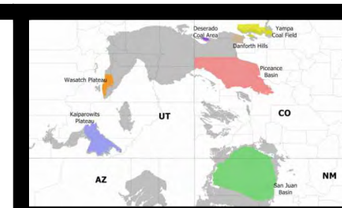
Lexington, Kentucky 40588

Alternative 8

- 3.3 million tpy mined
- 92.2 million tons coal resource
- 9.8:1 mining ratio
- 3,311 disturbed acres
- Stream Impacts:
  - 163,326 ft ephemeral stream mined through
  - 20,107 ft intermittent stream mined through (greater than one square mile of drainage)
  - 11,605 ft hydrologically defined intermittent stream mined through



Legend

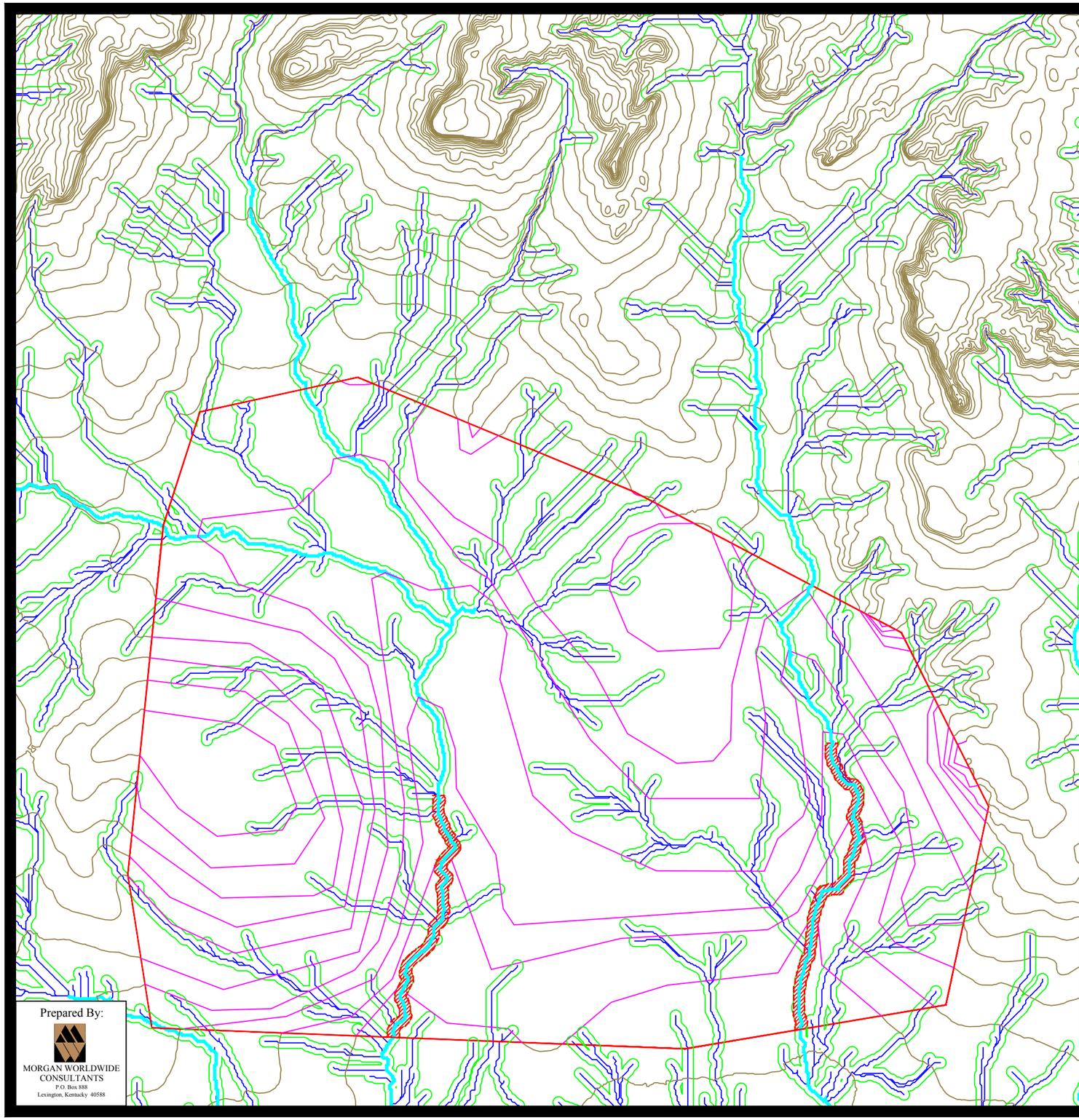
- Original Topography (20 ft Ctrs)
- Generated Streams-Intermittent (hydrologically defined)
- Mineral Removal Area
- Hydrologically Defined Intermittent Streams
- Post-Mining Topography

Colorado Plateau Region

Surface Area Mine Alternative 8

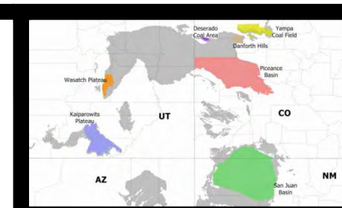
Scale 1"=2000'

0 2000 feet



Alternative 9

- 3.3 million tpy mined
- 92.2 million tons coal resource
- 9.8:1 mining ratio
- 3,311 disturbed acres
- Stream Impacts:
  - 163,326 ft ephemeral stream mined through
  - 20,107 ft intermittent stream mined through (greater than one square mile of drainage)
  - 11,605 ft hydrologically defined intermittent stream mined through



Legend

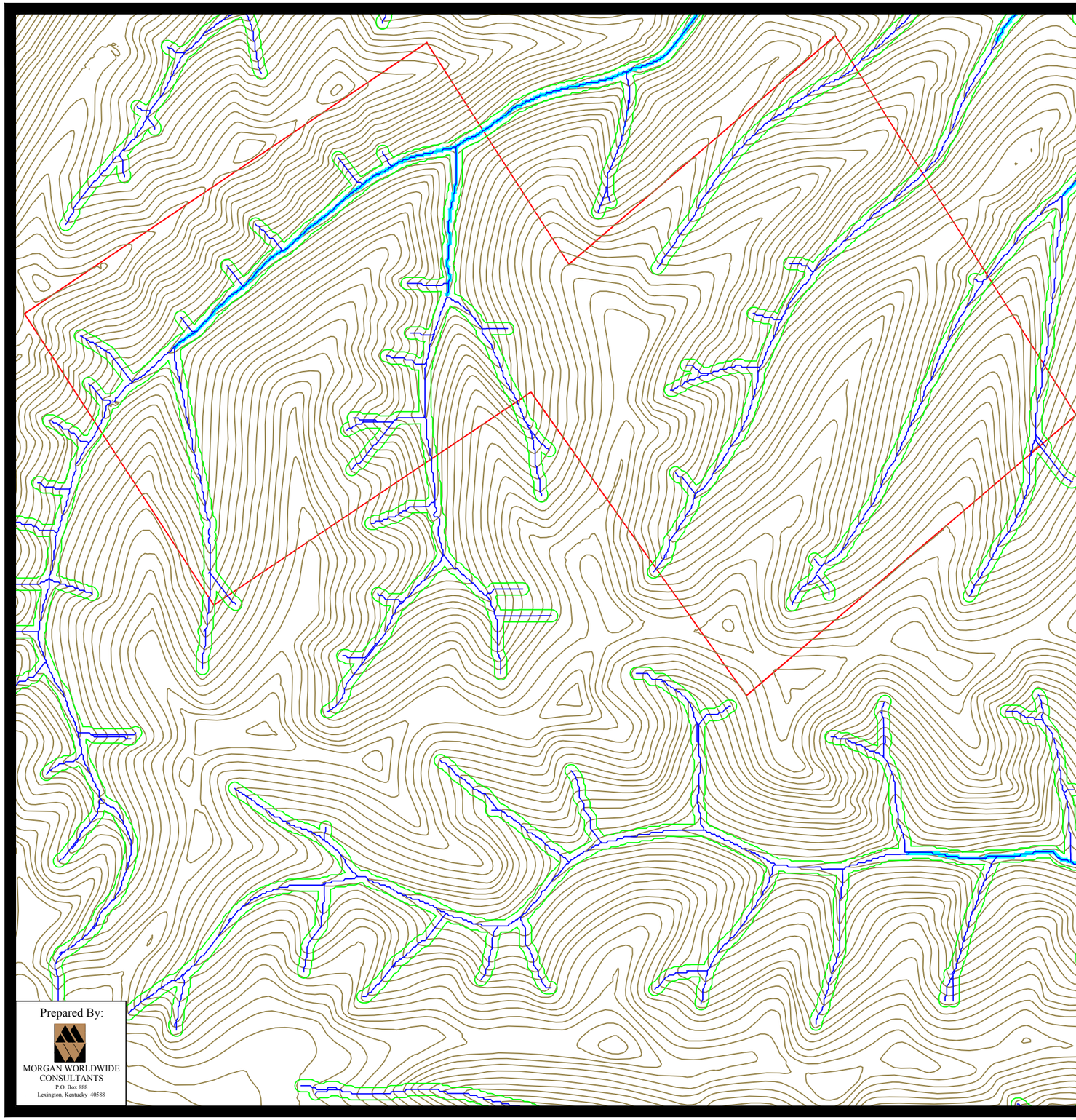
- Original Topography (20 ft Ctrs)
- Generated Streams-Intermittent (1 sq mi drainage definition)
- 100 ft stream offset
- Mineral Removal Area
- Hydrologically Defined Intermittent Streams
- Post-Mining Topography

Colorado Plateau Region

Surface Area Mine Alternative 9

Scale 1"=2000'

0 2000 feet



Prepared By:

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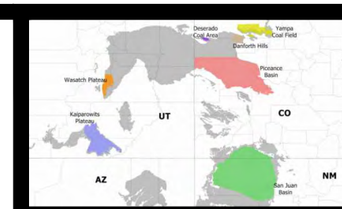
Pre-Mining

- 50 ft contours taken from USGS Seamless Server
- 7 acre ephemeral drainage requirement based on original streams delineated within permit files. Streams were generated based on drainage requirement until stream length was within 1% of the streams sampled from the permit file. This drainage requirement was then applied to the sample mine topography to generate the final streams.



Legend

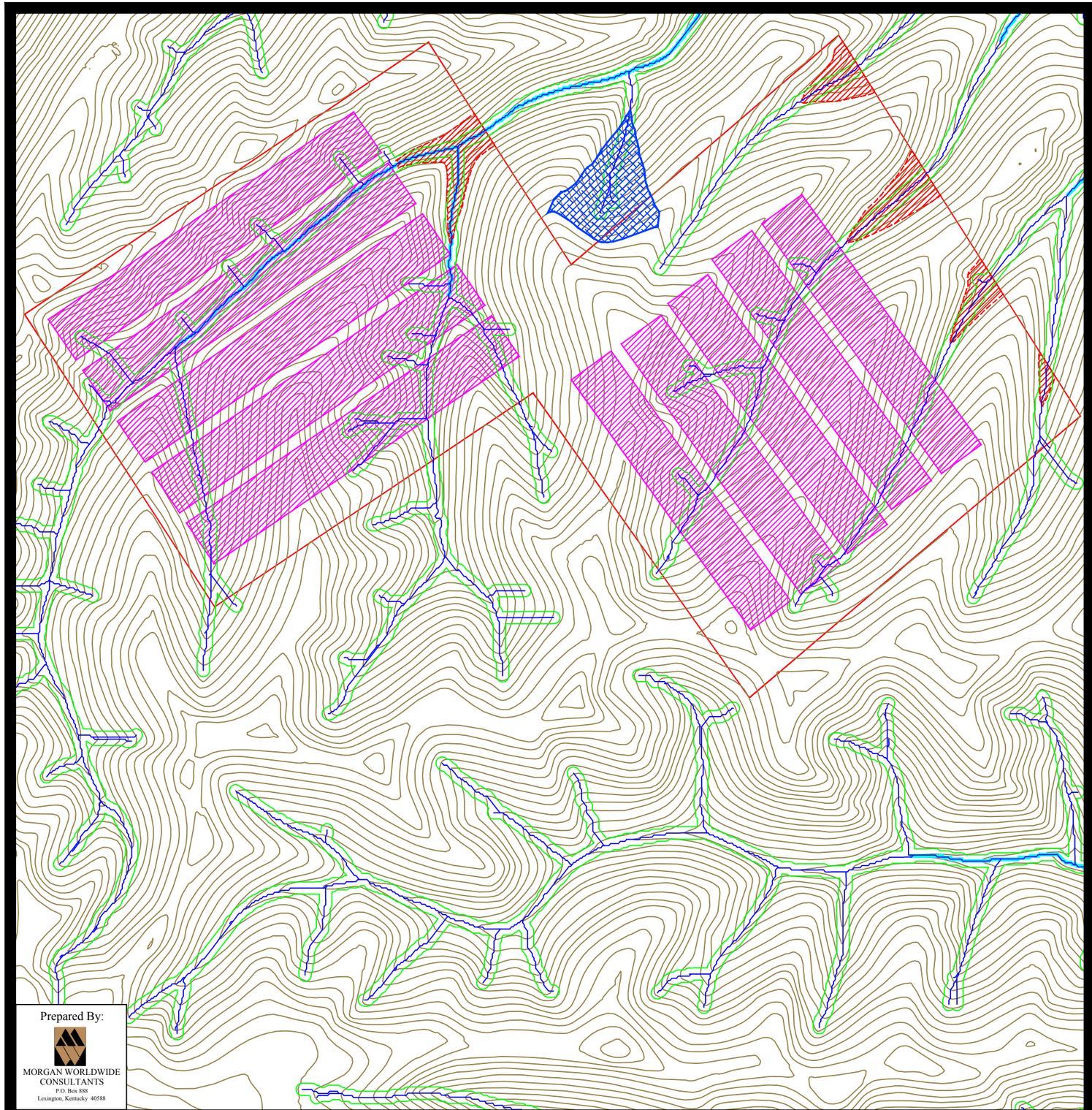
- Original Topography (50 ft Ctrs)
- Generated Streams-Intermittent (1 sq mi drainage requirement)
- Generated Streams-Ephemeral (7 acre drainage)
- 100 ft stream offset
- Mineral Removal Area

Colorado Plateau Region

Underground Longwall Mine Pre-Mining

Scale 1"=1800'

0 1800 feet



Prepared By:

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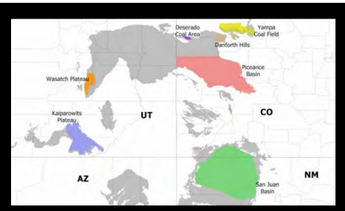
Alternative 1

- 3.0 million tpy
- 27.9 million tons coal resource
- 20.5 million tons recoverable coal
- 2,188 mine acres
- 44 disturbed acres
- Stream Impacts
  - 2,097 ft ephemeral stream impacts
  - 0 ft intermittent stream impacts



Legend

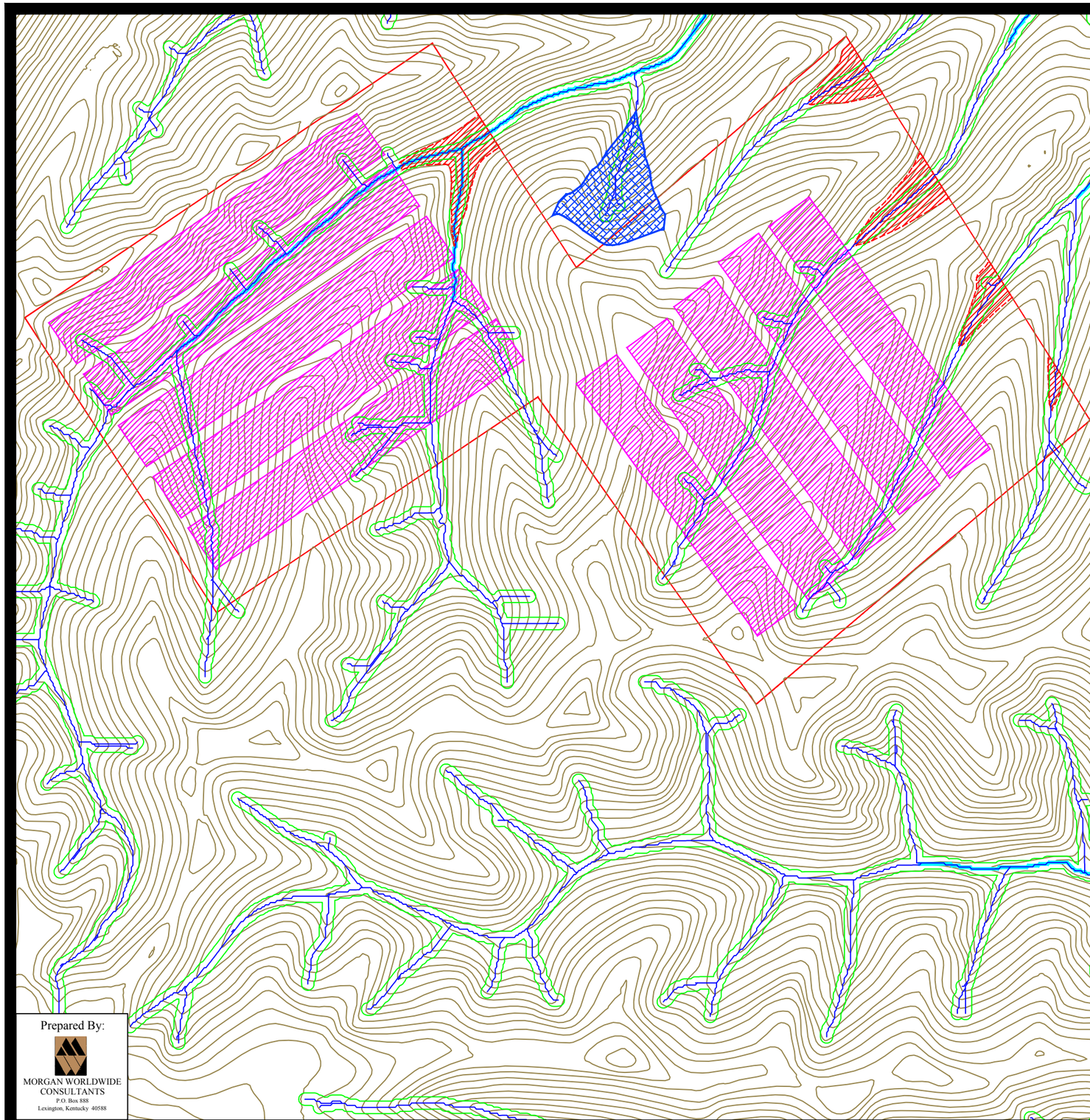
- Original Topography (50 ft Ctrs)
- Generated Streams-Intermittent (1 sq mi drainage requirement)
- Generated Streams-Ephemeral (7 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Longwall Panel
- Minimum Cover Area
- Refuse Impoundment

Colorado Plateau Region

Underground Longwall Mine Alternative 1

Scale 1"=1800'

0 1800 feet



Prepared By:

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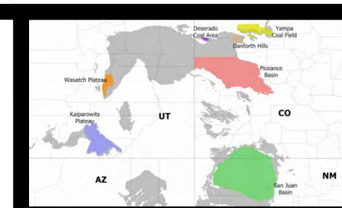
Alternative 2

- 3.0 million tpy
- 27.9 million tons coal resource
- 20.5 million tons recoverable coal
- 2,188 mine acres
- 44 disturbed acres
- Stream Impacts
  - 2,097 ft ephemeral stream impacts
  - 0 ft intermittent stream impacts



Legend

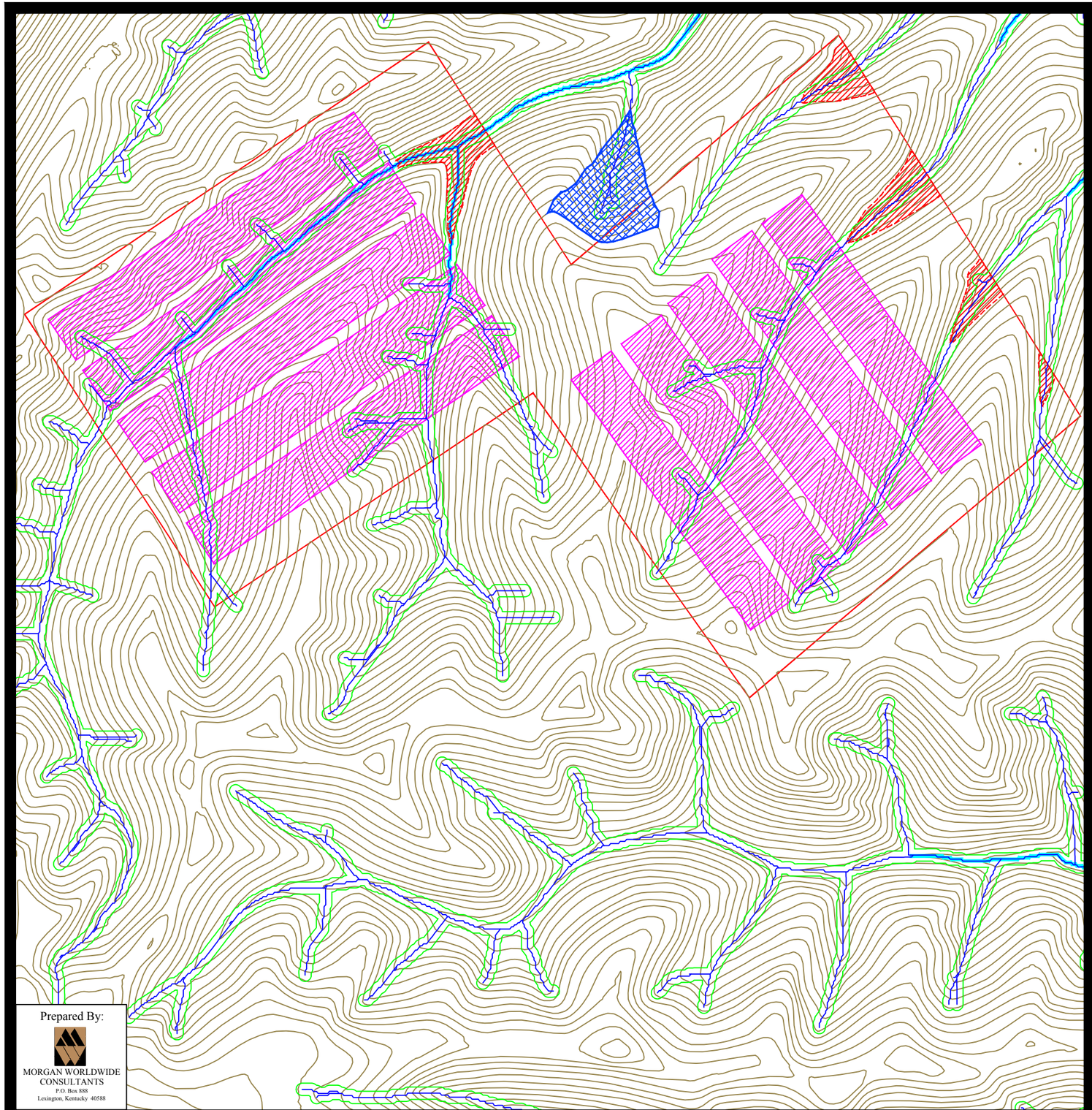
- Original Topography (50 ft Ctrs)
- Generated Streams-Intermittent (1 sq mi drainage requirement)
- Generated Streams-Ephemeral (7 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Longwall Panel
- Minimum Cover Area
- Refuse Impoundment

Colorado Plateau Region

Underground Longwall Mine Alternative 2

Scale 1"=1800'

0 1800 feet



Prepared By:

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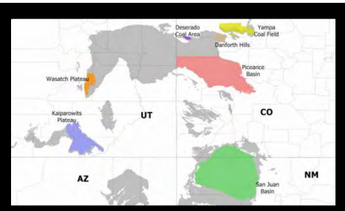
Lexington, Kentucky 40588

Alternative 3

- 3.0 million tpy
- 27.9 million tons coal resource
- 20.5 million tons recoverable coal
- 2,188 mine acres
- 44 disturbed acres
- Stream Impacts
  - 2,097 ft ephemeral stream impacts
  - 0 ft intermittent stream impacts



Legend

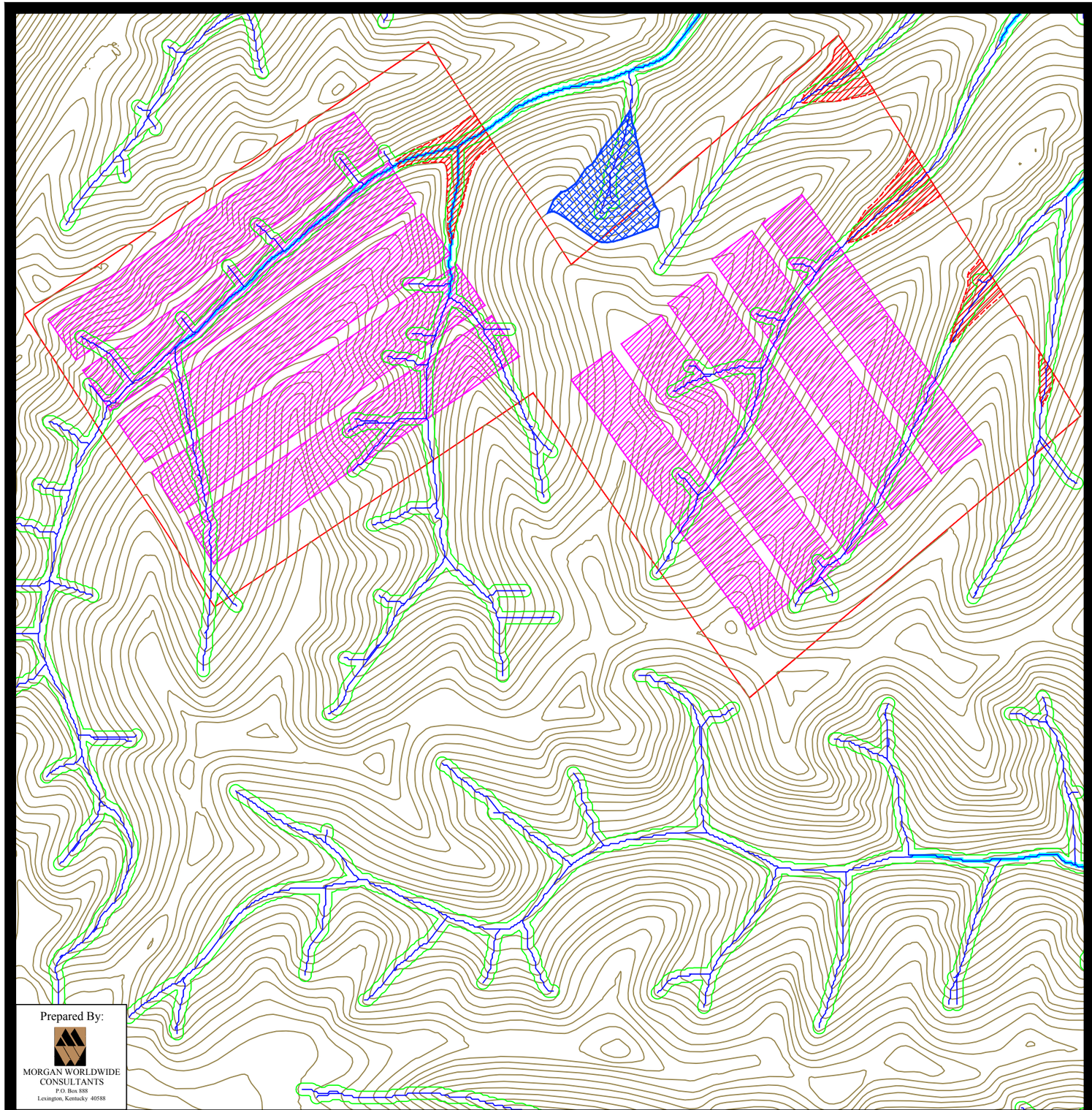
- Original Topography (50 ft Ctrs)
- Generated Streams-Intermittent (1 sq mi drainage requirement)
- Generated Streams-Ephemeral (7 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Longwall Panel
- Minimum Cover Area
- Refuse Impoundment

Colorado Plateau Region

Underground Longwall Mine Alternative 3

Scale 1"=1800'

0 1800 feet



Prepared By:

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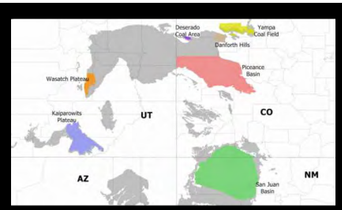
Alternative 4

- 3.0 million tpy
- 27.9 million tons coal resource
- 20.5 million tons recoverable coal
- 2,188 mine acres
- 44 disturbed acres
- Stream Impacts
  - 2,097 ft ephemeral stream impacts
  - 0 ft intermittent stream impacts



Legend

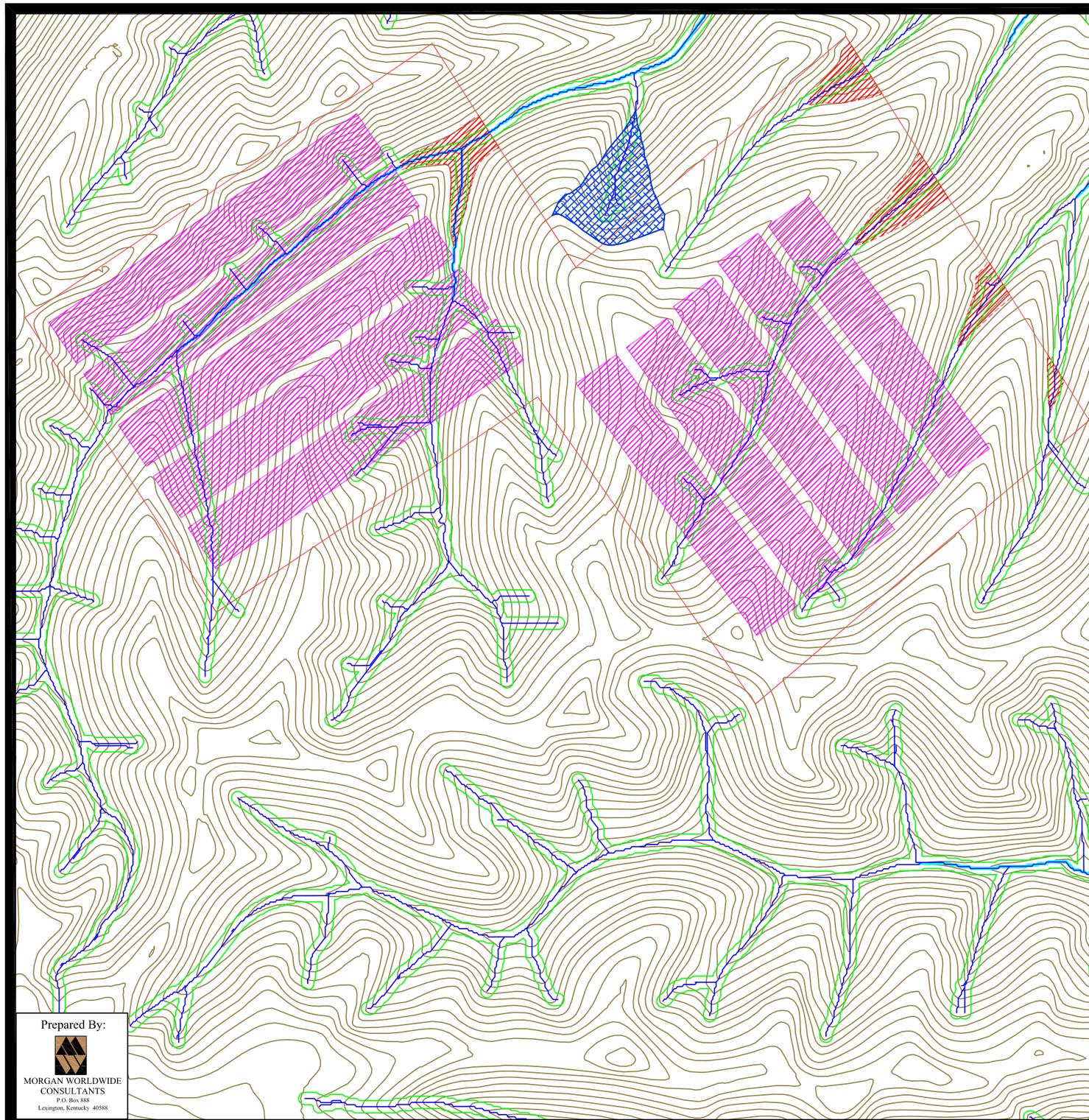
- Original Topography (50 ft Ctrs)
- Generated Streams-Intermittent (1 sq mi drainage requirement)
- Generated Streams-Ephemeral (7 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Longwall Panel
- Minimum Cover Area
- Refuse Impoundment

Colorado Plateau Region

Underground Longwall Mine Alternative 4

Scale 1"=1800'

0 1800 feet



Prepared By:

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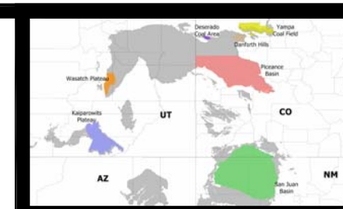
Lexington, Kentucky 40588

Alternative 5

- 3.0 million tpy
- 27.9 million tons coal resource
- 20.5 million tons recoverable coal
- 2,188 mine acres
- 44 disturbed acres
- Stream Impacts
  - 2,097 ft ephemeral stream impacts
  - 0 ft intermittent stream impacts



Legend

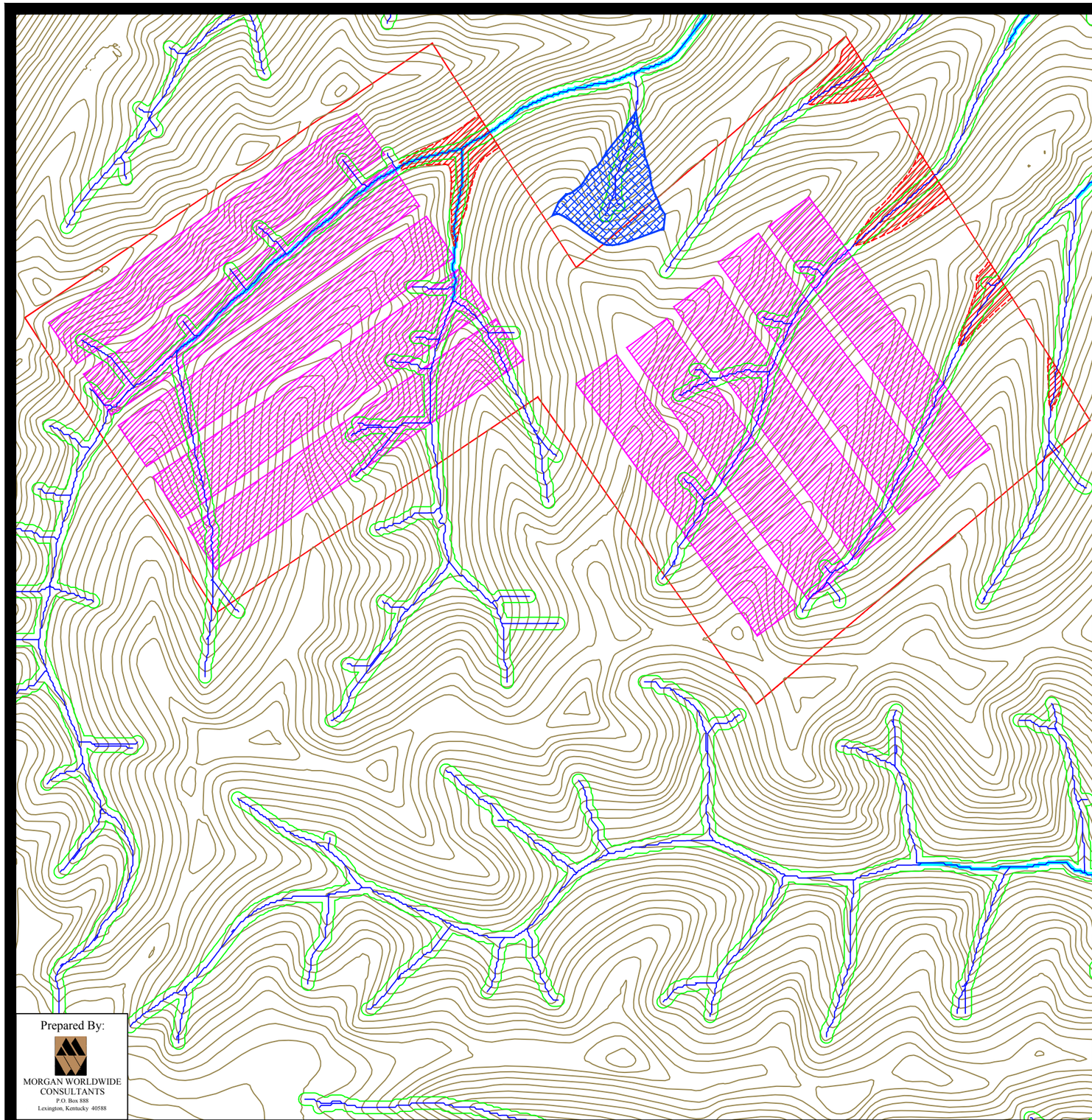
- Original Topography (50 ft Ctrs)
- Generated Streams-Intermittent (1 sq mi drainage requirement)
- Generated Streams-Ephemeral (7 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Longwall Panel
- Minimum Cover Area
- Refuse Impoundment

Colorado Plateau Region

Underground Longwall Mine Alternative 5

Scale 1"=1800'

0 1800 feet



Prepared By:

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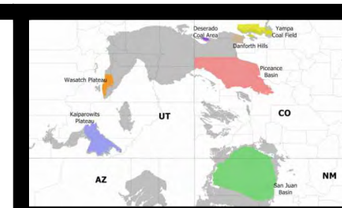
Lexington, Kentucky 40588

Alternative 6

- 3.0 million tpy
- 27.9 million tons coal resource
- 20.5 million tons recoverable coal
- 2,188 mine acres
- 44 disturbed acres
- Stream Impacts
  - 2,097 ft ephemeral stream impacts
  - 0 ft intermittent stream impacts



Legend

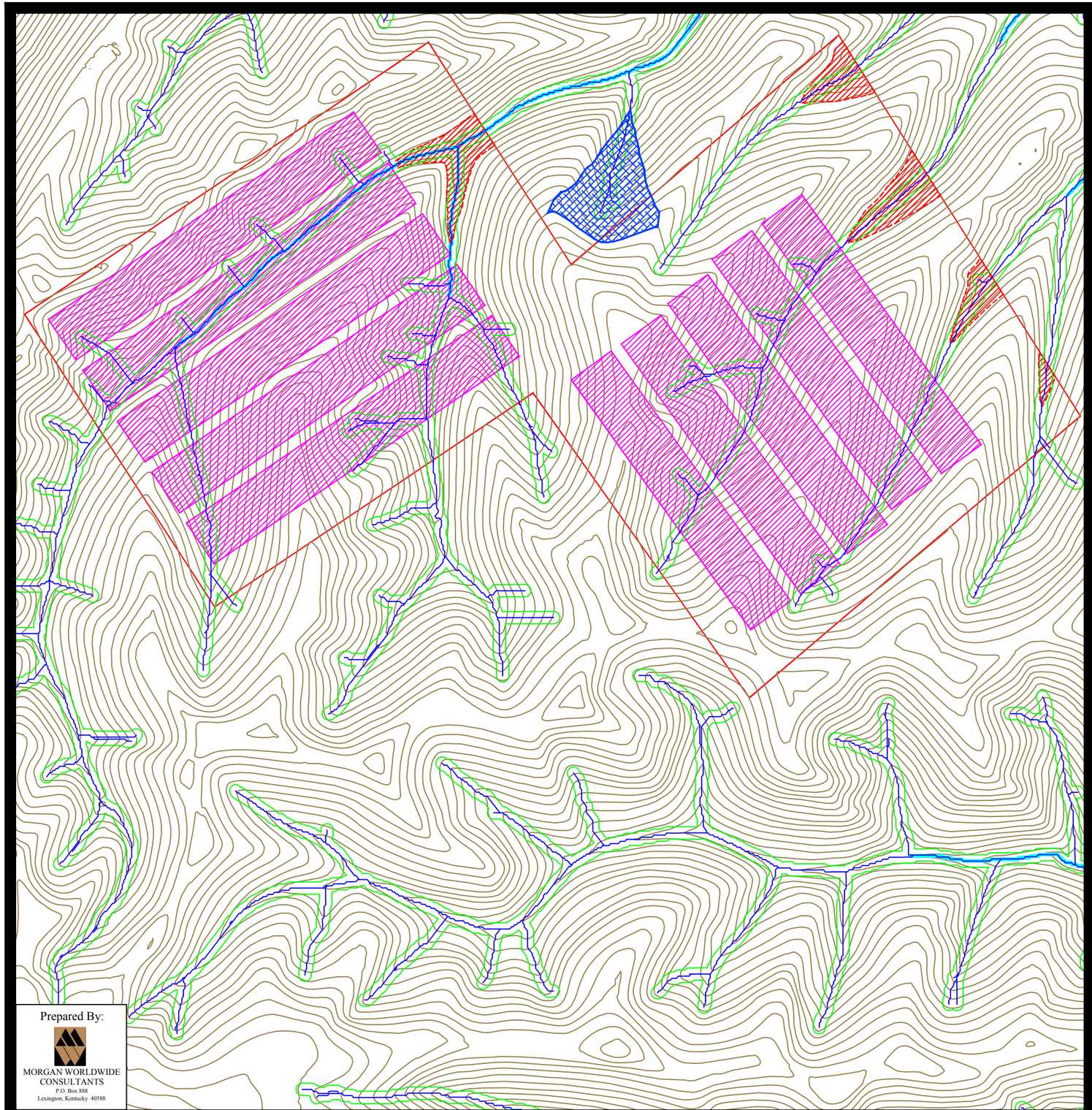
- Original Topography (50 ft Ctrs)
- Generated Streams-Intermittent (1 sq mi drainage requirement)
- Generated Streams-Ephemeral (7 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Longwall Panel
- Minimum Cover Area
- Refuse Impoundment

Colorado Plateau Region

Underground Longwall Mine Alternative 6

Scale 1"=1800'

0 1800 feet



Prepared By:

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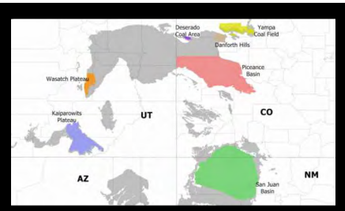
Lexington, Kentucky 40588

Alternative 7

- 3.0 million tpy
- 27.9 million tons coal resource
- 20.5 million tons recoverable coal
- 2,188 mine acres
- 44 disturbed acres
- Stream Impacts
  - 2,097 ft ephemeral stream impacts
  - 0 ft intermittent stream impacts



Legend

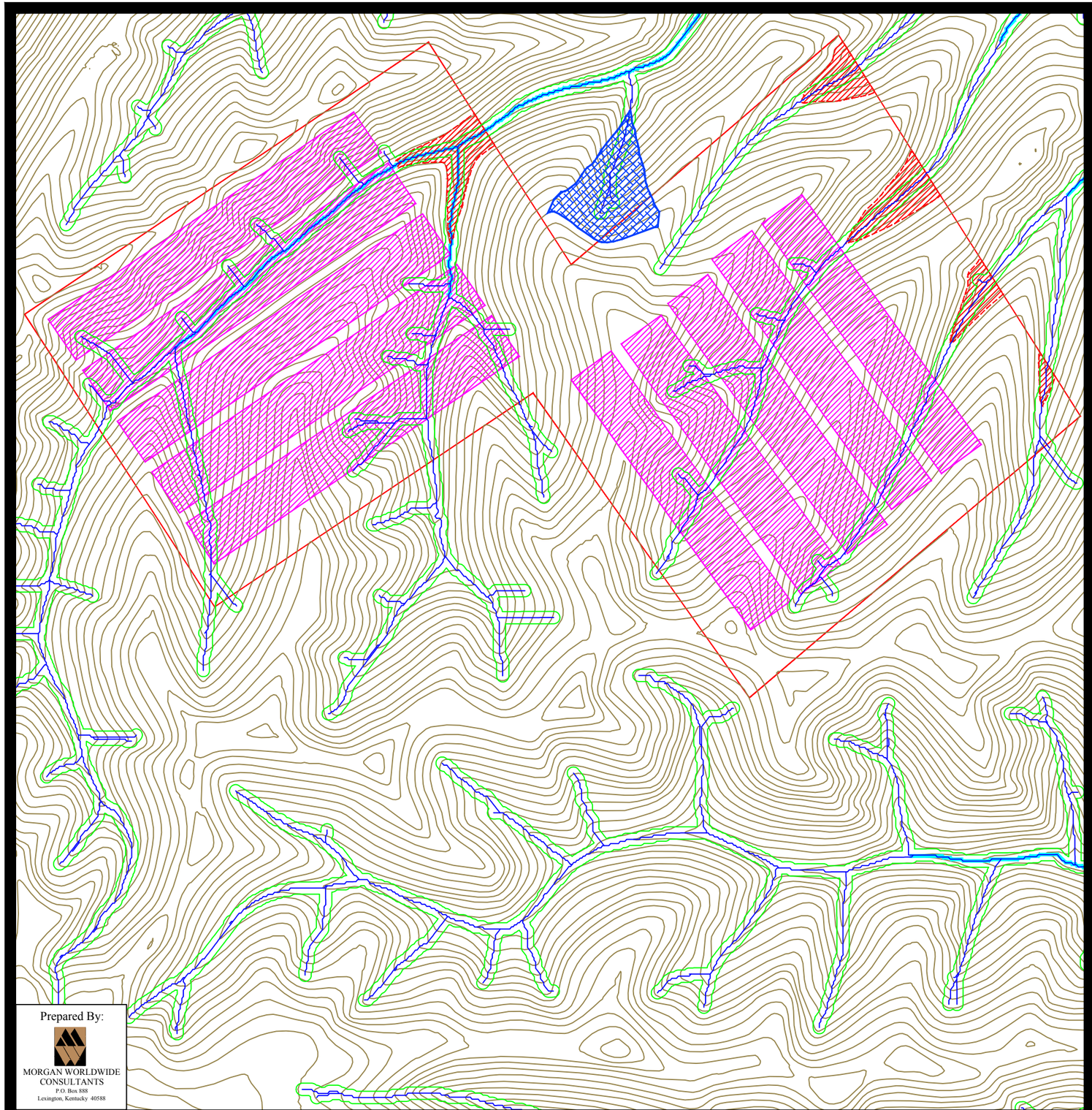
- Original Topography (50 ft Ctrs)
- Generated Streams-Intermittent (1 sq mi drainage requirement)
- Generated Streams-Ephemeral (7 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Longwall Panel
- Minimum Cover Area
- Refuse Impoundment

Colorado Plateau Region

Underground Longwall Mine Alternative 7

Scale 1"=1800'

0 1800 feet



Prepared By:

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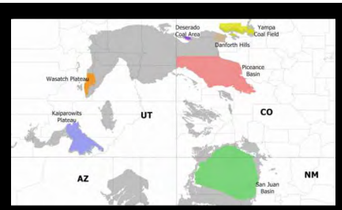
Lexington, Kentucky 40588

Alternative 8

- 3.0 million tpy
- 27.9 million tons coal resource
- 20.5 million tons recoverable coal
- 2,188 mine acres
- 44 disturbed acres
- Stream Impacts
  - 2,097 ft ephemeral stream impacts
  - 0 ft intermittent stream impacts



Legend

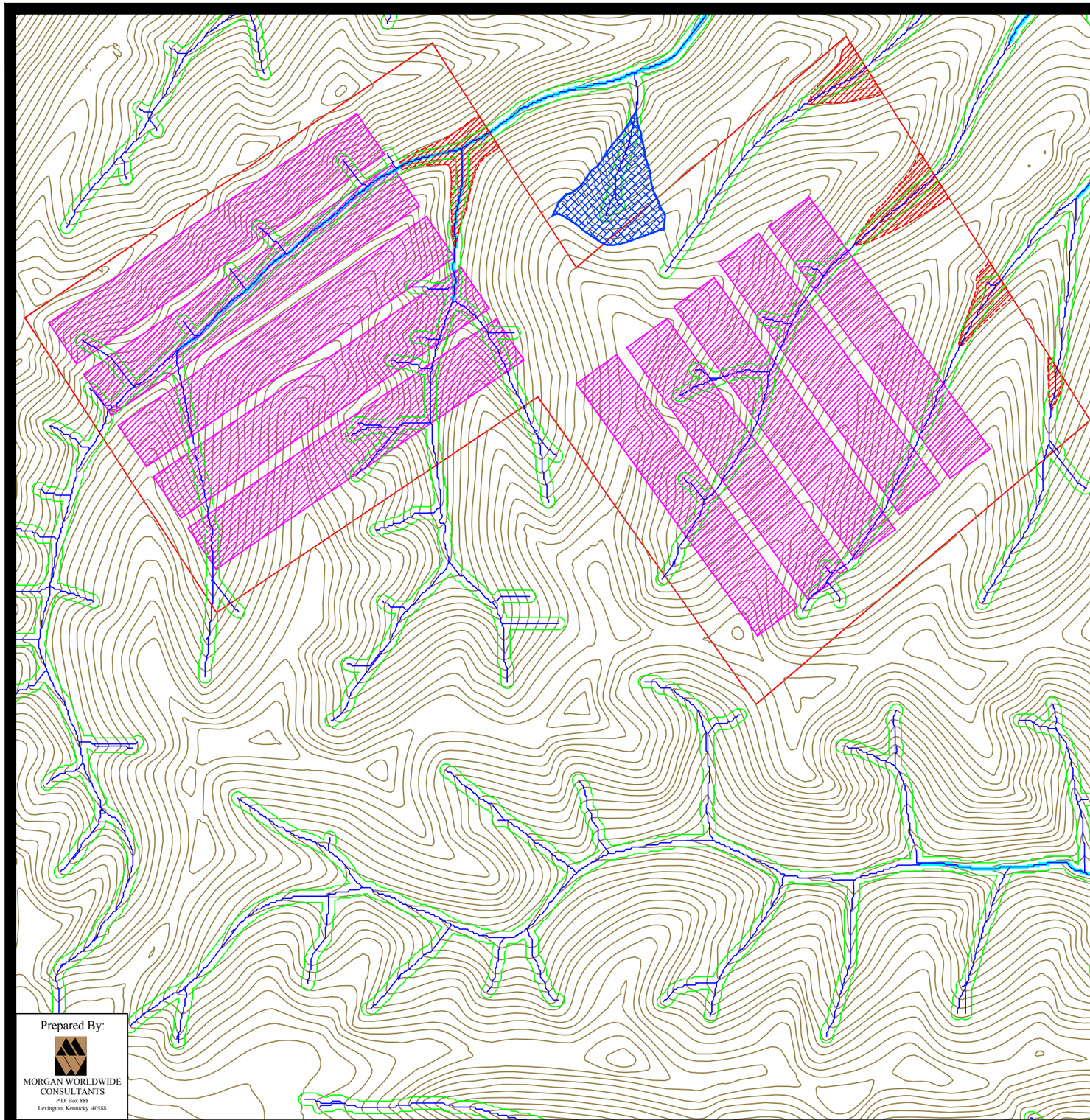
- Original Topography (50 ft Ctrs)
- Generated Streams-Intermittent (1 sq mi drainage requirement)
- Generated Streams-Ephemeral (7 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Longwall Panel
- Minimum Cover Area
- Refuse Impoundment

Colorado Plateau Region

Underground Longwall Mine Alternative 8

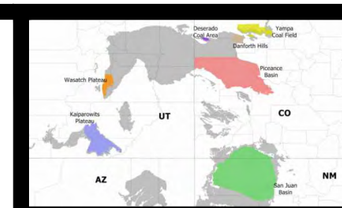
Scale 1"=1800'

0 1800 feet



Alternative 9

- 3.0 million tpy
- 27.9 million tons coal resource
- 20.5 million tons recoverable coal
- 2,188 mine acres
- 44 disturbed acres
- Stream Impacts
  - 2,097 ft ephemeral stream impacts
  - 0 ft intermittent stream impacts



Legend

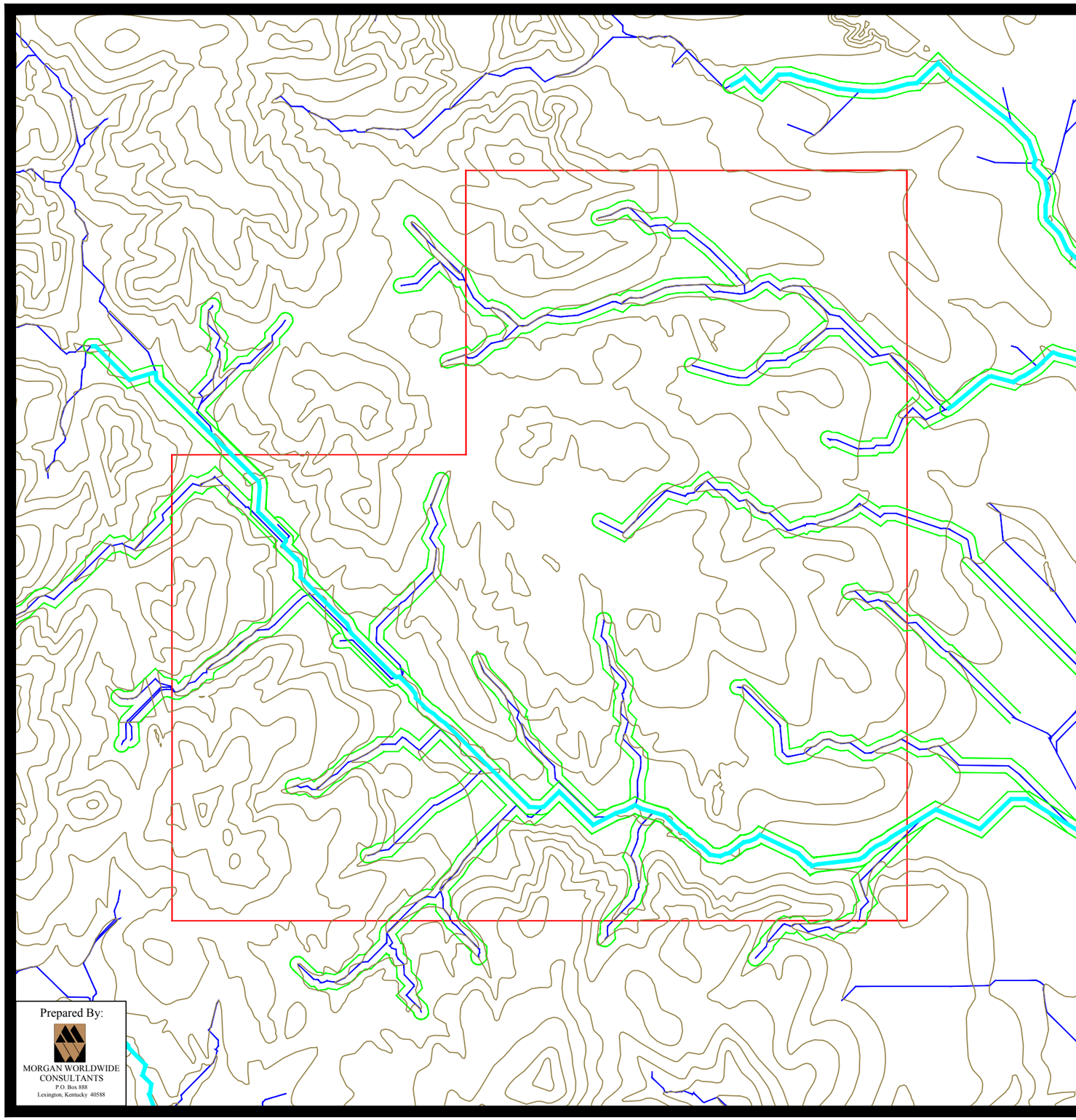
- Original Topography (50 ft Ctrs)
- Generated Streams-Intermittent (1 sq mi drainage requirement)
- Generated Streams-Ephemeral (7 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Longwall Panel
- Minimum Cover Area
- Refuse Impoundment

Colorado Plateau Region

Underground Longwall Mine Alternative 9

Scale 1"=1800'

0 1800 feet



Prepared By:

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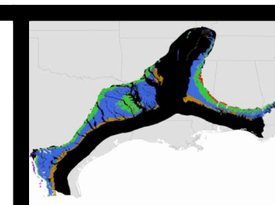
Lexington, Kentucky 40588

Pre-Mining

- 10 ft contours taken from USGS Seamless Server
- 21.8 acre ephemeral drainage requirement based on original streams delineated within permit files. Streams were generated based on drainage requirement until stream length was within 1% of the streams sampled from the permit file. This drainage requirement was then applied to the sample mine topography to generate the final streams.



Legend

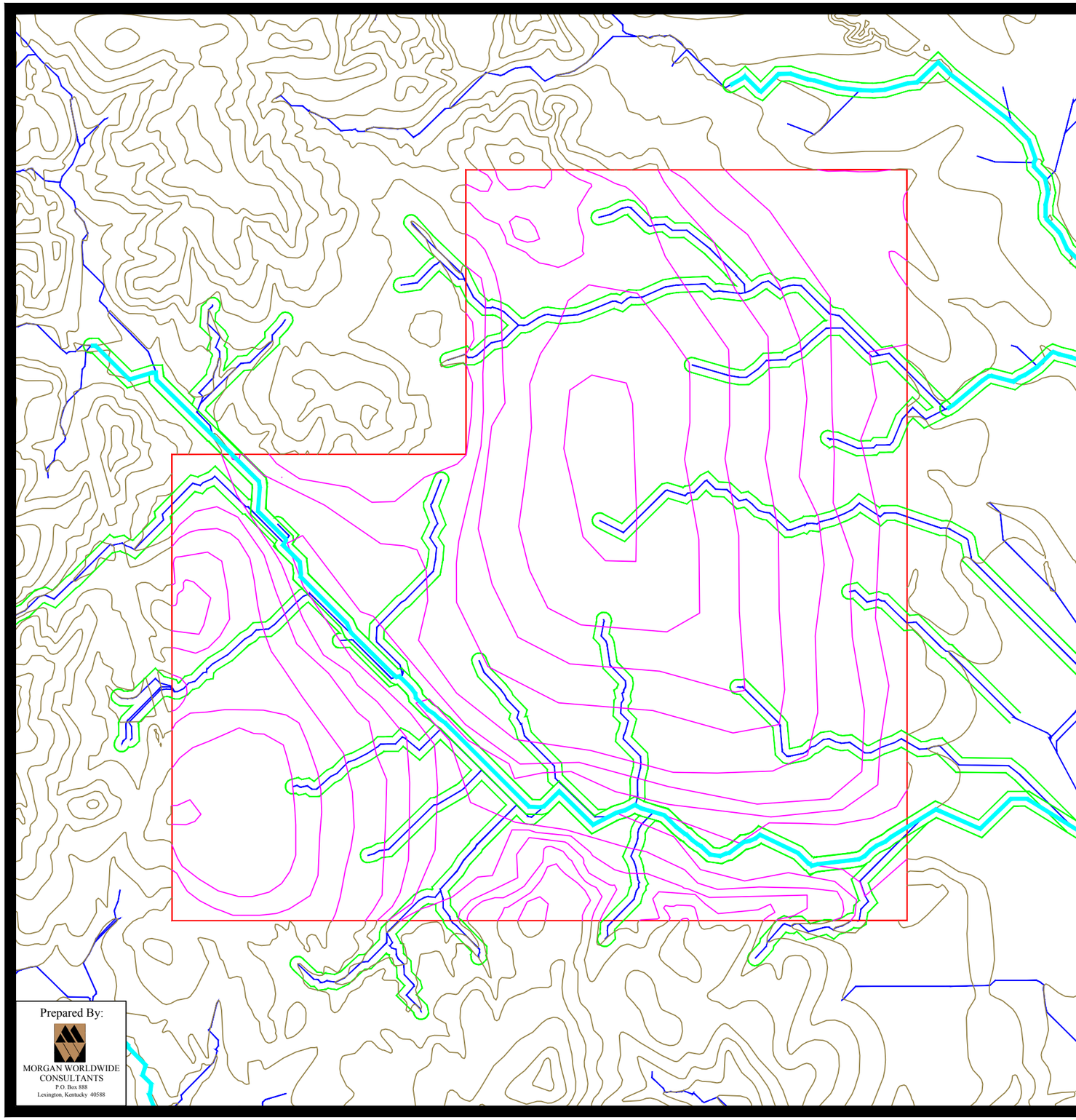
- Original Topography (10 ft Ctrs)
- Generated Streams-Intermittent (1 sq mi drainage definition)
- Generated Streams-Ephemeral (21.8 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Post-Mining Topography

Gulf Coast Region

Surface Area Mine Pre-Mining

Scale 1"=1500'

0 1500 feet



Prepared By:

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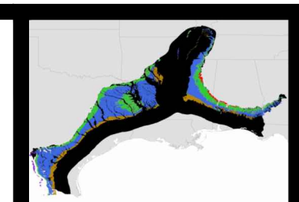
Lexington, Kentucky 40588

Alternative 1

- 3.3 million tpy mined
- 40.7 million tons coal resource
- 10.3:1 mining ratio
- 1,988 disturbed acres
- Stream Impacts:
  - 54,904 ft ephemeral stream mined through
  - 12,611 ft hydrologically defined intermittent stream mined through



Legend

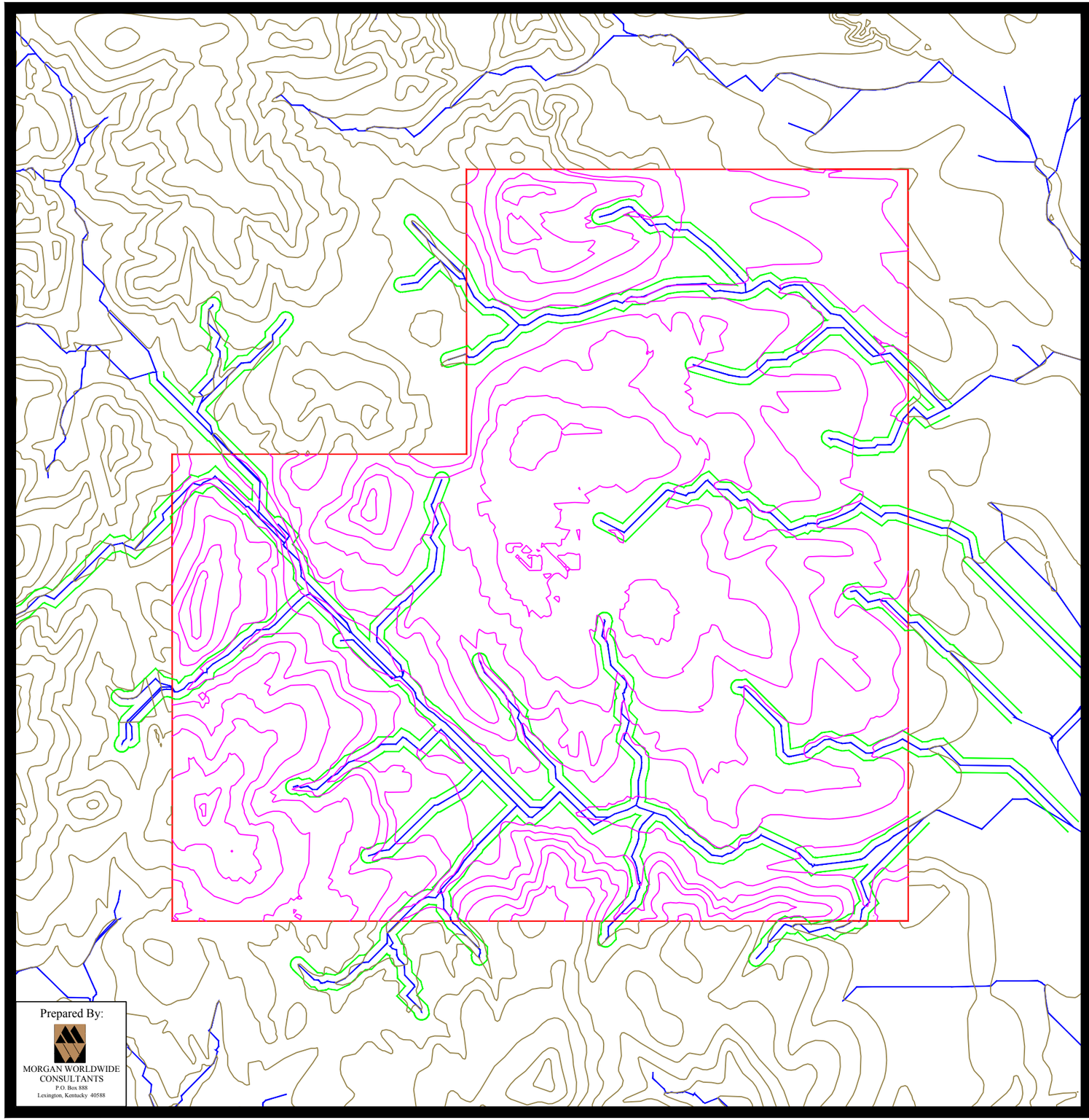
- Original Topography (10 ft Ctrs)
- Generated Streams-Intermittent (1 sq mi drainage definition)
- Generated Streams-Ephemeral (21.8 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Post-Mining Topography

Gulf Coast Region

Surface Area Mine Alternative 1

Scale 1"=1500'

0 1500 feet



Prepared By:

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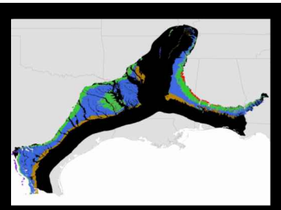
Lexington, Kentucky 40588

Alternative 2

- 3.3 million tpy mined
- 40.7 million tons coal resource
- 10.3:1 mining ratio
- 1,988 disturbed acres
- Stream Impacts:
  - 54,904 ft ephemeral stream mined through
  - 12,611 ft hydrologically defined intermittent stream mined through



Legend

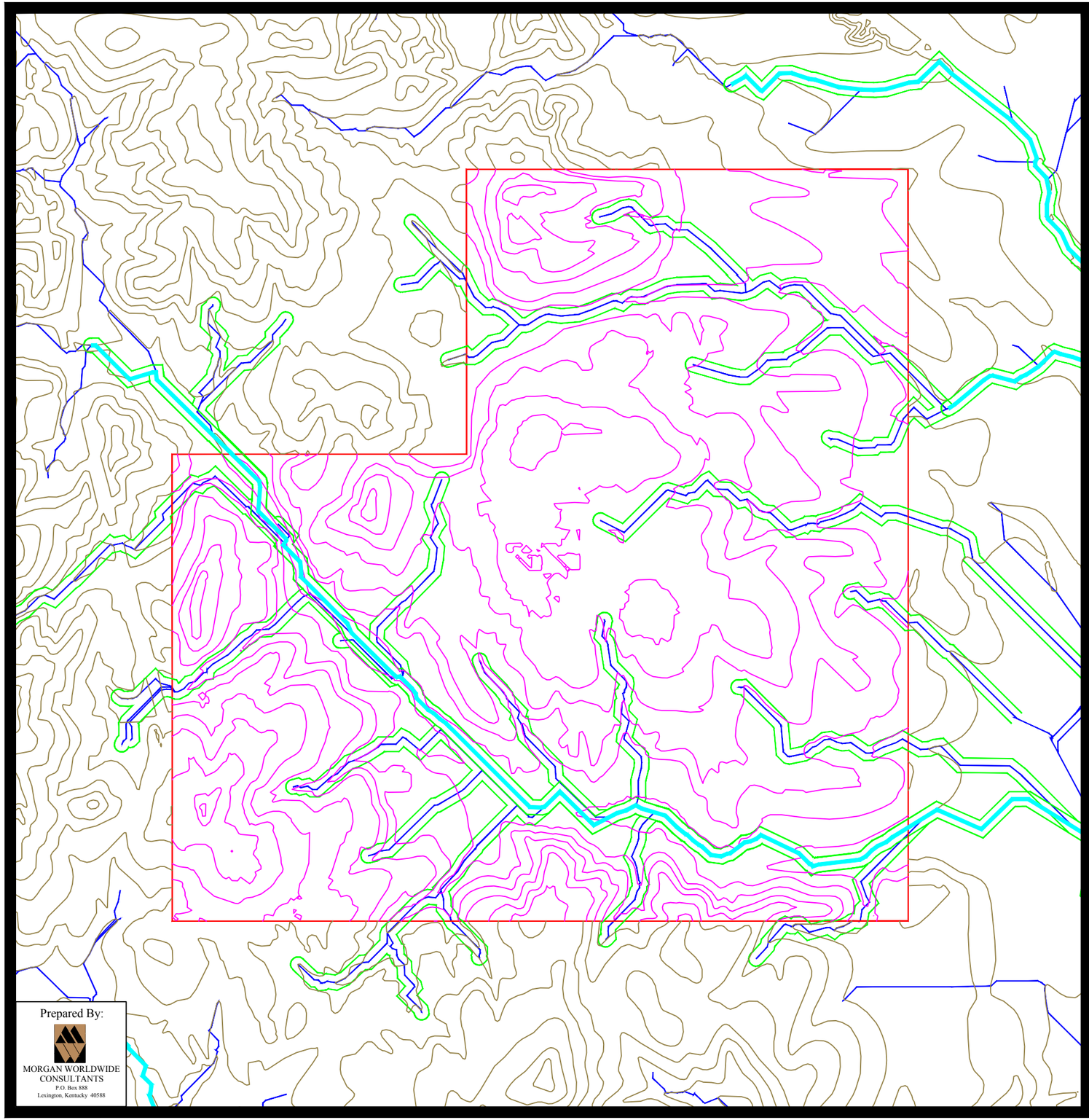
- Original Topography (10 ft Ctrs)
- Generated Streams-Ephemeral (21.8 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Post-Mining Topography

Gulf Coast Region

Surface Area Mine Alternative 2

Scale 1"=1500'

0 1500 feet



Prepared By:

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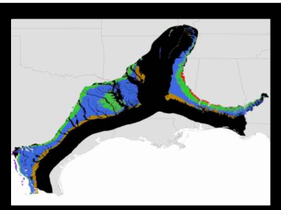
Lexington, Kentucky 40588

Alternative 3

- 3.3 million tpy mined
- 40.7 million tons coal resource
- 10.3:1 mining ratio
- 1,988 disturbed acres
- Stream Impacts:
  - 54,904 ft ephemeral stream mined through
  - 12,611 ft hydrologically defined intermittent stream mined through



Legend

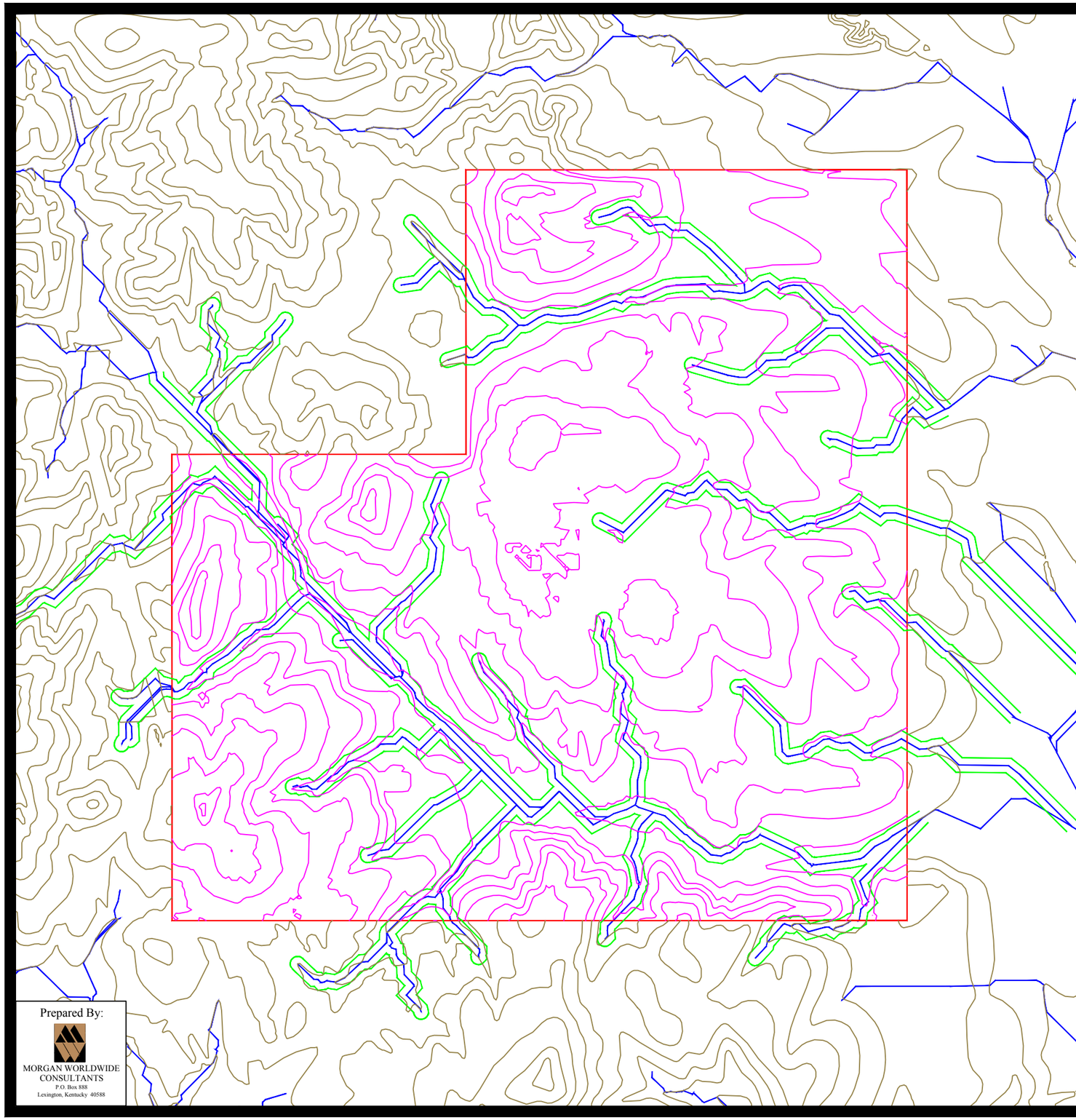
- Original Topography (10 ft Ctrs)
- Generated Streams-Intermittent (1 sq mi drainage definition)
- Generated Streams-Ephemeral (21.8 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Post-Mining Topography

Gulf Coast Region

Surface Area Mine Alternative 3

Scale 1"=1500'

0 1500 feet



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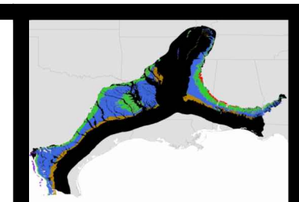
Alternative 4

- 3.3 million tpy mined
- 40.7 million tons coal resource
- 10.3:1 mining ratio
- 1,988 disturbed acres
- Stream Impacts:
  - 54,904 ft ephemeral stream mined through
  - 12,611 ft hydrologically defined intermittent stream mined through



Legend

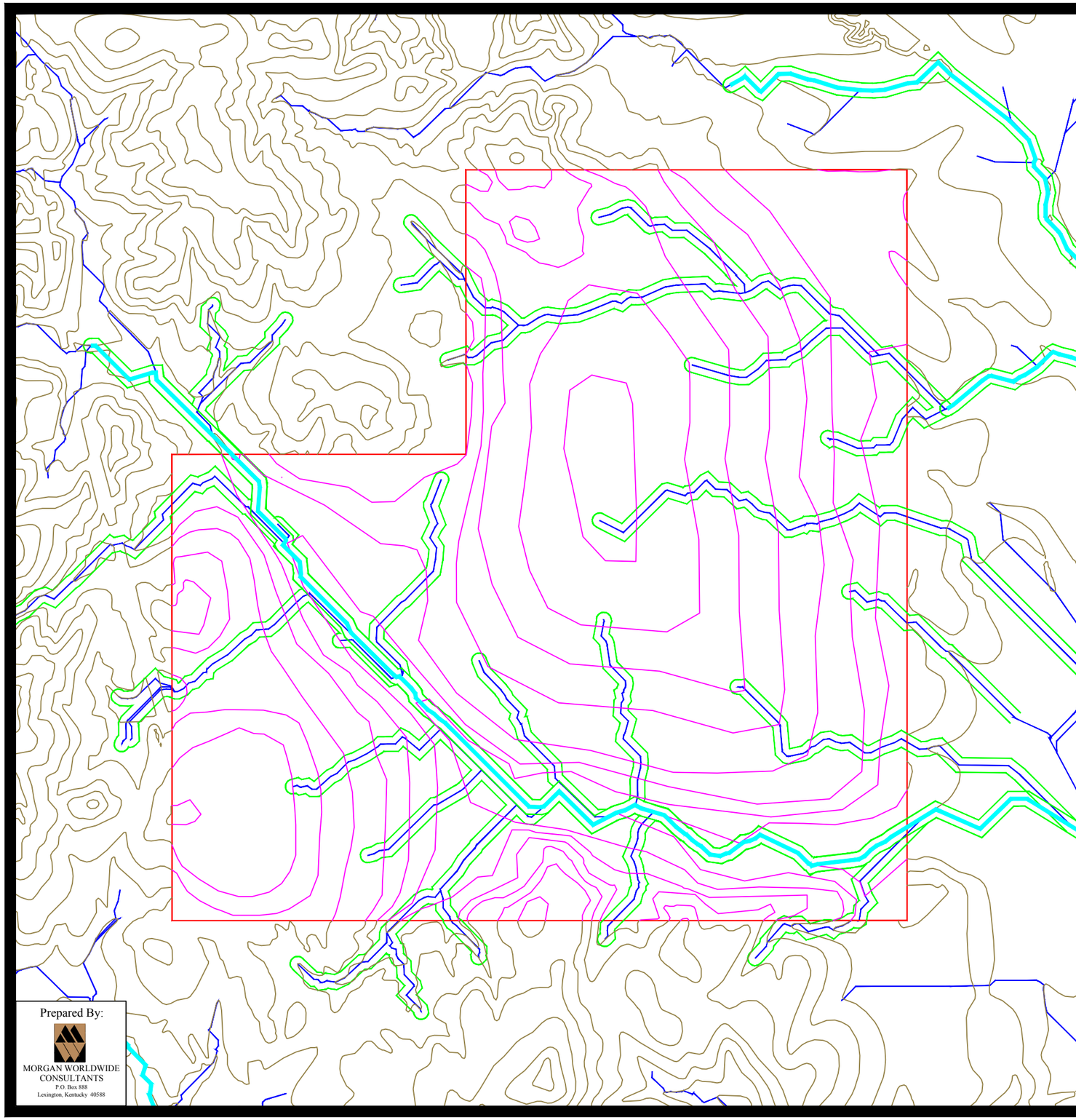
- Original Topography (10 ft Ctrs)
- Generated Streams-Ephemeral (21.8 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Post-Mining Topography

Gulf Coast Region

Surface Area Mine Alternative 4

Scale 1"=1500'

0 — 1500 feet



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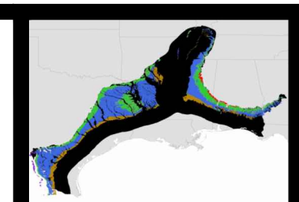
Alternative 5

- 3.3 million tpy mined
- 40.7 million tons coal resource
- 10.3:1 mining ratio
- 1,988 disturbed acres
- Stream Impacts:
  - 54,904 ft ephemeral stream mined through
  - 12,611 ft hydrologically defined intermittent stream mined through



Legend

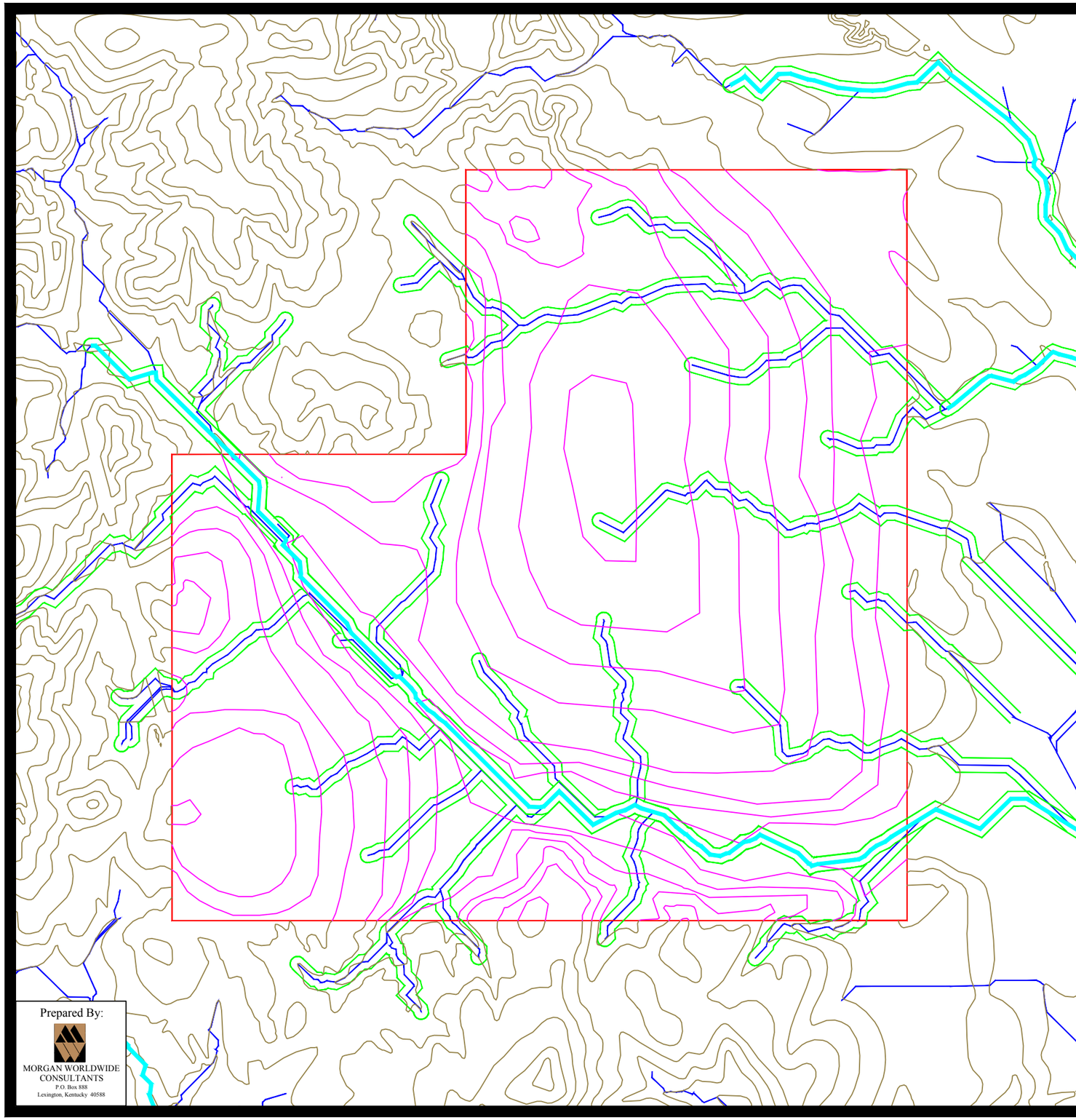
- Original Topography (10 ft Ctrs)
- Generated Streams-Intermittent (1 sq mi drainage definition)
- Generated Streams-Ephemeral (21.8 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Post-Mining Topography

Gulf Coast Region

Surface Area Mine Alternative 5

Scale 1"=1500'

0 1500 feet



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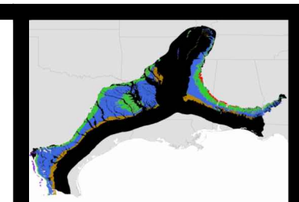
Alternative 6

- 3.3 million tpy mined
- 40.7 million tons coal resource
- 10.3:1 mining ratio
- 1,988 disturbed acres
- Stream Impacts:
  - 54,904 ft ephemeral stream mined through
  - 12,611 ft hydrologically defined intermittent stream mined through



Legend

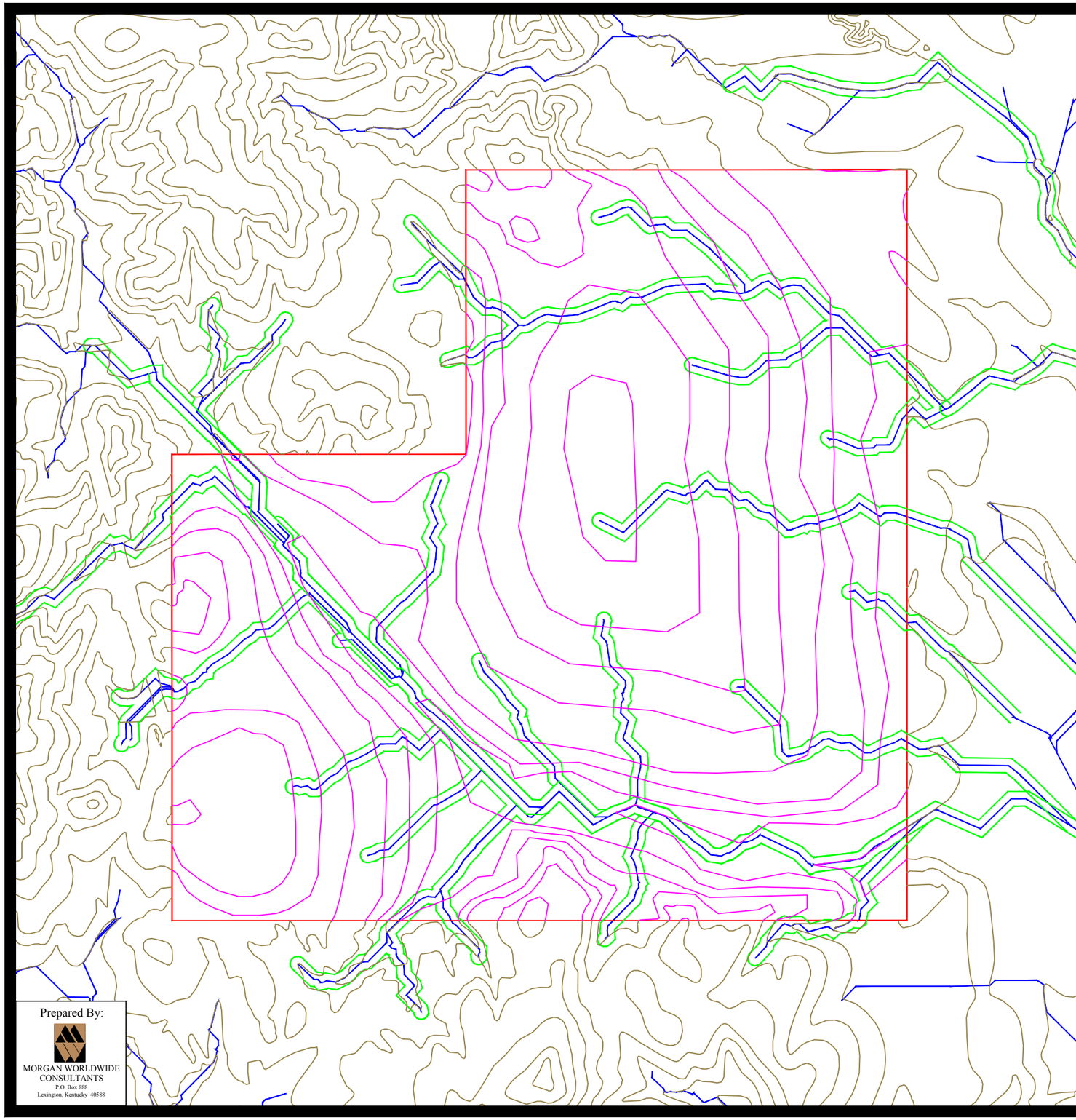
- Original Topography (10 ft Ctrs)
- Generated Streams-Intermittent (1 sq mi drainage definition)
- Generated Streams-Ephemeral (21.8 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Post-Mining Topography

Gulf Coast Region

Surface Area Mine Alternative 6

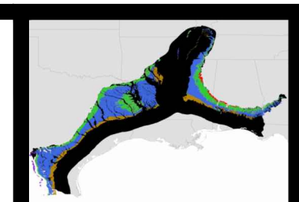
Scale 1"=1500'

0 1500 feet



Alternative 7

- 3.3 million tpy mined
- 40.7 million tons coal resource
- 10.3:1 mining ratio
- 1,988 disturbed acres
- Stream Impacts:
  - 54,904 ft ephemeral stream mined through
  - 12,611 ft hydrologically defined intermittent stream mined through



Legend

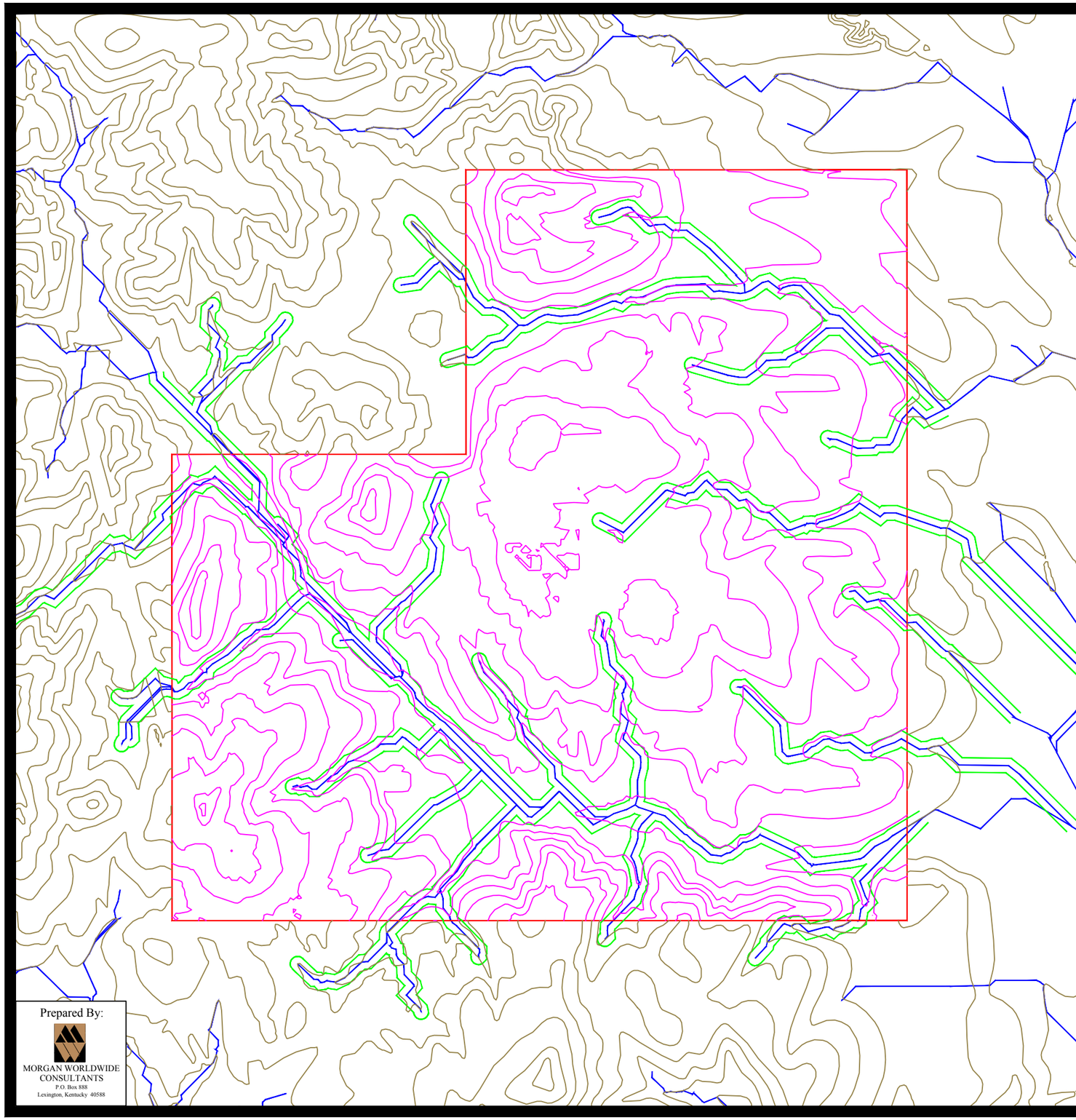
- Original Topography (10 ft Ctrs)
- Generated Streams-Ephemeral (21.8 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Post-Mining Topography

Gulf Coast Region

Surface Area Mine Alternative 7

Scale 1"=1500'

0 — 1500 feet



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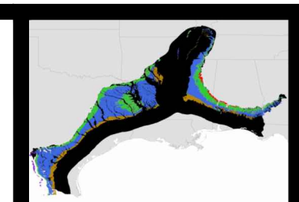
Alternative 8

- 3.3 million tpy mined
- 40.7 million tons coal resource
- 10.3:1 mining ratio
- 1,988 disturbed acres
- Stream Impacts:
  - 54,904 ft ephemeral stream mined through
  - 12,611 ft hydrologically defined intermittent stream mined through



Legend

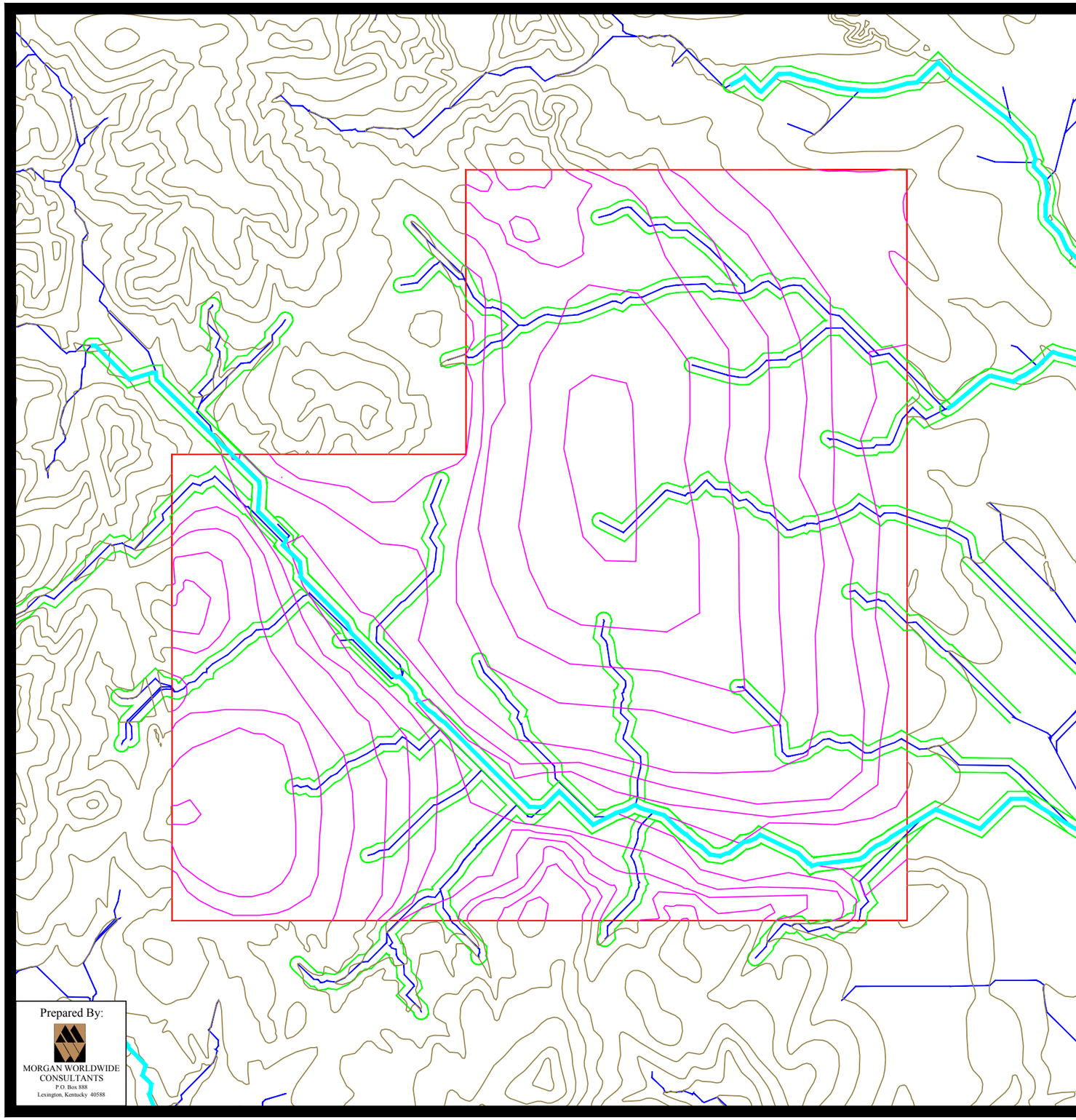
- Original Topography (10 ft Ctrs)
- Generated Streams-Ephemeral (21.8 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Post-Mining Topography

Gulf Coast Region

Surface Area Mine Alternative 8

Scale 1"=1500'

0 1500 feet



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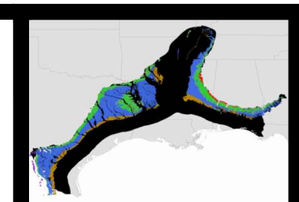
Alternative 9

- 3.3 million tpy mined
- 40.7 million tons coal resource
- 10.3:1 mining ratio
- 1,988 disturbed acres
- Stream Impacts:
  - 54,904 ft ephemeral stream mined through
  - 12,611 ft hydrologically defined intermittent stream mined through



Legend

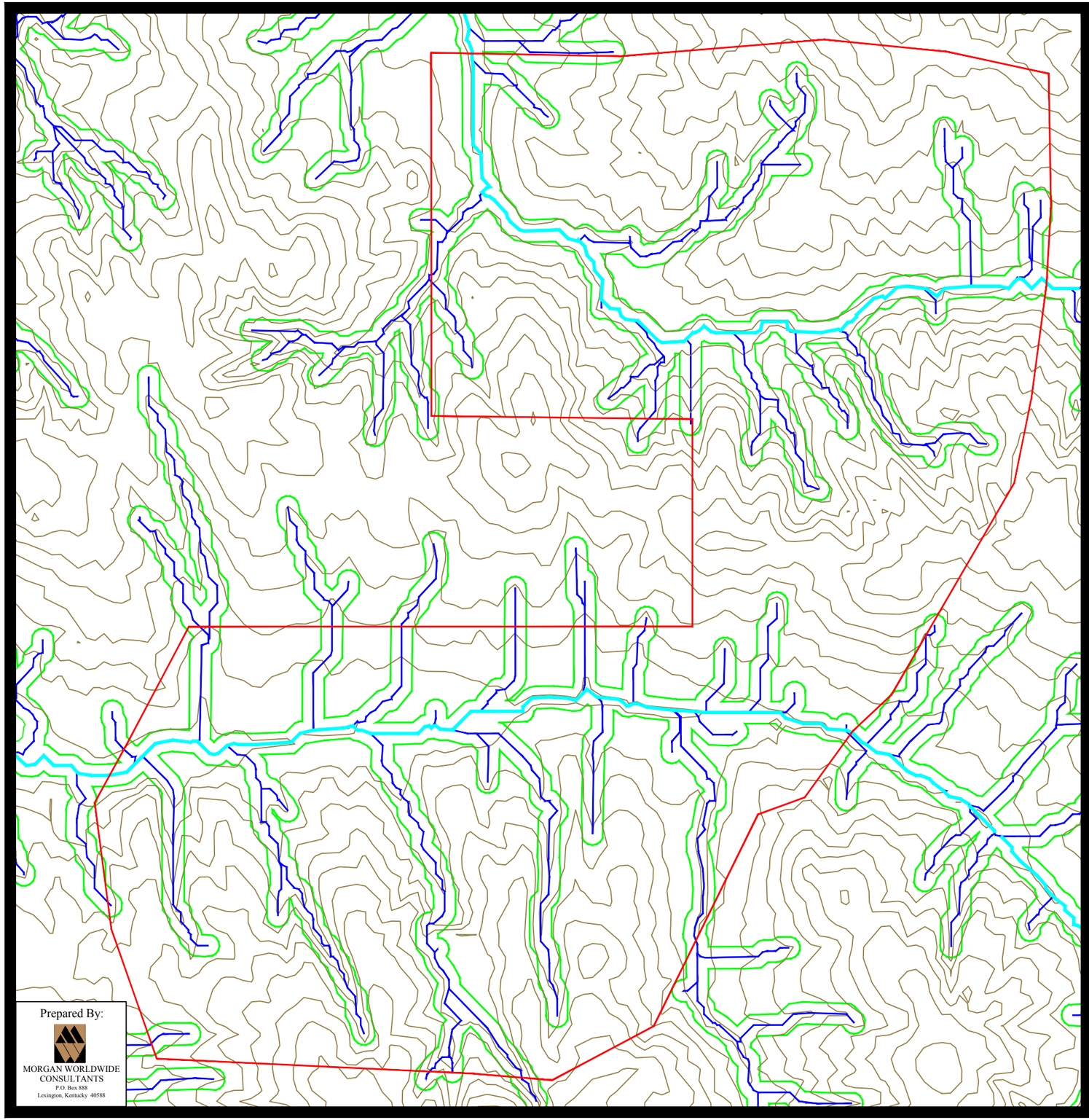
- Original Topography (10 ft Ctrs)
- Generated Streams-Intermittent (1 sq mi drainage definition)
- Generated Streams-Ephemeral (21.8 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Post-Mining Topography

Gulf Coast Region

Surface Area Mine Alternative 9

Scale 1"=1500'

0 1500 feet



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Pre-Mining

- 10 ft contours taken from USGS Seamless Server
- 7.4 acre ephemeral drainage requirement based on original streams delineated within permit files. Streams were generated based on drainage requirement until stream length was within 1% of the streams sampled from the permit file. This drainage requirement was then applied to the sample mine topography to generate the final streams.

Legend

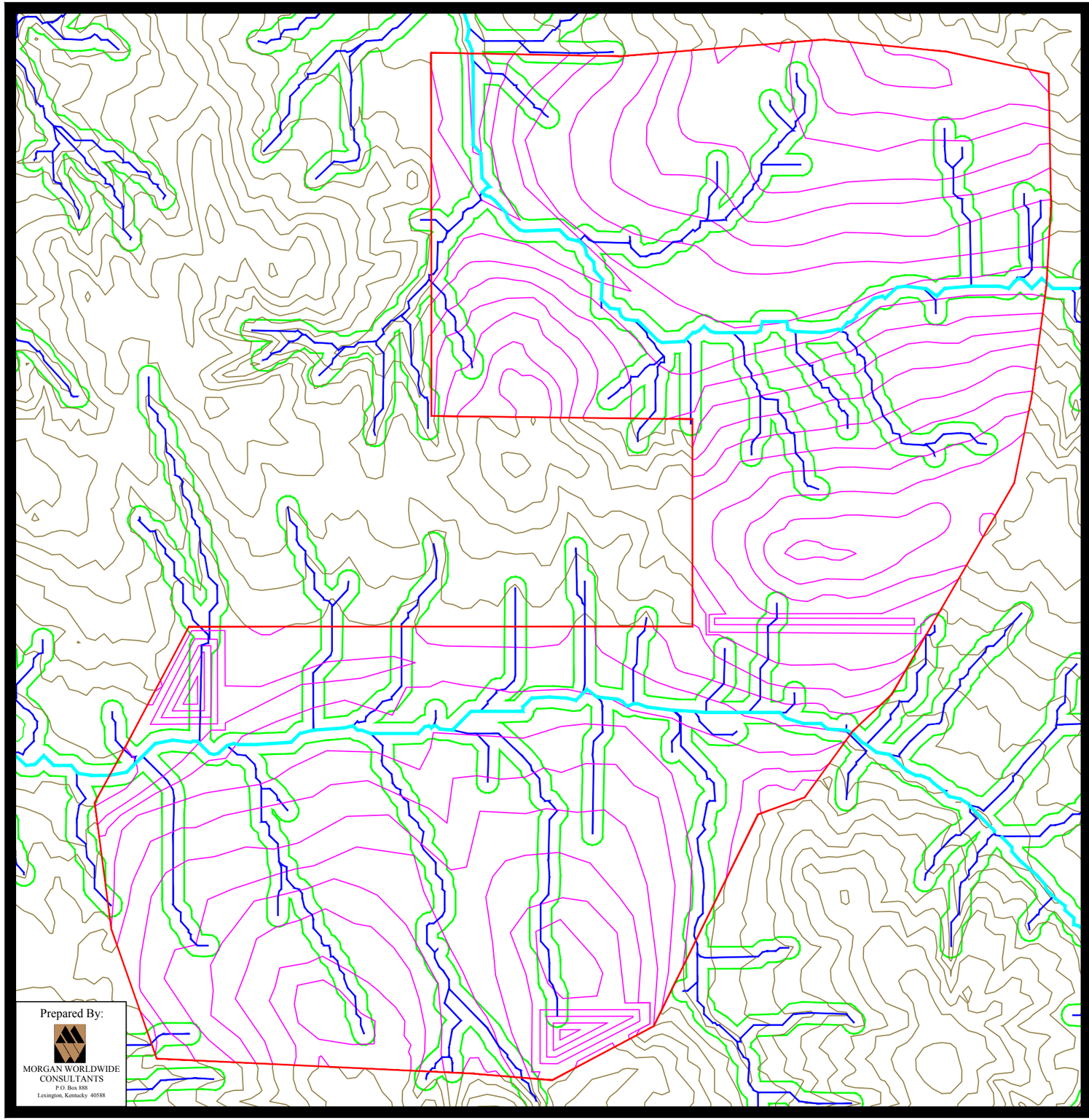
- Original Topography (10 ft Ctrs)
- Generated Streams-Intermittent (hydraulically defined)
- Generated Streams-Ephemeral (7.4 acre drainage)
- 100 ft stream offset
- Mineral Removal Area

Illinois Basin Region

Surface Area Mine Pre-Mining

Scale 1"=1000'

0 1000 feet



Alternative 1

- 1 million tpy mined
- 12 million tons coal resource
- 15.5:1 mining ratio
- 1,067 disturbed acres
- Stream Impacts:
  - 48,809 ft ephemeral stream mined through
  - 15,140 ft hydrologically defined intermittent stream mined through

Legend

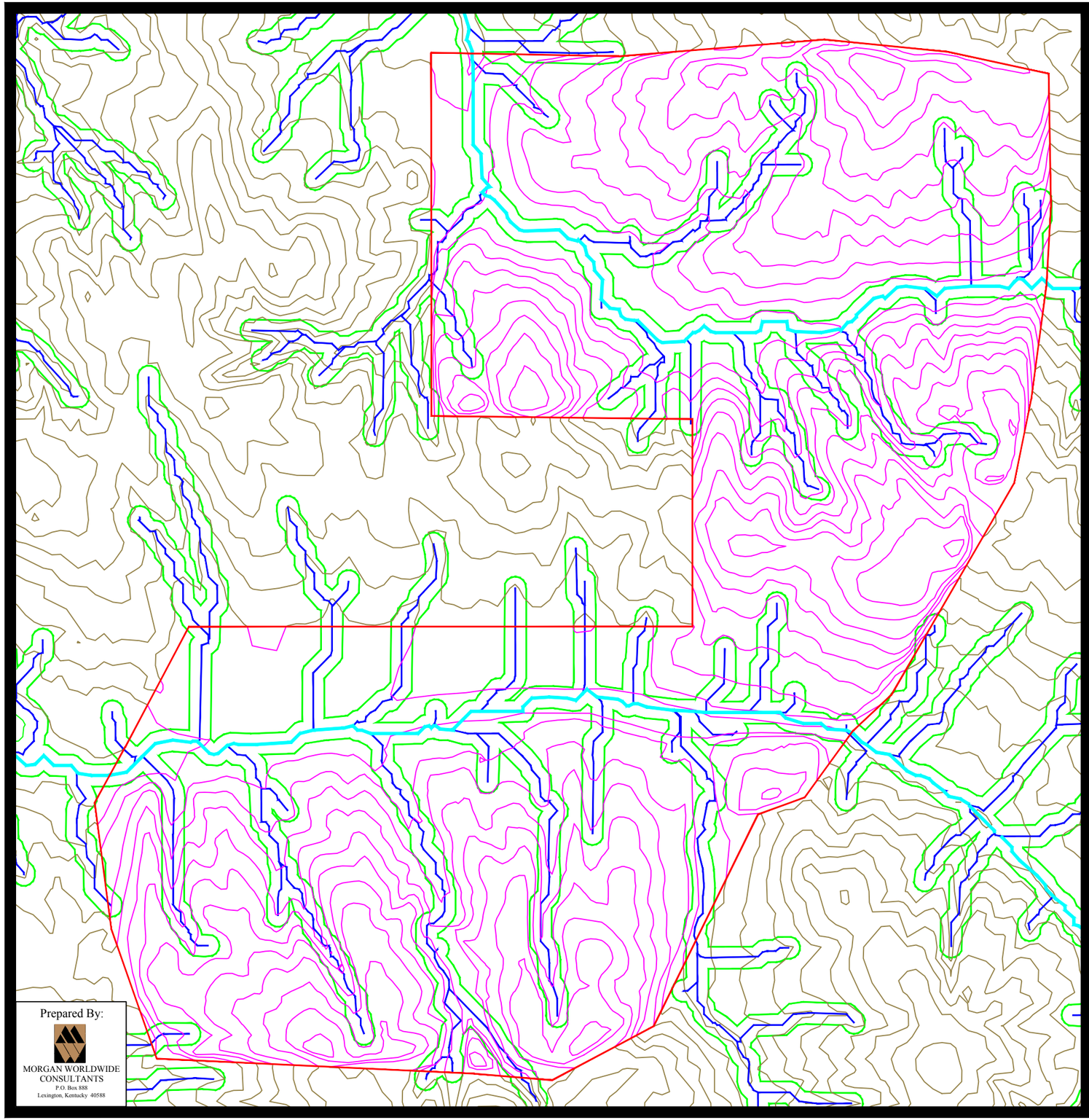
- Original Topography (10 ft Ctrs)
- Generated Streams-Intermittent (hydraulically defined)
- Generated Streams-Ephemeral (7.4 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Post-Mining Topography

Illinois Basin Region

Surface Area Mine Alternative 1

Scale 1"=1000'

0 1000 feet



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Alternative 2

- 1 million tpy mined
- 12 million tons coal resource
- 15.5:1 mining ratio
- 1,067 disturbed acres
- Stream Impacts:
  - 48,809 ft ephemeral stream mined through
  - 15,140 ft hydrologically defined intermittent stream mined through

Legend

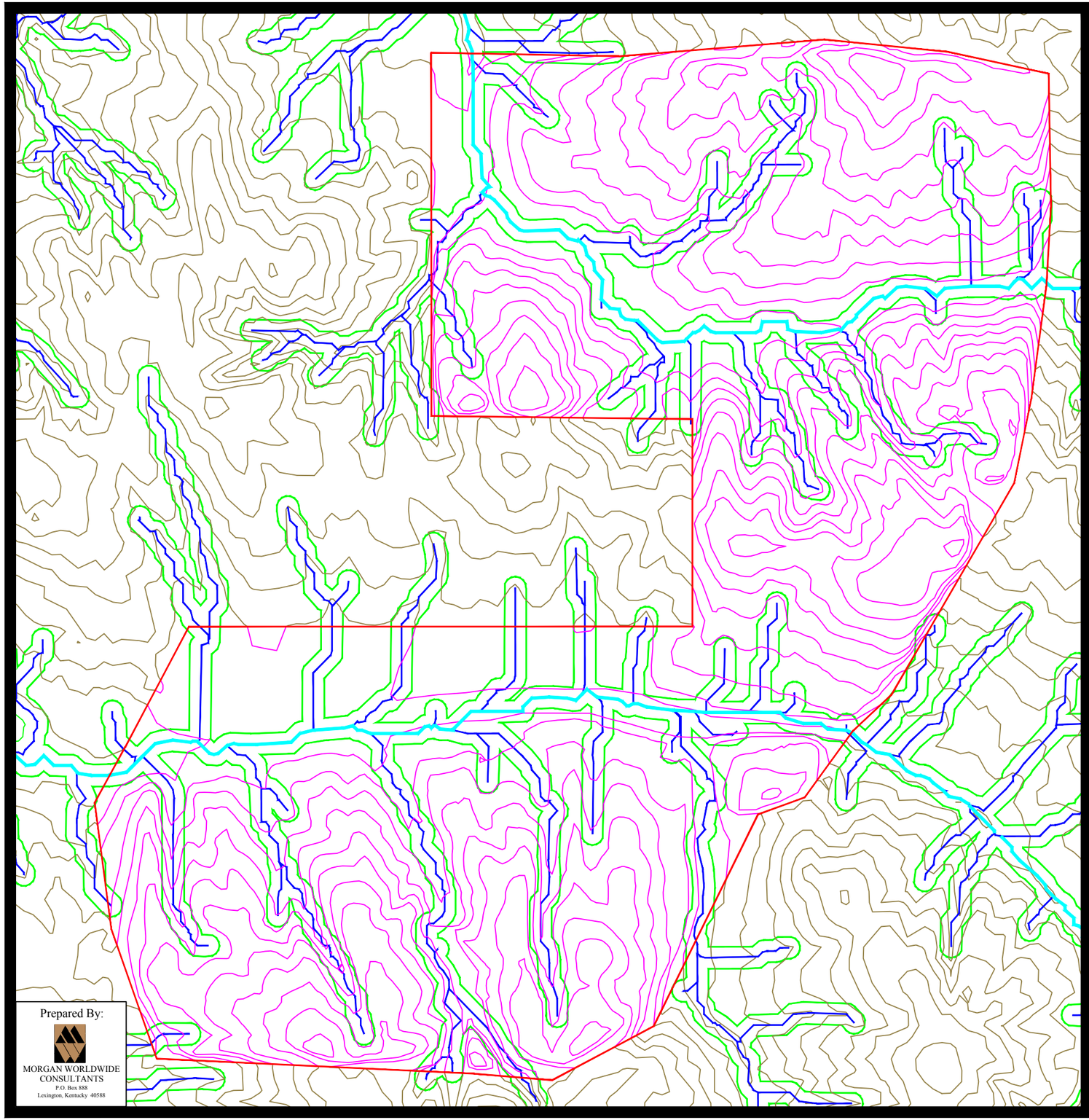
- Original Topography (10 ft Ctrs)
- Generated Streams-Intermittent (hydraulically defined)
- Generated Streams-Ephemeral (7.4 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Post-Mining Topography

Illinois Basin Region

Surface Area Mine Alternative 2

Scale 1"=1000'

0 1000 feet



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Alternative 3

- 1 million tpy mined
- 12 million tons coal resource
- 15.5:1 mining ratio
- 1,067 disturbed acres
- Stream Impacts:
  - 48,809 ft ephemeral stream mined through
  - 15,140 ft hydrologically defined intermittent stream mined through

Legend

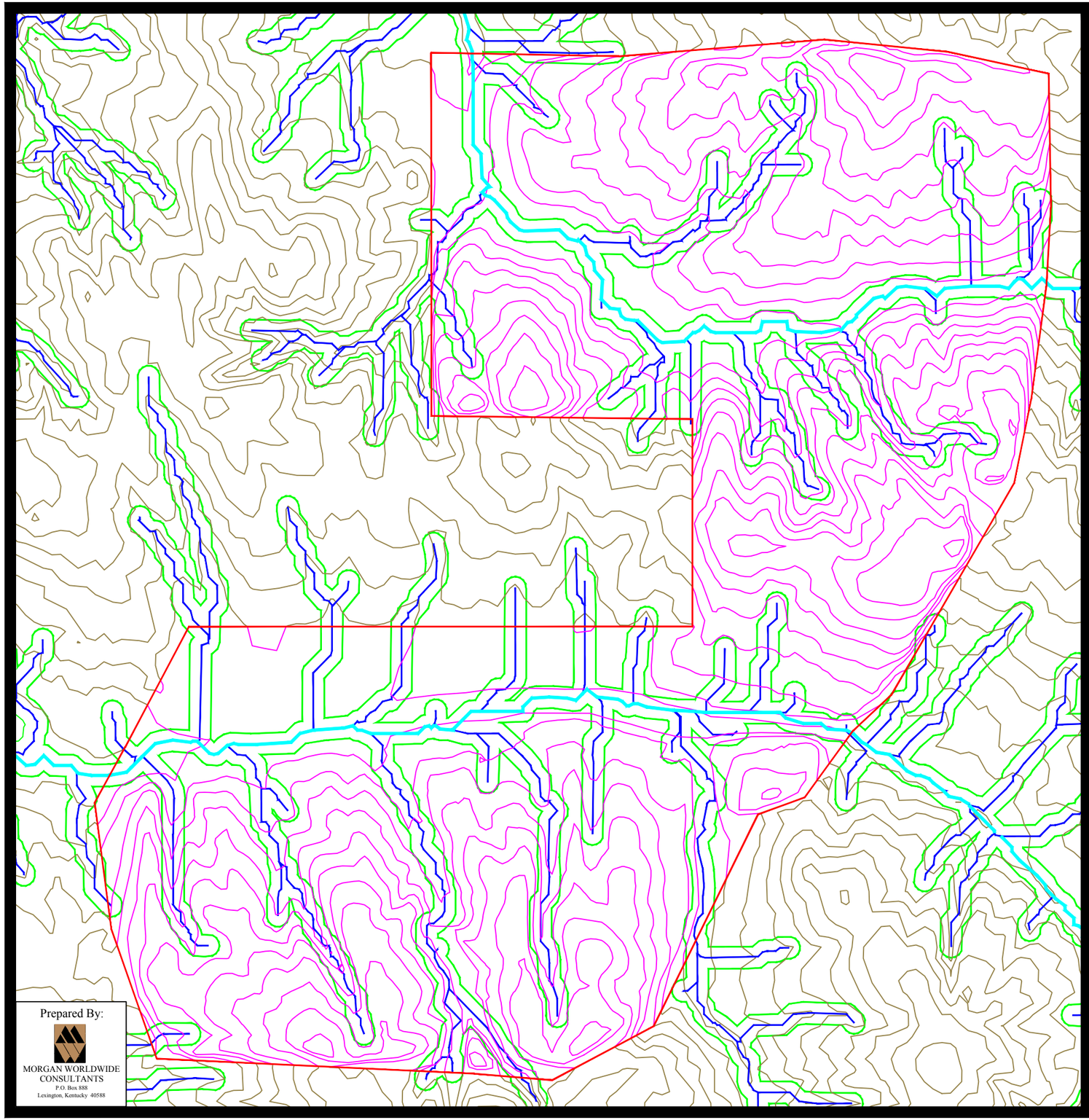
- Original Topography (10 ft Ctrs)
- Generated Streams-Intermittent (hydraulically defined)
- Generated Streams-Ephemeral (7.4 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Post-Mining Topography

Illinois Basin Region

Surface Area Mine Alternative 3

Scale 1"=1000'

0 1000 feet



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Alternative 4

- 1 million tpy mined
- 12 million tons coal resource
- 15.5:1 mining ratio
- 1,067 disturbed acres
- Stream Impacts:
  - 48,809 ft ephemeral stream mined through
  - 15,140 ft hydrologically defined intermittent stream mined through

Legend

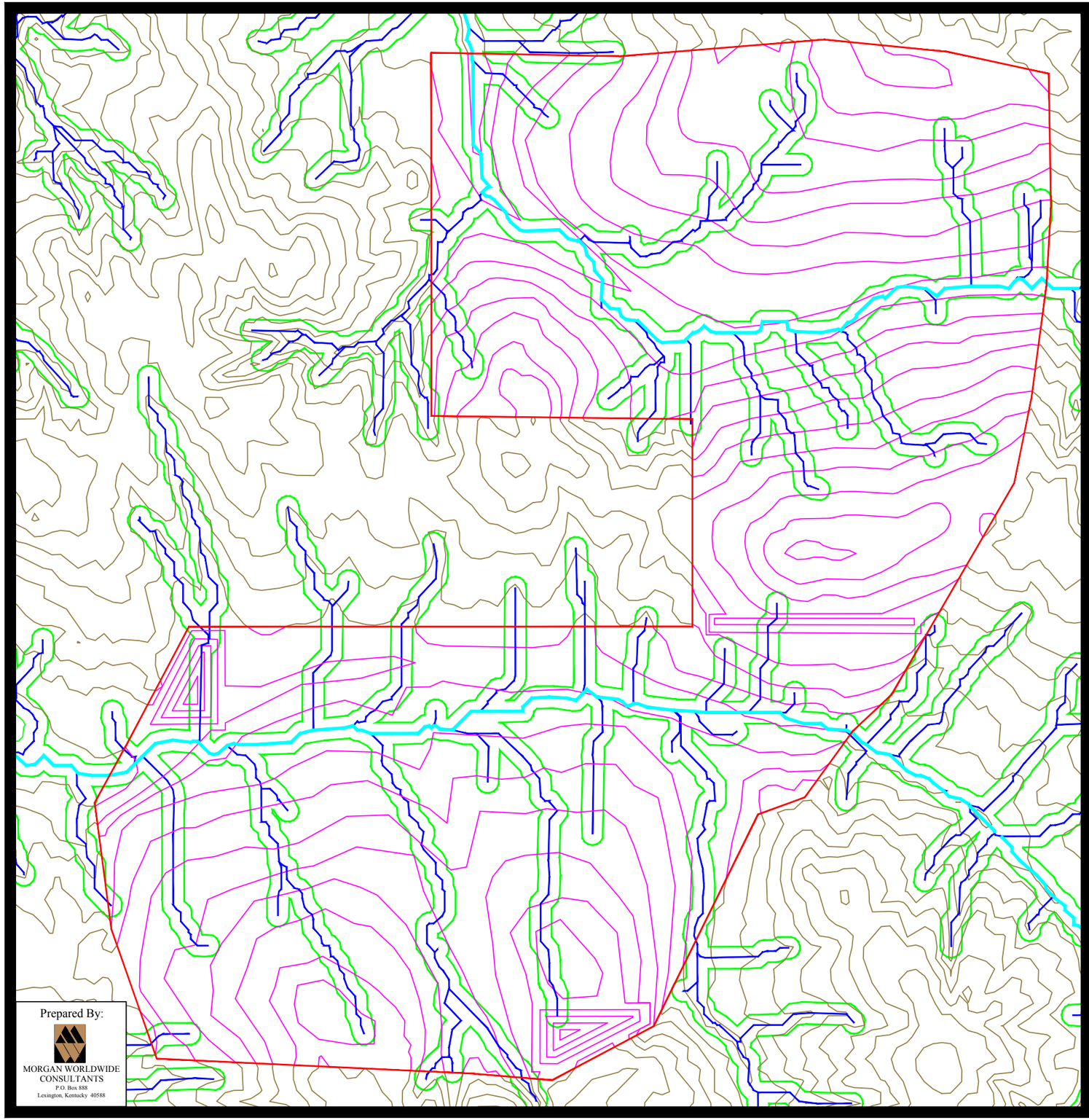
- Original Topography (10 ft Ctrs)
- Generated Streams-Intermittent (hydraulically defined)
- Generated Streams-Ephemeral (7.4 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Post-Mining Topography

Illinois Basin Region

Surface Area Mine Alternative 4

Scale 1"=1000'

0 1000 feet



Alternative 5

- 1 million tpy mined
- 12 million tons coal resource
- 15.5:1 mining ratio
- 1,067 disturbed acres
- Stream Impacts:
  - 48,809 ft ephemeral stream mined through
  - 15,140 ft hydrologically defined intermittent stream mined through

Legend

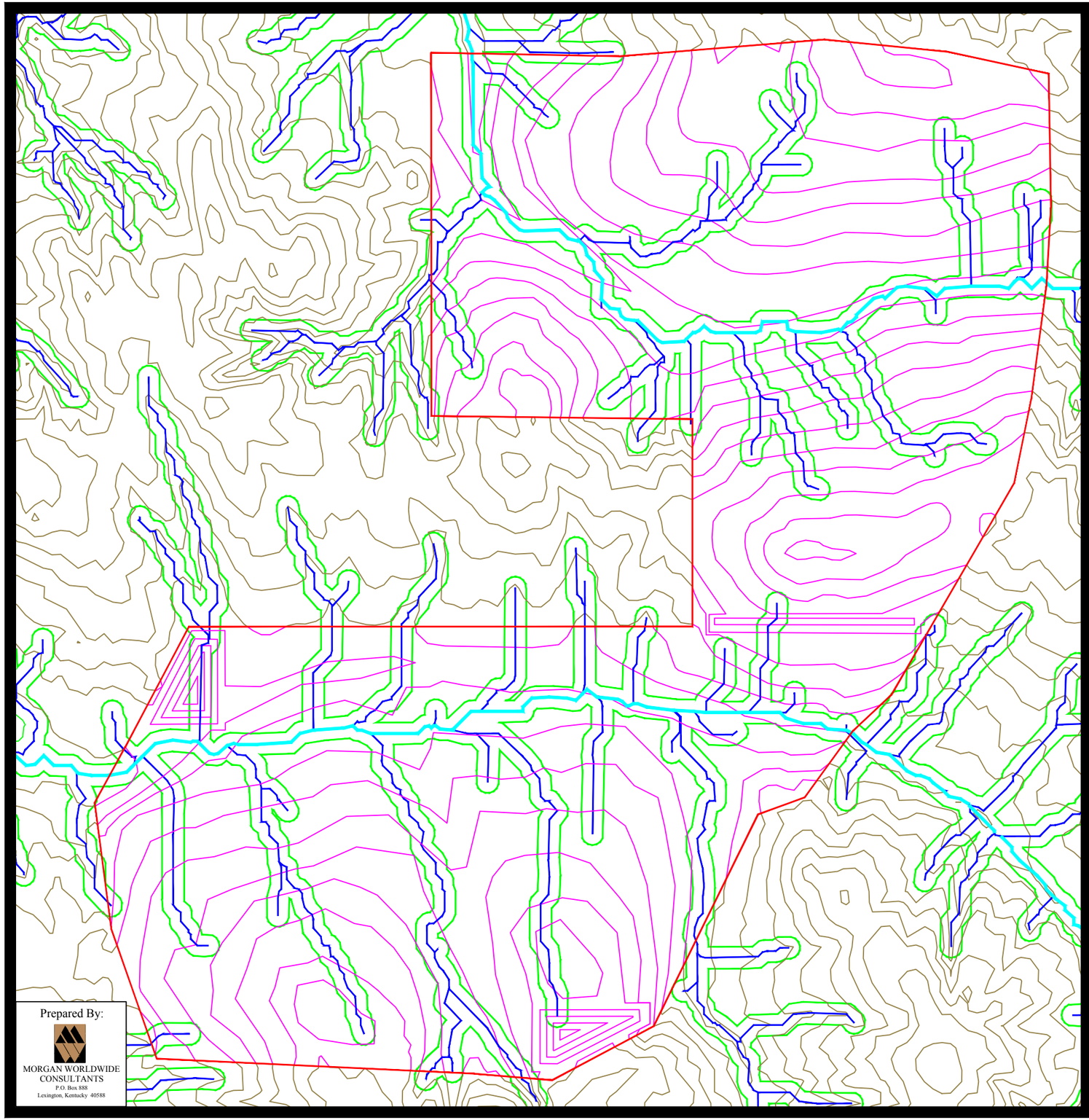
- Original Topography (10 ft Ctrs)
- Generated Streams-Intermittent (hydraulically defined)
- Generated Streams-Ephemeral (7.4 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Post-Mining Topography

Illinois Basin Region

Surface Area Mine Alternative 5

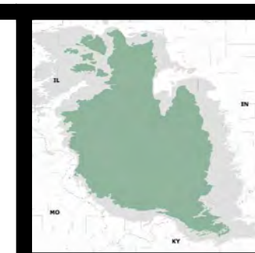
Scale 1"=1000'

0 1000 feet



Alternative 6

- 1 million tpy mined
- 12 million tons coal resource
- 15.5:1 mining ratio
- 1,067 disturbed acres
- Stream Impacts:
  - 48,809 ft ephemeral stream mined through
  - 15,140 ft hydrologically defined intermittent stream mined through



Legend

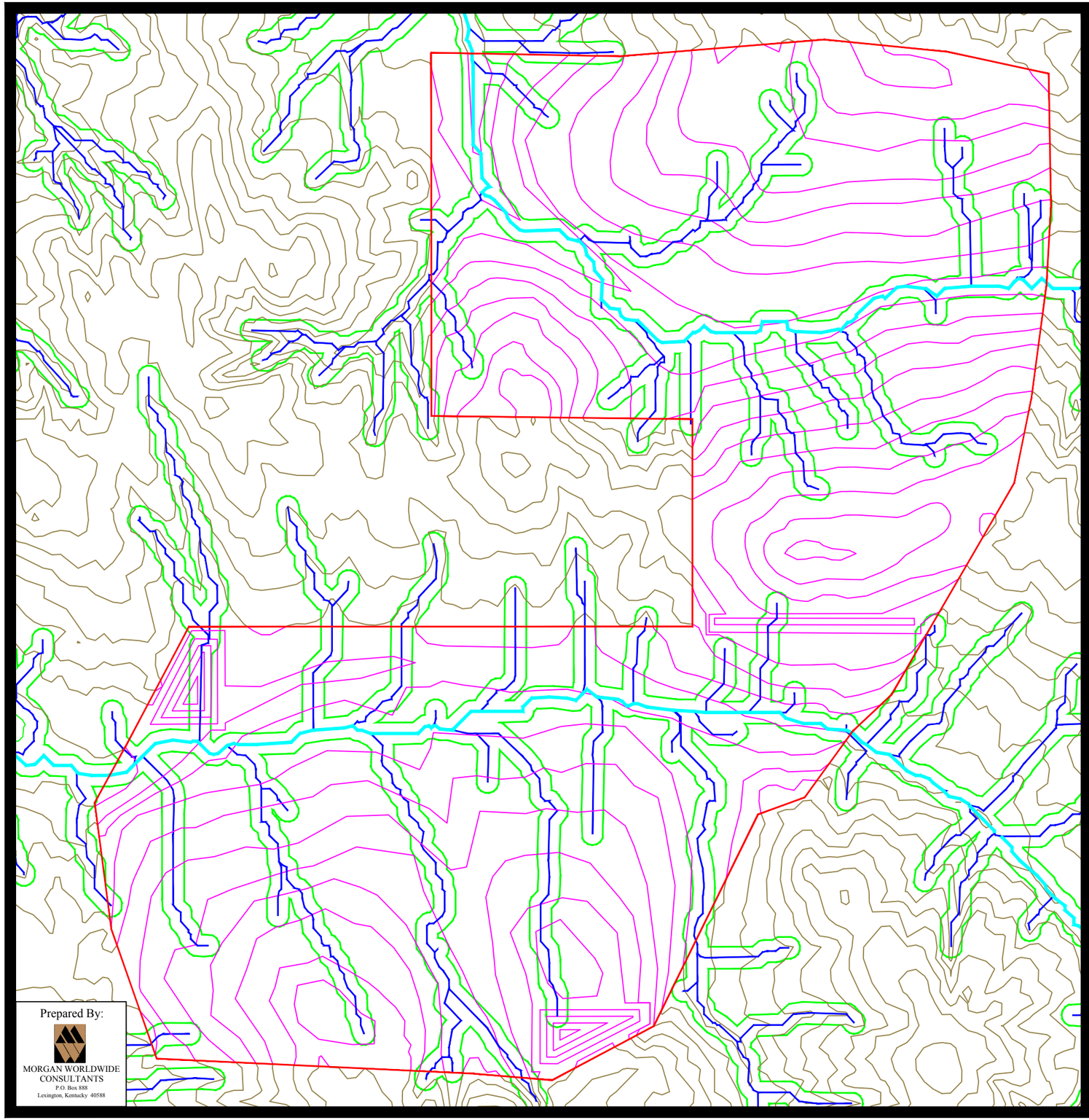
- Original Topography (10 ft Ctrs)
- Generated Streams-Intermittent (hydraulically defined)
- Generated Streams-Ephemeral (7.4 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Post-Mining Topography

Illinois Basin Region

Surface Area Mine Alternative 6

Scale 1"=1000'

0 1000 feet



Alternative 7

- 1 million tpy mined
- 12 million tons coal resource
- 15.5:1 mining ratio
- 1,067 disturbed acres
- Stream Impacts:
  - 48,809 ft ephemeral stream mined through
  - 15,140 ft hydrologically defined intermittent stream mined through

Legend

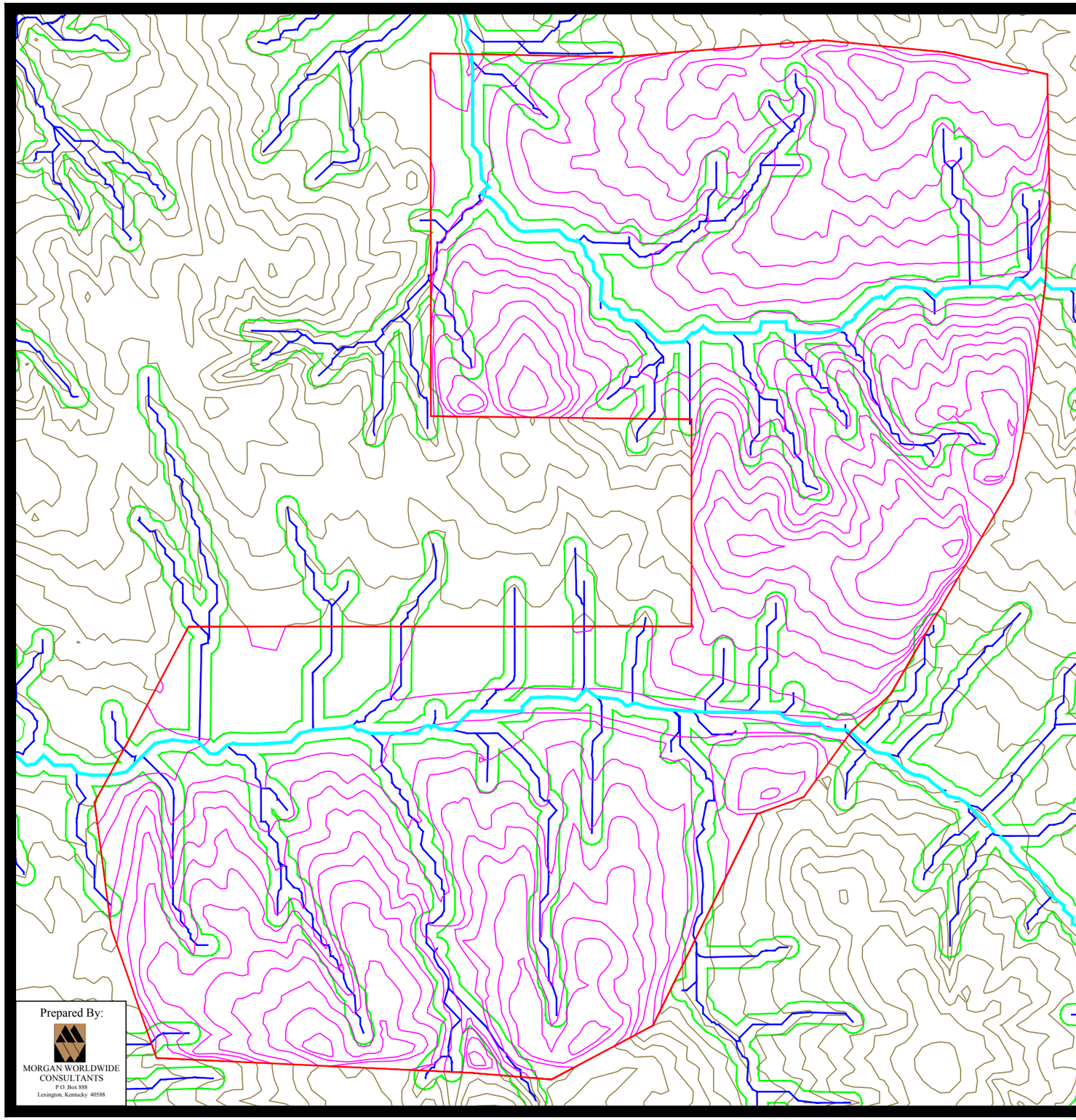
- Original Topography (10 ft Ctrs)
- Generated Streams-Intermittent (hydraulically defined)
- Generated Streams-Ephemeral (7.4 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Post-Mining Topography

Illinois Basin Region

Surface Area Mine Alternative 7

Scale 1"=1000'

0 1000 feet



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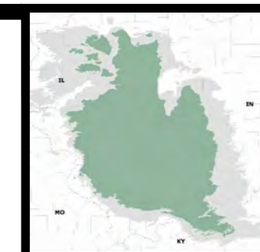
Alternative 8

- 1 million tpy mined
- 12 million tons coal resource
- 15.5:1 mining ratio
- 1,067 disturbed acres
- Stream Impacts:
  - 48,809 ft ephemeral stream mined through
  - 15,140 ft hydrologically defined intermittent stream mined through



Legend

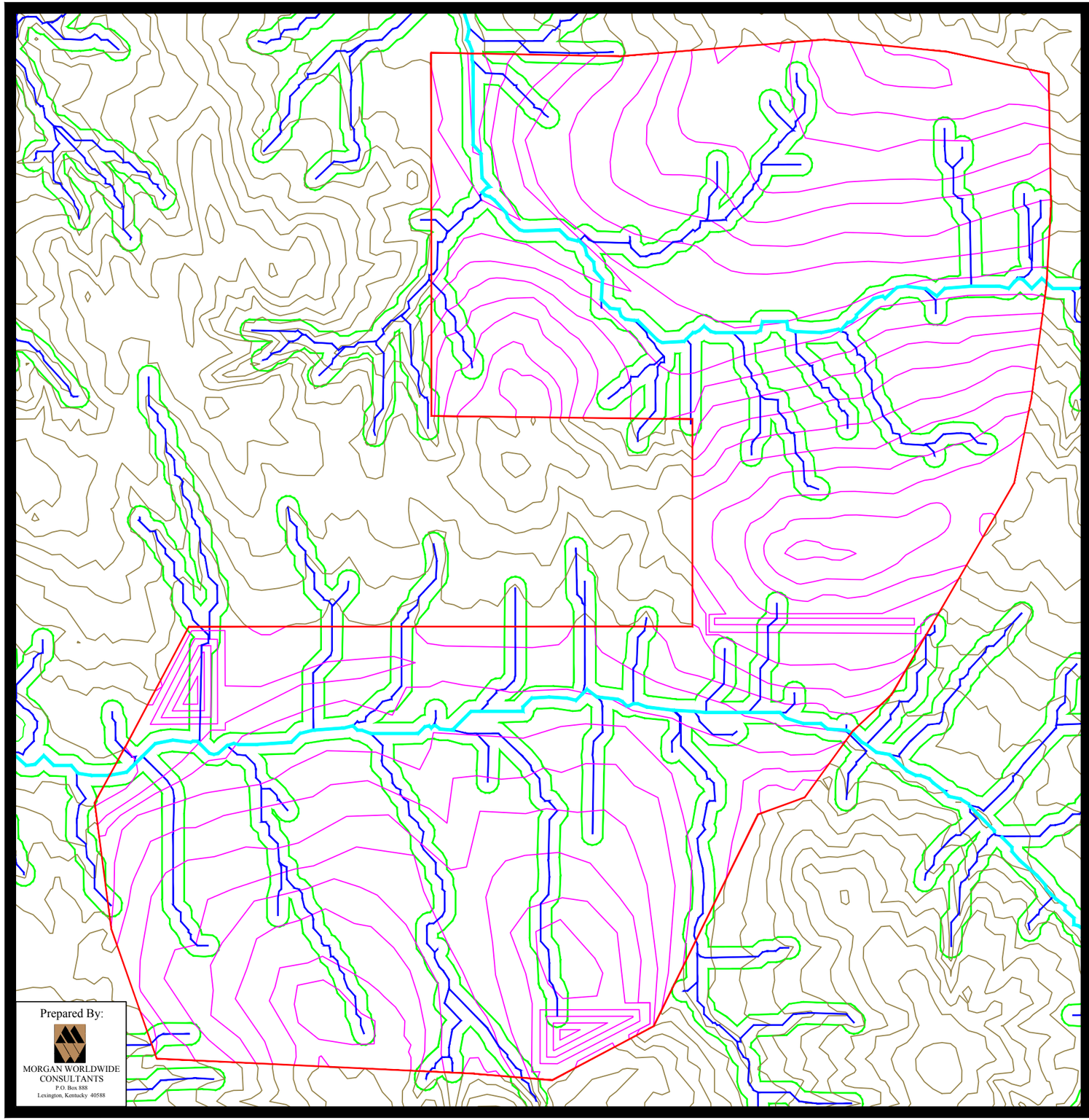
- Original Topography (10 ft Ctrs)
- Generated Streams-Intermittent (hydraulically defined)
- Generated Streams-Ephemeral (7.4 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Post-Mining Topography

Illinois Basin Region

Surface Area Mine Alternative 8

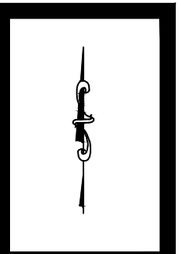
Scale 1"=1000'

0 1000 feet



Alternative 9

- 1 million tpy mined
- 12 million tons coal resource
- 15.5:1 mining ratio
- 1,067 disturbed acres
- Stream Impacts:
  - 48,809 ft ephemeral stream mined through
  - 15,140 ft hydrologically defined intermittent stream mined through



Legend

- Original Topography (10 ft Ctrs)
- Generated Streams-Intermittent (hydraulically defined)
- Generated Streams-Ephemeral (7.4 acre drainage)
- 100 ft stream offset
- Mineral Removal Area
- Post-Mining Topography

Illinois Basin Region

Surface Area Mine Alternative 9

Scale 1"=1000'

0 1000 feet