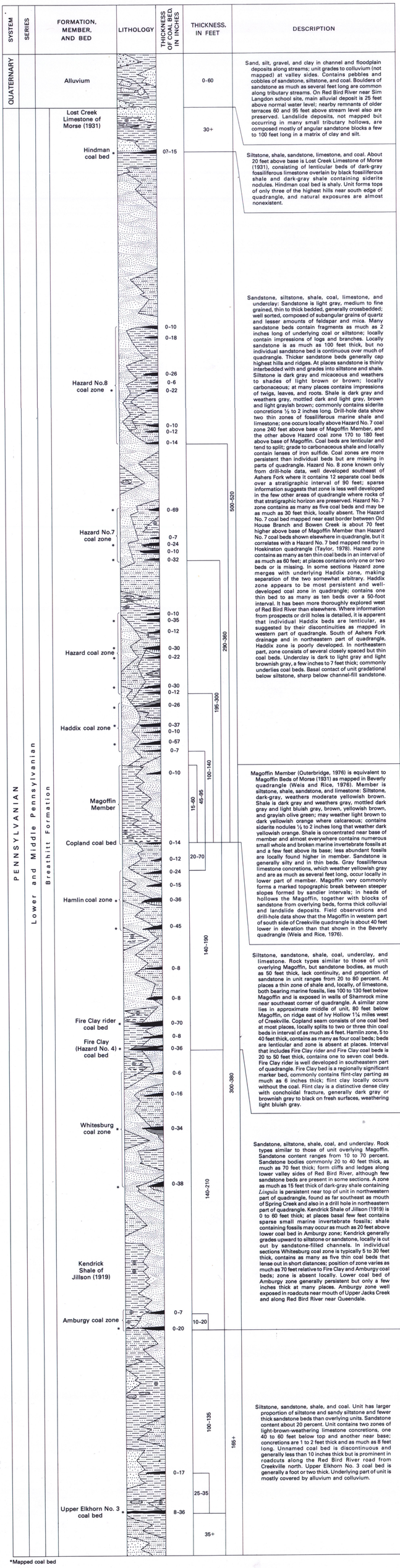
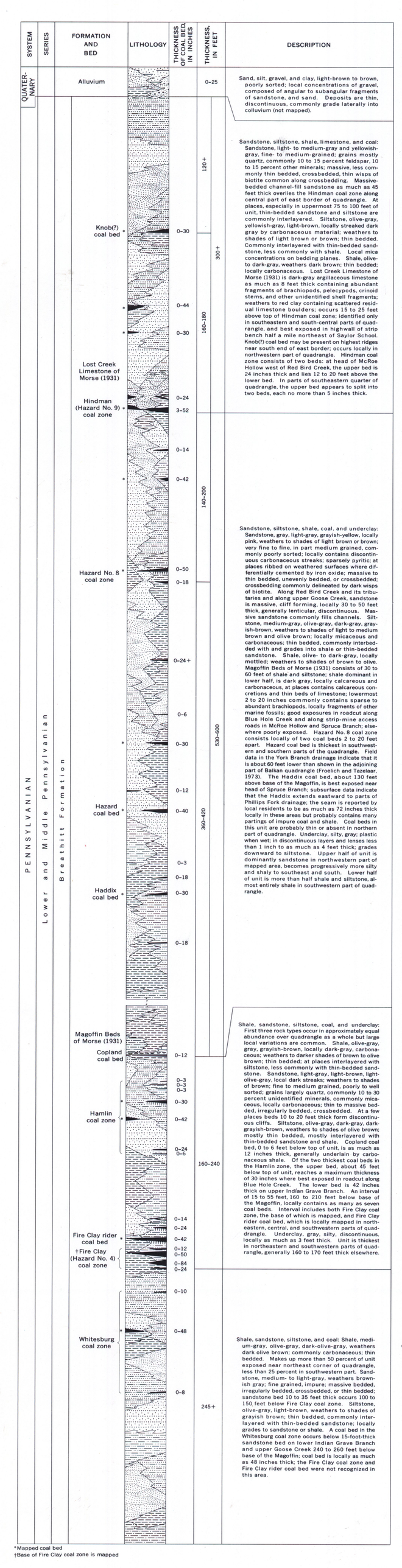


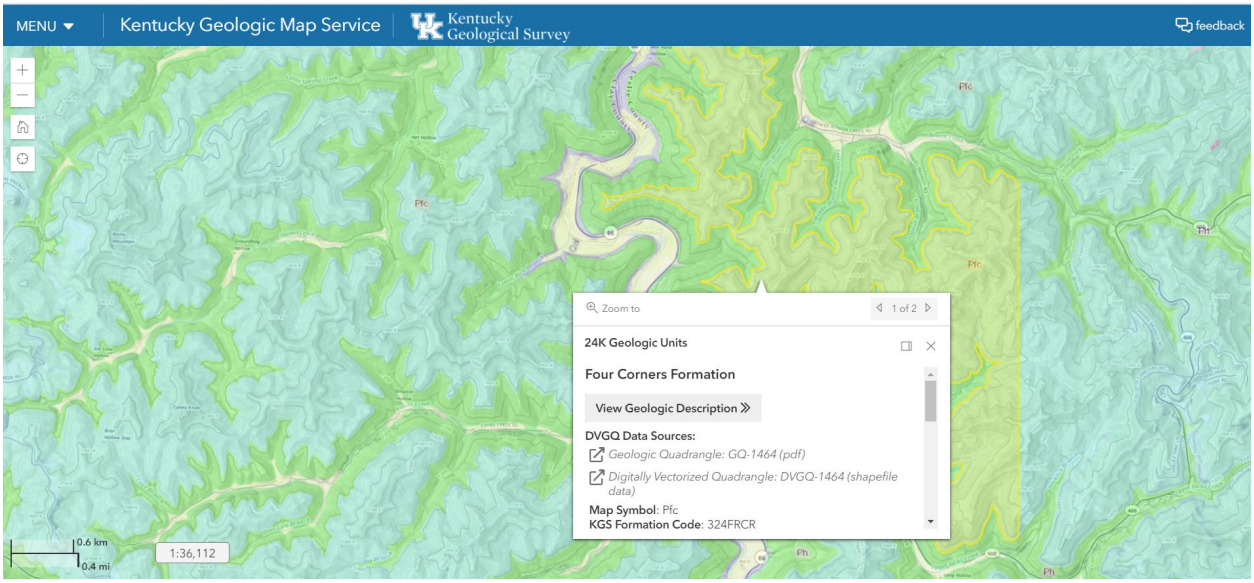
*Mapped coal bed



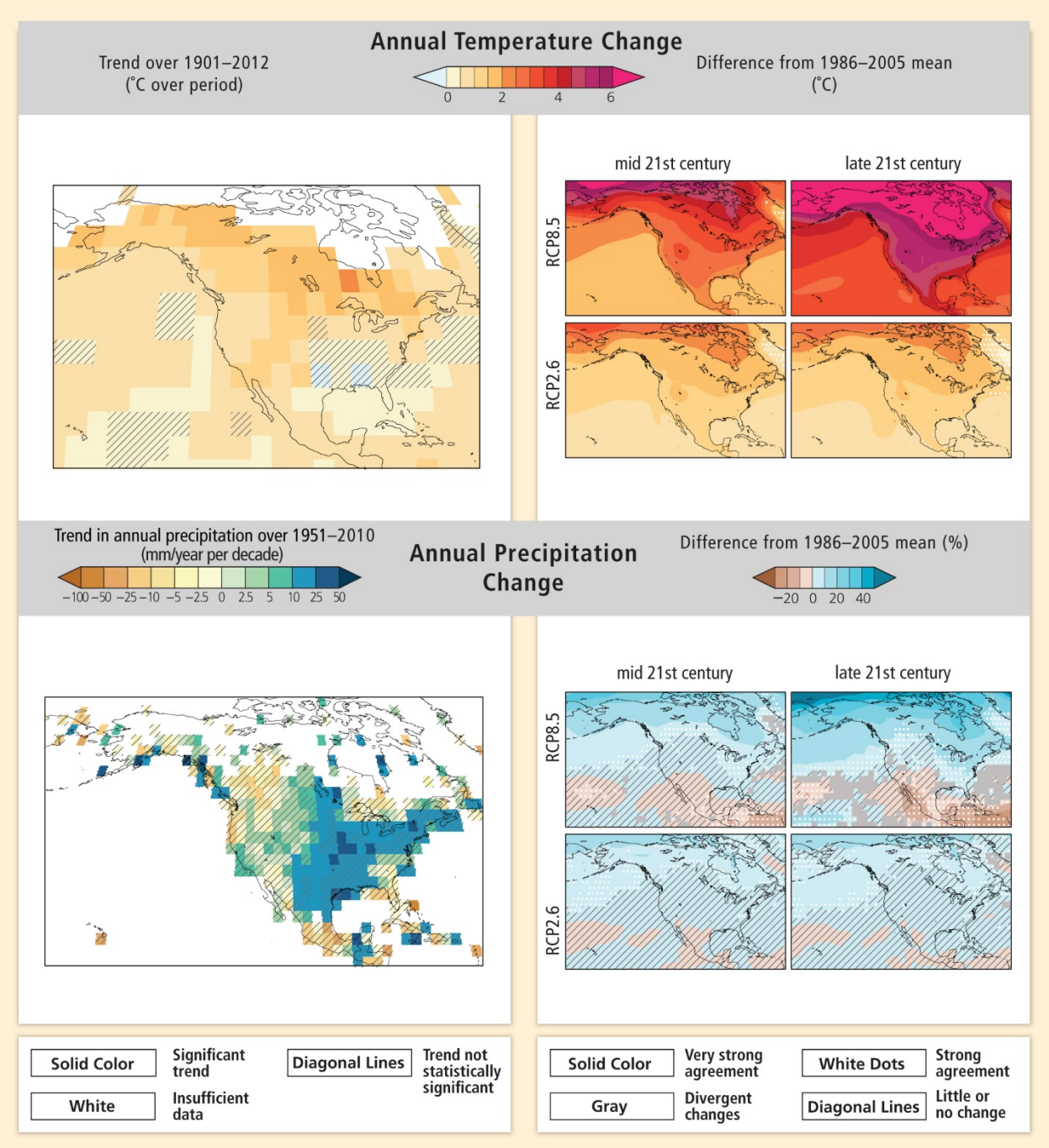
*Mapped coal bed

†Base of Fire Clay coal zone is mapped

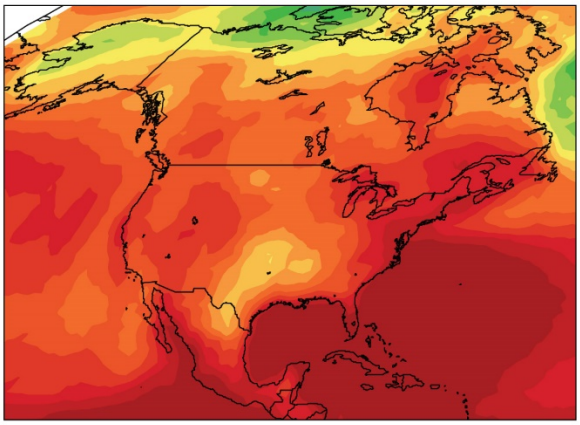
Kentucky Geological Survey Kentucky Geologic Map Service, located at https://kgs.uky.edu/kygeode/geomap/ and accessed October 1, 2020

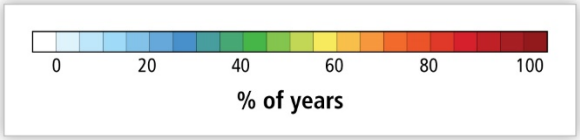


Romero-Lankao, P., J.B. Smith, D.J. Davidson, N.S. Diffenbaugh, P.L. Kinney, P. Kirshen, P. Kovacs, and L. Villers Ruiz, 2014: North America. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1439-1498, Figures 26-3 and 26-4.

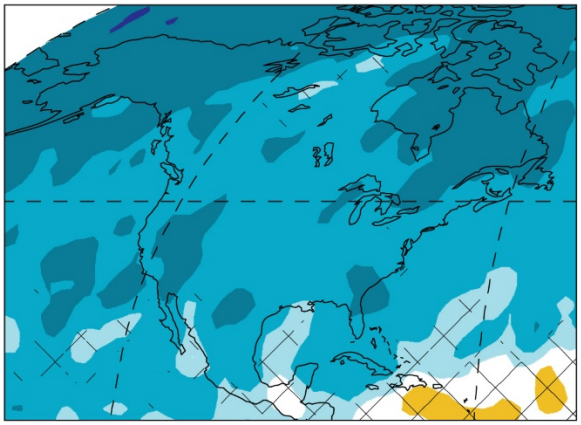


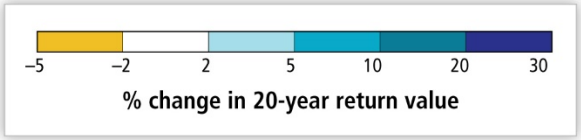
(a) Summer Extreme Hot
RCP8.5 2046–2065



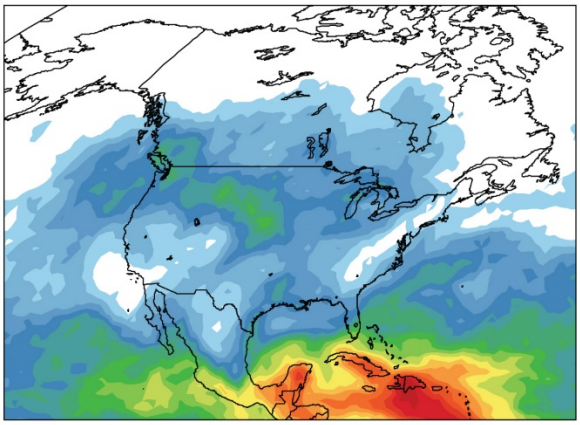


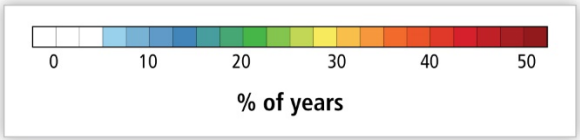
(b) Extreme Precipitation
RCP4.5 2046–2065



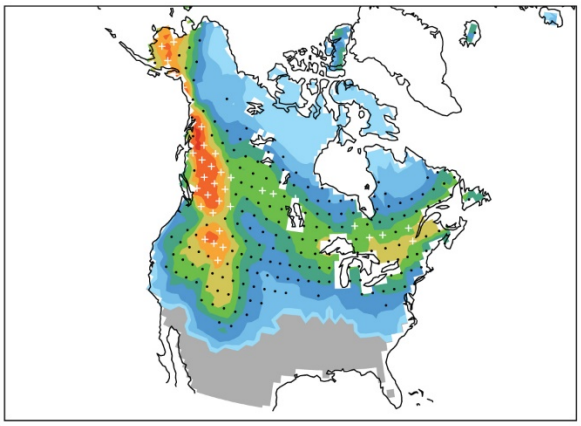


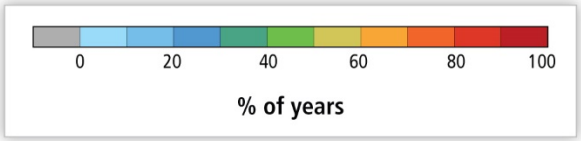
(c) Summer Extreme Dry
RCP8.5 2080–2099





(d) March Extreme Low Snow
RCP8.5 2070–2099





1/8/20 : DT, MC, Grev, JW

Unit 20

Kudzu - 7 years post-close

closed in 12 ; ~~[illegible]~~

JW has been ripping the landings

deeper the better → working

down here, deep soils

Shelterwood w/ reserves

~~2 age Shelter~~ most around here

of treatment

Often overwood not removal →

10 - 20 RBA

7 yrs

↳ b/c most are

bat trees

NRB Project Action

strip mines were looked @ for elk

habitat

~~[illegible]~~ Public - wanted elk habit

USPAR ; sprayed; removed veg

~~but now~~

---

landslides around strip

(*) bare highwalls not recl. originally

early 60's mined ; the highwalls

slump. Wet.

Britton

grown in

140

40 -

80

80 - 280

160

Get point from Dave)

Britton Br

20/#001 of dm

perfect - no issues

Seed / mulch on h2obars

f[illegible]s seed on roads

→ no lime on skid roads

only landings

lime + fert on landing

↓ 1°

↓ 2°

Seed on slopes, not ~~flats~~ flat areas

logistically, spreading is difficult

Unit 14 – bench road

we put in road

we put in 2x's h2obars

120' buffer off ck below road

no bmp violation here

yarded to skid rd w/cable off dozer – cable log from skid down to avoid perpindic channels

no signs of offsite deposition

some gullies

→ broomsedge on RB most have fill bench – wall area. Eventually upper slump & ravel ravel.

700 John Deere
648G Skidder] – grip needed to get timber

11' 9"

h2obars & working

flat area – strip mine / bench

Jim Garvin

more seed 150 #/ac.
less fert

no mulch on trails
but on skid trails

h2obars keys

Calcareous shale

* lime landings only.

→ Shape file from us for skids

no stream sedimentation

poor soil

woolgrass broomsedge lovegrass

entire unit x ht. of bench = 3'

x no shrub / brushing on RB – too steep & h2o goes underneath

= x̄ bench ht = 7'
dist ≈ 150'] bare soil ; in reality, no erosion ... runoff but it's ... caught w/ h2obars

hav
— ... road const.

① 1/9/20

HW ↓

Wes - 30% soil exposure; based on aerial photography on Bing; no licence to use 14-15% over per Wes

JW: equip is bigger - need wider skid roads ↑ than 10%

Wes used NAIP + Bing to est 14-15% defensible # per Wes.

~~For~~ He thinks ~~it w~~ based the skids on ~~50~~ 46' wide skid.

vs. aerial photogs - widest areas are around 25' turn areas   landing a 5cume width

Freeman Wes: landings are 0.25-0.5 ac usually ~~1~~/1 landing/unit

JW: tandem trucks on KB haul logs vs Freeman was a tractor-trailer

14' Σ width of skid roads on Peabody top of cut to end of fill

② Wes: State BMP violation

2 pgs after Jim's stmt in BMP guide it says where feasible - it recognizes that roads may have to go places due to topography. Must take the entire BMP into context

KYBMPs. pg 43 - initial stmt of Jim's

p. 46 - times not feasible

Look @ old version vs new

this was done under old.

③ Wes: 70% hp for mass wasting ~~[illegible]~~ in OR

Slope analyses

Small slide where repair was done get pict from DT

- streams b/c i/m when they come together

- 65' bt road x stream @ 37°11'27" 83°34'45"

KENTUCKY HEARTWOOD

Protecting the Beauty and Wellbeing of Kentucky's Native Forests

DT: went to field; found slump & verified
(1) its there
(2) appears to the out fill from the road
(3) assuming clause variance, we did follow BMP's
(4) Cant prove it but very likely rain
(5) we do not plan for this; theres a risk
(6) we have an oblig to provide them

Robert Claybrook
Redbird District Ranger
91 Peabody Road
Big Creek, KY 40914

December 6, 2019

RE: South Redbird Wildlife Habitat Enhancement Project

Dear Ranger Claybrook,

Thank you for the opportunity to submit comments on the South Redbird Wildlife Habitat Enhancement Project (hereafter "South Redbird project"). These comments are being submitted on behalf of Kentucky Heartwood, the Center for Biological Diversity, and the Kentucky Resources Council. Commenters are deeply concerned about the environmental impacts posed by this project. Our concerns are grouped in four main sections. Section 1 details our concerns relating to soil and water resources, including impacts to aquatic habitats and federally-listed aquatic species and critical habitat. Section 2 details our concerns related to interior forest, old-growth, and other silvicultural issues. Section 3 addresses invasive species, and Section 4 addresses oak regeneration, early seral habitat, and the range of alternatives.

Section 1: Soil and Water Resources

I. Logging Activities Can Cause Significant Erosion and Sedimentation

Logging can have significant adverse impacts on the aquatic environment. Logging activities can a water chemistry, flow, temperature, and nutrient and sediment transport, and can interfere with no watershed functioning.[1] Logging has multiple direct and indirect negative effects on aquatic biot across taxa. Erosion from poor forestry practices degrades water quality.[2]

Ground-based timber harvesting and road building can significantly increase erosion and sedimentation.[3] Road systems can contribute to rill and gully erosion, at the outlet of cross-r

---

[1] Folkerts, G.W. 1997. State and fate of the world's aquatic fauna. P. 1-16 In: Benz, G.W. and D.E. Collins (ec Aquatic Fauna in Peril: The Southeastern Perspective. Southeast Aquatic Research Institute Special Publicatio Design and Communications, Decatur, GA. 553 pp.

[2] Williams, J. D., M. L. Warren, K.S. Cummings, J.L. Harris, and R.J. Neves. 1993. Conservation status of the mussels of the United States and Canada. Fisheries 18(9):6-22.

[3] Megahan, W.F. and King, J.G. 2004. Erosion, sedimentation and cumulative effects in the northern Rocky Mc Ice, G.G., Stednick, J.D. eds. A century of forest and wildland watershed lessons. Bethesda, MD: Society of An Foresters: 202-222. Chapter 9; Croke, J.C. and Hairsine, P.B. 2006. Sediment delivery in managed forests: a re Environmental Review. 14: 59-87.

submissions. once done, send out to team
Kevin, Jim Wayne, DT, Marc, Wes, Cary, Randy, Peggy

Slump W ≈ 80' Σ slope length ≈ 100' est not meas

A combination of the above methods could meet the primary habitat objectives of the South Redbird project. A combination of the three management approaches above would support substantial creation and maintenance of ESH while supporting oak recruitment across the landscape. The primary obstacle to non-commercial management is of course paying for it. As the Forest Service has noted, habitat improvement work, including road and trail work, is typically paid for with timber receipts. Fortunately, the Forest Service has active partnerships with the RMEF and NWTF. According to public records, these two organizations together have around $110,000,000 in assets. They could certainly put resources toward implementing habitat management on the DBNF to benefit of their respective constituencies. Local partners like the Ruffed Grouse Society and Kentucky Division of Fish and Wildlife Resources could also help. If the Forest Service is willing to take a serious look at achieving the goals in this project through non-commercial methods with fewer environmental impacts, then we're willing to do what we can to help leverage support and funding to see this work happen.

The Forest Service needs to take a second look at this project with fresh eyes. There are too many biases and predetermined courses of action baked into to the proposal for a reasonable and informed decision to be made. Viable alternatives to the proposed action that can meet the purpose and need of the project exist, and need to be explored in detail in a revised EA.

Thank you for considering these comments.

Sincerely,

Jim Scheff

Jim Scheff, Director
Kentucky Heartwood
P.O. Box 1482
Berea, KY 40403

(10) no Δ in the perr stream upstream or d/s of this unnamed trib

(9) shallower slopes means better everything

(4) @ 37° 11' 26"
83 34' 45"

there is a landslide off the skid trail that has deposited sediment in stream

x was an existing road bed prior to sale

was 60' dist
50'

KDF BMP's on slopes >16%
p.43
100' SMZ
but classes

(7) adaptive management
this will inform decision making
• we followed BMP's
• extreme rain events

(8) This is informing us in SRB slopes less steep than here

We acknowledged this failure on SRB - less x̄ slope than here
FS has developed better planning tools

Harvested in 2016

60% slope here 40% avg there

20 percentage points

1. characteristic of landslide

(*) 2. dont go below scarp (fc) or across

3. higher BA in band above 30

50% + slopes - back off

≥35% slope extra h2obars
soil problems

Liklihood of slump or Hazard is lower than FC.

avoid if we can

---

highly erodible soils everywhere - xtra h2obars

Skid road
layout prior to sale.
(*) Careful planning
on ground ; locate skid
roads b/f
loggers hit the ground.
we can control

Diff
approach.
spec. lengths
id in advance

- equip is bigger now than b/f
- FS understood we exceeded.
- Δ approach to avoid in future

Skid roads

~~late~~ - FS Sale Admin
authorizes skid trails
on ground.
In past equip was smaller

Dist. personnel.
- that logger used ~~bigger~~
equip.

888 844 9904
2536908
~~$~~ 5280816

Kevin
& JB.

how we plan
can be done b/f
logger hits the ground.

1/13/20 CV x CC

1. here's what happened - how it failed, why it failed
2. here's how we prevent this in SRB
   how is SRB different

Coal seam

- no roads on ~~x~~ slopes or on coal seams

avoid

→ unclear in orig. spec. report if it was 10% of unit or sale. method wasn't clear so unable to det if it's 10% of unit or sale

↓	↓
it was ✓	it was ✗

if both >10% then design criteria

in SRB
✓ prevalence of Fire Clay
x Cumberland

Response to Soil and Water Comments
By Heartwood regarding the South Red Bird Project
Claudia Cotton, Ph.D.
Forest Soil Scientist
Daniel Boone National Forest

fc is major coals

Granny's Branch (Unit 18 of the Granny's Branch Sale within the Group One Project)
Field visit on 1/9/20 with JW, Gavin, Wes, David T., and Kevin

1. Landslide and BMP's:
    a. Confirmed there is a slide and sediment off of the slide next to the creek; minimal sediment in the intermittent stream; sediment is equal to that found in an adjacent undisturbed intermittent stream in neighbor watershed.
    b. Origin of landslide appears to be a combination of extreme participation events and skid road placement on a water-perching coal seam.
    c. Landslide width = 80' slope length = 100' – revised w/ Gavin & Wes
    d. 61% slope at landslide
    e. We acknowledge this failure
    f. Appears to be the outfill of the skid road
    g. We did follow BMP's, distance between road and stream was appropriate (50 feet minimum)
    h. We have an obligation to provide fiber
    i. This will inform SRB decision making: adaptive management
    j. SRB slopes are not as steep as these were, 20 percentage points less than NRB – Incorrect, State as max median
    k. Design criteria: no roads on coal seams over x % slope
    l. Shallower slopes means better everything
    m. Mac and Wes went down to Lower Jack's Branch and reported no change in the perennial stream upstream or downstream of the unnamed intermittent trib.
    n. Under the KY BMP's at the time this sale was implemented, it states on p. 54 that "In areas adjacent to intermittent streams, where possible, avoid equipment operation in a zone of at least 25' on each side of an intermittent stream.
    o. The Forest Plan calls for 50' SMZ on intermittent streams.
    p. KY State BMP's (edition that was in place when this unit was harvested, 1997, aka FOR-67) state that:
        i. (p. 49) "Where minimum distances are not possible, roads, trails, and landings can be located at less than the recommended distances but should be constructed to protect water quality."
    q. Extra waterbars were installed to overcome this exception. Waterbars are vegetated.
    r. We measured 65 horizontal feet between the skid trail and the stream.
    s. Granny's Branch is an exception that was included in the initial analysis.
    t. We did include mitigation measures.

2. 10% Soil Exposure:
    a. Per Wes, his best estimate using NAIP and BING imagery, mapped roads and field measurements is 14-15% exposure (map).
    b. Wes used NAIP and Bing map; defensible number
    c. Widest areas are around landings and turns in skid roads; 25' turn radius in some areas
    d. Big equipment was used in this unit due to slopes

e. Gavin and Wes: landings average 0.25 to 0.5 acres total; smaller than Greenwood's
f. RB typically is harvested using tandem trucks on haul roads versus Freeman Fork was tractor-trailer, requiring larger landings
g. Wes and Gavin: mean road width of skid roads (including cut banks) is 14' (top of cut to end of fill)

Lower Ulysses Branch (Unit 14, Bob's Fork Sale within the Group One Project)
Field Visit on 1/7/2020 with John Wayne Gilbert, Gavin Wilson, Bobby Claybrook, and Mac Cherry

1. Waterbars are vegetated and working properly (photo).
2. There is a 120' buffer between the lowest skid trail and the stream below
3. No signs of offsite sediment deposition.
4. There are full bench cuts for most of the roads. Full bench cut roads are necessary for this district due to the equipment needed to harvest the timber. Anecdotal and historic evidence indicates that full bench cut roads in the district eventually slump and revegetate.
5. The landslide area mentioned by KYHW on p. 11 of their comment letter for SRB was vegetated photo). This was an old auger-mine bench that left a highwall, mined in the early 1960's. The highwalls slump over time.
6. There was water moving through the area but it was ultimately being arrested and directed into the riparian buffer via the waterbars.
7. Across the area we observed, the mean embankment height from the full bench cut roads was 4 feet.
8. There are sycamores and sumac trees growing in the skid trails (photo).

Mean slope in the SRB Project area is 23%. Use Wes' slope maps for all units.

From: Cotton, Claudia A -FS
To: Bonaccorso, Kimberly J -FS
Subject: FOIA
Date: Monday, March 16, 2020 11:54:06 AM
Attachments: image001.png
image002.png
image003.png
image004.png
Field Notes.pdf

Kim,

Here is all the info I can find on Granny's Branch with regard to the information being requested by Heartwood. I have checked the dates with Kevin Beck and the District. Yellow is everything for the FOIA.

The events occurred as follows with regard to the Granny's Branch Unit (aka Group One Project Unit 18 or Granny's Branch Sale Unit 1). (This unit is referred to as Harvest Unit 18 of the Granny's Branch Sale within the Group One Project in the Soil and Water Report).

1. Purchasers seeded and mulched the unit in summer 2017 but the seed did not take due to lack of rain.
2. Jon Walker and I were informed of the excess and steep skid trails in Granny's Branch unit in July of 2017.
3. Jon Walker and I visited the site with Kevin Beck and District Personnel in July of 2017. At that time we saw exposed soil but no landslide.
4. At that field visit we decided to lay back the cut slopes and re-seed and re-straw the areas of exposed soil using NFVW funds (federally allocated funds for vegetation and watershed).
5. $2,000 was allocated to the Redbird District out of NFVW in FY2018 (our FY runs from October through September). This money was for a gate, gate installation, and seed and straw for Granny's Branch.
6. The gate is currently being manufactured and has not been installed. There was a temporary gate in place during harvest operations.
7. NFVW was charged $377 in FY19 by the Redbird District to lime, fertilize, seed, and mulch exposed soil.
8. District personnel limed, fertilized, seeded, and mulched all exposed soil in the unit in April 2019.
9. The Soil and Water Specialist Report for the South Redbird EA includes information about the Granny's Branch unit on p. 13, August 2019.
10. Received Heartwood comment letter, through which we became aware of the landslide in Granny's Branch unit, December 2019.
11. In January 2020 SO and District Personnel went to the field to investigate units and issues mentioned in the Heartwood Comment Letter. This is when FS personnel first saw the landslide in Granny's Branch.
12. Additional analysis was done via GIS and included as an addendum to the original South Redbird Soil and Water Report, January 2020.

I indicated the location of the landslide in the Addendum to the Soil and Water Report on p. 27.

Let me know if you have questions. I have also included a pdf of my field notes.

Claudia

Claudia Cotton, Ph.D.
Forest Soil Scientist

Forest Service
Daniel Boone National Forest

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