New Mexico CROP

A Summary of CROP Landscape Analyses Results

Presented by
Catherine M. Mater
President — Mater Engineering
Senior Fellow —The Pinchot Institute for Conservation
Corvallis, Oregon; Washington, DC
Tel: 541-753-7335 Fx: 541-752-2952
E-mail: catherine@mater.com

New Mexico CROP:

Center Point: Santa Fe
100-mi. radius

- **4 National Forests**
- **3 BLM Districts**
- **10 State Parks**
- **New Mexico Dept. of Trans.**
- **16 Counties**
- **Indian Lands (18 reservations)**

***National Forests*: 15 Ranger Districts**

- **Carson NF:** Camino Real, Canjilon, El Rito, Jicarilla, Questa, Tres Piedras
- **Cibola NF:** Sandia, Mt. Taylor, Mountainair, Kiowa & Rita Blanca NG
- **Santa Fe NF:** Jemez, Coyote, Espanola, Cuba, Pecos/ Las Vegas

***3 BLM Districts*:**

Albuquerque, Farmington, Pecos

16 Counties:

Bernalillo	Cibola	Colfax	Guadalupe
Los Alamos	Mosa	Rio Ariba	San Juan
McKinley	Santa Fe	Sandoval	San Miguel
Socorro	Taos	Torrance	Valencia

What was asked for (5-yr. period):

- ***Volume:*** **(by mmbf; green/dry tons; ccf) w/conversions**
- ***Diameter sizes:*** **<4" >4"-7" >7"-9" >9"-12" >12"**
- ***Species:*** **(8 species evaluated for resource flow)**
- ***Harvest "type":*** **fuel load reduction, timber sales, PCT, post and pole**
- ***Location*** **of resource offering**
- ***NEPA phase*** **for each resource offering**
- ***Road accessibility*** **for each resource offering**

So, let's take a look at the final results . . .

Overall:

Year	Total Biomass (1,040,968 gT)	% of 5-yr volume	Total Small Log (77.30 mmbf)	% of 5-yr volume	Total Large Log (22.655 mmbf)	% of 5-yr volume
2006	157,138.75	15%	11.10	14%	3.262	14%
2007	240,535.98	23%	15.488	20%	4.18	18%
2008	230,687.38	22%	17.294	22%	5.382	24%
2009	199,629.68	19%	16.452	21%	4.26	19%
2010	212,977.18	20%	16.972	22%	5.56	25%

Biomass = 68% (up to 7" dbh)

Small Logs = 25% (>7" – 12" dbh)

Large Logs = 7% (>12" dbh)

New Mexico CROP

9

Who's providing what?

Agency	5-yr total *Biomass (gT)*	5-yr total *Small Log (mmbf)*	5-yr total *Large Log (mmbf)*	% of 5-yr total
Carson NF	127,000	18	14.4	19%
Cibola NF	23,831	21.359	1.35	9%
Santa Fe NF	883,830	37.69	6.81	72%
NM BLM	6,307	.256	.092	<1%

September 2006 *Mater Engineering, Ltd.* *Catherine M. Mater*

New Mexico CROP

10

Carson NF: *(gT= 127,000; Small log = 18 mmbf; Large log = 14.4 mmbf)*

Ranger Districts	5-yr total (Biomass = gT)	5-yr total Small log (mmbf)	5-yr total Large log (mmbf)
Camino Real	38,000	4.1	2.3
Canjilon	11,500	2.3	0
Jicarilla	9,000	.6	0
El Rito	31,500	6.4	7.8
Questa	21,000	2	.1
Tres Piedras	16,000	2.6	4.2

Cibola NF: *(gT= 23,831; Small log = 21.359 mmbf; Large log = 27.477 mmbf)*

Ranger Districts	5-yr total (Biomass = gT)	5-yr total Small log (mmbf)	5-yr total Large log (mmbf)
Kiowa & Rita Blanca NG	737.5	.1475	0
Mountainair	23,093	21.211	1.352

September 2006 *Mater Engineering, Ltd.* *Catherine M. Mater*

Santa Fe NF: *(gT= 883,830; Small log = 37.69 mmbf; Large log = 6.81 mmbf)*

Ranger Districts	5-yr total (Biomass = gT)	5-yr total Small log (mmbf)	5-yr total Large log (mmbf)
Coyote	167,687	7.08	1.735
Cuba	116,040	5.89	1.5
Jemez	143,125	4.819	.123
Pecos/Las Vegas	347,137	13.985	2.729
Espanola	109,840	5.90	.724

NM BLM: *(gT= 6,307.5; Small log = .256 mmbf; Large log = .092 mmbf)*

Field Offices	5-yr total (Biomass = gT)	5-yr total Small log (mmbf)	5-yr total Large log (mmbf)
Albuquerque	946	.038	.013
Farmington	5,361	.218	.078

State Trust Lands: **All either do not own forest land or plan no removal during the next 5 years.**

Indian Nations: **No data provided from the 18 reservations contacted.**

16 Counties: **All either do not own forest land or plan no removal during the next 5 years.**

Private lands: **No historical data exists for removal pattern analysis.**

By Species		5-yr total (Biomass = gT)	5-yr total Small log (mmbf)	5-yr total Large log (mmbf)
Ponderosa pine	(74% of 5-yr. total)	779,305	57.59	15.64
Pinyon pine/juniper	(10% of 5-yr. total)	106,178	8.52	.309
White fir	(9% of 5-yr. total)	98,112	6.15	3.42
Douglas fir	(6% of 5-yr. total)	51,064	4.14	3.14
Sugar pine	(<1% of 5-yr. total)	0	.64	.04
Juniper	(<1% of 5-yr. total)	1,950	.11	.041
Pinyon pine	(<1% of 5-yr. total)	4,320	.146	.051
Other conifers	(<1% of 5-yr. total)	37.5	0	0

***Very poor picture** for small log processing (unless small log line already exists to handle ~ 15 mmbf/yr).* **Largest percentage of volume is projected to be in the >4" biomass strata.**

(% of total volume)	*4"-7"*	*>7"-9"*	*>9"-12"*	*<4"*
Ponderosa Pine	6%	8%	18%	62%
Pinyon Pine/Juniper	15%	11%	17%	56%
White Fir	8%	6%	15%	59%
Douglas Fir	9%	7%	16%	50%
Sugar Pine	0%	0%	94%	0%
Juniper	18%	8%	12%	54%
Pinyon Pine	13%	6%	8%	68%
Other Conifers	0%	0%	0%	100%

Resource Offering Maps (ROMS):
Here's what you get for each species . . .

- ✓ ***Who*** will supply?
- ✓ ***When*** will supply be offered?
- ✓ ***How much*** will be offered?
- ✓ ***What diameter size*** will it be offered in?
- ✓ Will supply be consistent and ***levelized over time*** to invite purchase and investment?

New Mexico CROP

For each species:

- ✓ ***Locator map*** **per specific supplier**
- ✓ ***Summary sheet***
- ✓ ***Detailed supply breakouts*** **by volume, diameter, and year per supplier**

Let's look at Ponderosa Pine as an example . . .

New Mexico CROP

New Mexico: ***Ponderosa Pine*** **CROP offering/removal '06 – '10 (gT = 779,305 / S = 57.59 mmbf / L = 15.64 mmbf)**

ROM # PP 1.1

PP = ponderosa pine

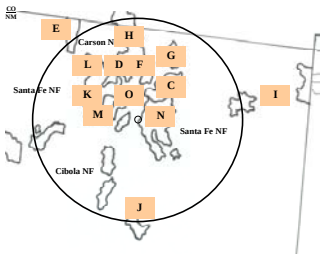
BLM:
- A Albuquerque Dist.
- B Farmington Dist.

Carson NF:
- C ***Camino Real RD***
- D ***Canjilon RD***
- E ***Jicarilla RD***
- F ***El Rito RD***
- G ***Questa RD***
- H ***Tres Piedras RD***

Cibola NF:
- I ***Kiowa & Rita Blanca NG***
- J ***Mountainair RD***

Santa Fe NF:
- K ***Coyote RD***
- L ***Cuba RD***
- M ***Jemez RD***
- N ***Pecos/Las Vegas RD***
- O ***Espanola RD***

*italics/bold = species offering in CROP



Locator map

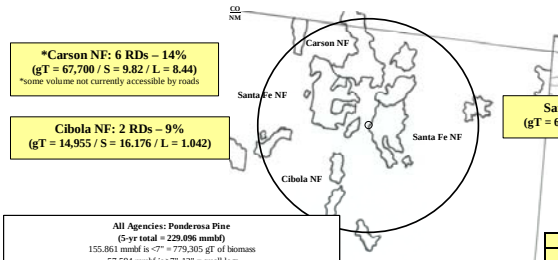
Summary Sheet

New Mexico CROP

New Mexico: ***Ponderosa Pine*** **CROP offering/removal '06 – '10**
(gT = 779,305 / S = 57.59 mmbf / L = 15.64 mmbf)

ROM # PP 1

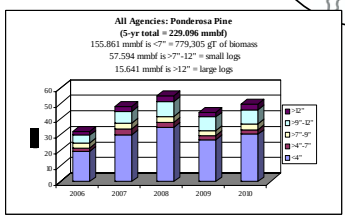
gT = green tons (up to 7" dbh)
S = small log mmbf (>7"-12" dbh)
L = large log mmbf (>12" dbh)



***Carson NF: 6 RDs – 14%**
(gT = 67,700 / S = 9.82 / L = 8.44)
*some volume not currently accessible by roads

Cibola NF: 2 RDs – 9%
(gT = 14,955 / S = 16.176 / L = 1.042)

Santa Fe NF: 5 RDs – 77%
(gT = 696,650 / S = 31.598 / L = 6.159)



	gT	mmbf	
	Biomass	Small Log	Large Log
2006	107848	8.20525	2.404
2007	167735.63	11.42119	2.97173
2008	189288.93	13.32692	3.77994
2009	148063.69	11.892858	2.87297
2010	166369.19	12.747858	3.61297
Totals	779305.44	57.594076	15.64161
%	68%	25%	7%
mmbf	155.861088		

New Mexico CROP

New Mexico: ***Ponderosa Pine*** **CROP offering/removal '06 – '10**
(by agency)

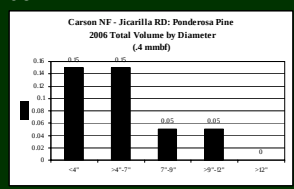
ROM # PP 1.5

gT = green tons (up to 7" dbh)
S = small log mmbf (>7"-12" dbh)
L = large log mmbf (>12" dbh)

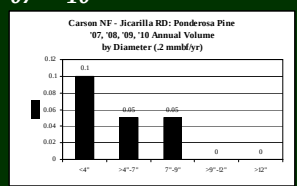
Detailed Breakout by Supplier

Ponderosa Pine* Carson NF: *Jicarilla RD	***5-yr = 1.2 mmbf***
	• Fairly level supply from year to year
gT = 4,500	• <4" = 46% (.55 mmbf) • >4"-7" = 29% (.35 mmbf)
S = .3	• >7"-9" = 21% (.25 mmbf) • >9"-12" = 4% (.05 mmbf)
L = 0	• >12" = 0% (0 mmbf)

'06



'07 – '10



SO . . . with CROP, we're able to look at:

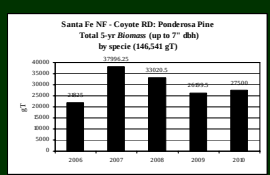
- ***performance between different public agencies*** **to identify needed coordination of supply; *and***
- ***performance between ranger districts in a single NF*** **to see where coordination of supply offering might be needed.**

Let's take a look …

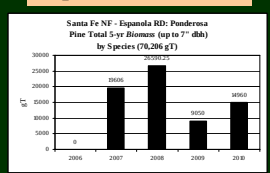
Ponderosa Pine: **Santa Fe - 5 RDs - *biomass offerings***

(% of NF offering)

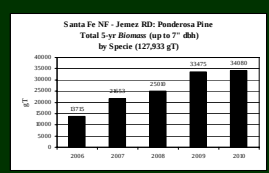
Coyote RD - 21%



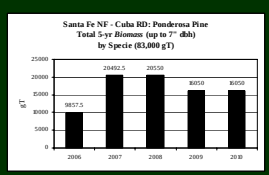
Espanola RD – 10%



Jemez RD – 18%

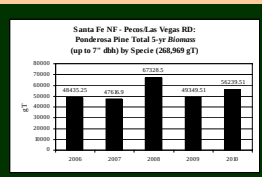


Cuba RD – 12%



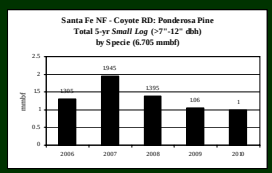
Unlevilized supply in 4 of 5 RDs

Pecos/Las Vegas RD – 39%

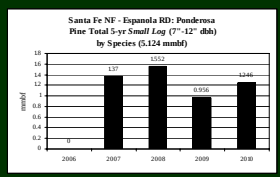


Ponderosa Pine: Santa Fe NF – 5 RDs – small log offerings (% of NF offering)

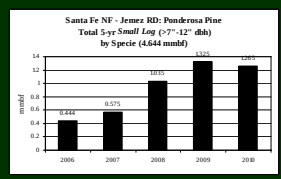
Coyote RD - 21%



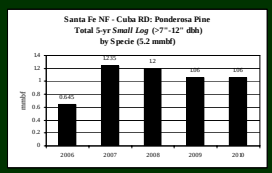
Espanola RD – 16%



Jemez RD – 15%

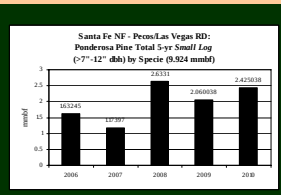


Cuba RD – 16%



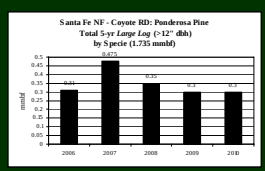
Unlevelized supply in 4 of 5 RDs

Pecos/Las Vegas RD – 31%

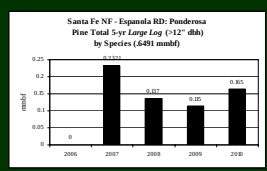


Ponderosa Pine: Santa Fe NF – 5 RDs – large log offerings (% of NF offering)

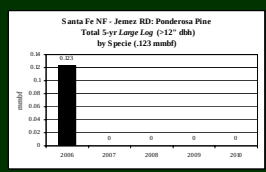
Coyote RD - 28%



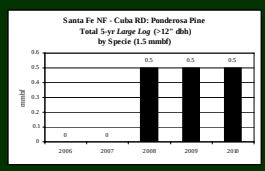
Espanola RD – 11%



Jemez RD – 2%

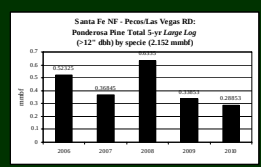


Cuba RD – 24%



Unlevelized supply in all RDs

Pecos/Las Vegas RD – 35%

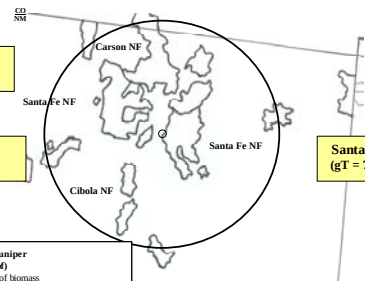


Let's look at species <u>Summary Sheets</u> for the other top New Mexico CROP species . . .

***New Mexico: <u>Pinyon Pine/Juniper</u>* CROP offering/removal '06 – '10**
(gT = 106,179 / S = 8.518 mmbf / L = .31 mmbf)

ROM # Pp-J.1

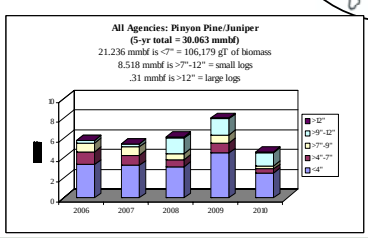
gT = green tons (up to 7" dbh)
S = small log mmbf (>7"-12" dbh)
L = large log mmbf (>12" dbh)



Carson NF: 3 RDs – 20%
(gT = 19,900 / S = 1.92 / L = 0)

Cibola NF: 2 RDs – 24%
(gT = 8,876 / S = 5.183 / L = .31)

Santa Fe NF: 5 RDs – 56%
(gT = 77,402 / S = 1.41 / L = 0)



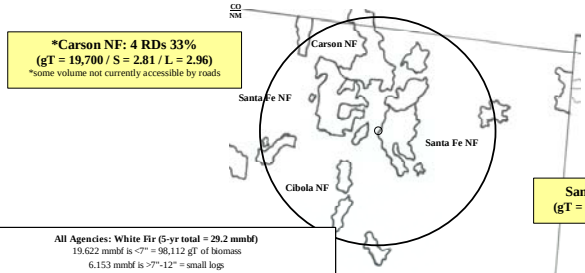
	gT	mmbf	
	Biomass	Small Log	Large Log
2006	23321	1.1142	0
2007	21364.5	1.1774	0
2008	19270.2	2.1704	0.10326
2009	27660.2	2.4354	0.10326
2010	14562.7	1.6204	0.10326
Totals	106178.6	8.5178	0.30978
%	71%	28%	1%
mmbf	21.23572		

New Mexico CROP

New Mexico: White Fir CROP offering/removal '06 – '10
(gT = 98,112 / S = 6.153 mmbf / L = 3.426 mmbf)

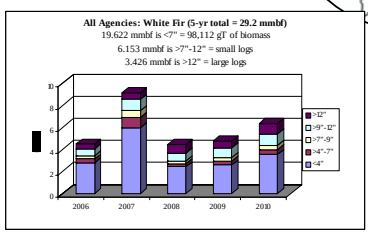
ROM # WF 1

gT = green tons (up to 7" dbh)
S = small log mmbf (>7"-12" dbh)
L = large log mmbf (>12" dbh)



***Carson NF: 4 RDs 33%**
(gT = 19,700 / S = 2.81 / L = 2.96)
*some volume not currently accessible by roads

Santa Fe NF: 5 RDs – 67%
(gT = 78,412 / S = 3.344 / L = .466)



	gT	mmbf	
	Biomass	Small Log	Large Log
2006	15658.75	0.94075	0.40875
2007	34407.75	1.66245	0.62425
2008	13523.75	0.9535	0.7575
2009	14664.85	1.17843	0.67755
2010	19857.35	1.41843	0.95755
Totals	98112.45	6.15356	3.4256
%	67%	21%	12%
mmbf	19.62249		

New Mexico CROP

How levelized will the supply be for all species?

Let's take a look . . .

Levelized supply for five years?

(R = relatively; NA = Not applicable)

	gT Biomass		Small Logs		Large Logs	
	yes	*no*	*yes*	*no*	*yes*	*no*
Ponderosa Pine		✓		✓		✓
Pinyon Pine/Juniper		✓		✓		✓
White Fir		✓		✓	R	
Douglas Fir	R		R			✓
Sugar Pine	NA		R			✓
Juniper	R		R		R	
Pinyon Pine	R		✓		✓	
Other Conifers	R		NA		NA	

Looking at the *Ponderosa Pine* . . .

- ✓ **There will be a *fluctuating, unlevel supply of green tonnage biomass* that will impact almost 75% of the total biomass volume in the CROP landscape over the next 5 years.**
- ✓ **There will be an *unlevelized supply of small logs in this specie* that will impact ~75% of the total CROP small log supply. Total CROP volume of ~15 mmbf/yr is too small to construct a new small log mill. May be sufficient to add small log line to existing mill.**
- ✓ **Similarly, there will be an *unlevelized supply of large logs in this specie* that will impact almost 75% of the total 5-yr CROP volume. As with small logs, overall annual volume of ~ 4.5 mmbf is too small to construct a new milling operation.**

Here's how it looks on an agency-by-agency basis . . .

Levelized Annual Supply?

(Total 5-yr volume)

Not a good picture as unlevilized supply pattern in Santa Fe NF drives overall performance.

Y = yes
N = no
R = relatively

		Ponderosa Pine (229 mmbf; includes gT)		
		Biomass	*Small log*	*Large log*
Carson NF	(14% of 5-yr vol.)			
	Camino Real	N	R	R
	Canjilon	N	N	NA
	Jicarillo	R	R	NA
	El Rito	N	N	N
	Questa	N	N	NA
	Tres Piedras	N	R	N
Cibola NF	(9% of 5-yr vol.)			
	Kiowa/Rita Blanca NG	Y	Y	NA
	Mountainair	R	R	R
Santa Fe NF	(77% of 5-yr vol.)			
	Coyote	N	N	Y
	Cuba	N	R	N
	Jemez	N	N	N
	Pecos/Las Vegas	N	N	N
	Espanola	N	N	R

Overall . . . *better coordination* of resource offering in *ponderosa pine, pinyon pine/juniper, and white fir* likely preferred to help:

- **Reduce investor risk**
- **Increase purchaser confidence**
- **Achieve fuel load reduction goals**
- **Achieve forest restoration goals**

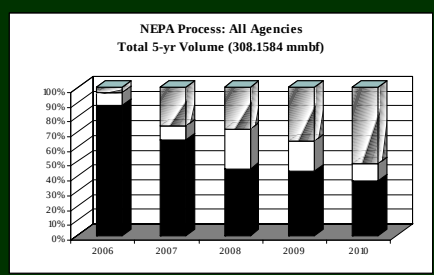
What about NEPA?
It's important to know!

. . . here's how it looks

NEPA Picture for CROP Landscape

***All NF & BLM lands*:**
100% of 5-yr total = (308.15 mmbf; includes gT as mmbf)

	mmbf	*% of total*
Approved	165.18	54%
In process	49.006	16%
Just started	93.89	30%
Not started	.07	<1%



Over 70% of CROP resource offering either NEPA approved or in-process!

. . . story best told on agency-by-agency basis.

NEPA Risk Rating

1 Lowest	2 Low	3 Medium	4 *High*	5 *Highest*

For low risk rating, 3 key desired attributes:

- ✓ **Volume *approved* in first 2 years, followed by *in-process*.**
- ✓ **Consistency in supply; no dramatic gaps from year to year (eg: *approved/not started/in-process*).**
- ✓ **Overall – no major emphasis on *just started* or *not started*.**

New Mexico CROP

NEPA Risk Rating Summary:

	mmbf affected	% of 5-yr total
lowest	76.2	25%
low	49.28	16%
medium	149.44	48%
high	33.2	11%
highest	0	0%

Only11% in high risk designation

New Mexico CROP

NEPA Risk Rating Summary:

Carson NF	**Total 5-yr volume**	**NEPA Risk Rating**
Camino Real	14 mmbf	medium
Canjilon	4.6 mmbf	***high***
Jicarillo	2.4 mmbf	medium
El Rito	20.5 mmbf	low
Questa	6.3 mmbf	medium
Tres Piedras	10 mmbf	medium

Cibola NF	**Total 5-yr volume**	**NEPA Risk Rating**
Kiowa/Rita Blanca NG	.295 mmbf	lowest
Mountainair	27.18 mmbf	low

NM BLM NF	**Total 5-yr volume**	**NEPA Risk Rating**
Albuquerque	.24 nmmbf	low
Farmington	1.36	low

NEPA Risk Rating Summary:

Santa Fe NF	Total 5-yr volume	NEPA Risk Rating
Coyote	42.35 mmbf	lowest
Cuba	30.6 mmbf	medium
Jemez	33.56 mmbf	lowest
Pecos/Las Vegas	86.14 mmbf	medium
Espanola	28.6 mmbf	*high*

What about road access to supply? *Here's how it looks . . .*

Agency	5-yr total volume	Affected by No Current Road Access		
	mmbf	mmbf	% of total volume with no road access	Species affected
NM BLM	1.61	0	0%	
Carson NF	57.8	10.1	17%	PP, DF, WF
Cibola NF	27.477	0	0%	
Santa Fe NF	221.270	0	0%	
Total	308.158	10.0	3%	

Conclusions for New Mexico CROP . . .

Not attractive to investors . . .

- ✓ Not enough small log offering for investors to offset biomass (<4") removal costs to achieve fuel load reduction objectives. A review of small log volume offering might be in order.

- ✓ Levelization of supply between agencies from year to year is needed – especially for ponderosa pine.

however . . .

- ✓ NEPA risk rating does look good; provides a good platform to work from.

For more information:

Catherine M. Mater:
President—Mater Engineering
Senior Fellow – The Pinchot Institute for Conservation
Corvallis, Oregon; Washington, DC
tel: (541) 753-7335 fax: (541) 752-2952; cell: (541) 760-5526
E-mail: catherine@mater.com

Edmund Gee:
Nat'l Woody Biomass Utilization Team Leader
Nat'l Partnership Coordinator USFS
Washington DC
tel: (202) 205-1787 fax: (202) 205-1045 cell: (202) 236-5153
E-mail: eagee@fs.fed.us