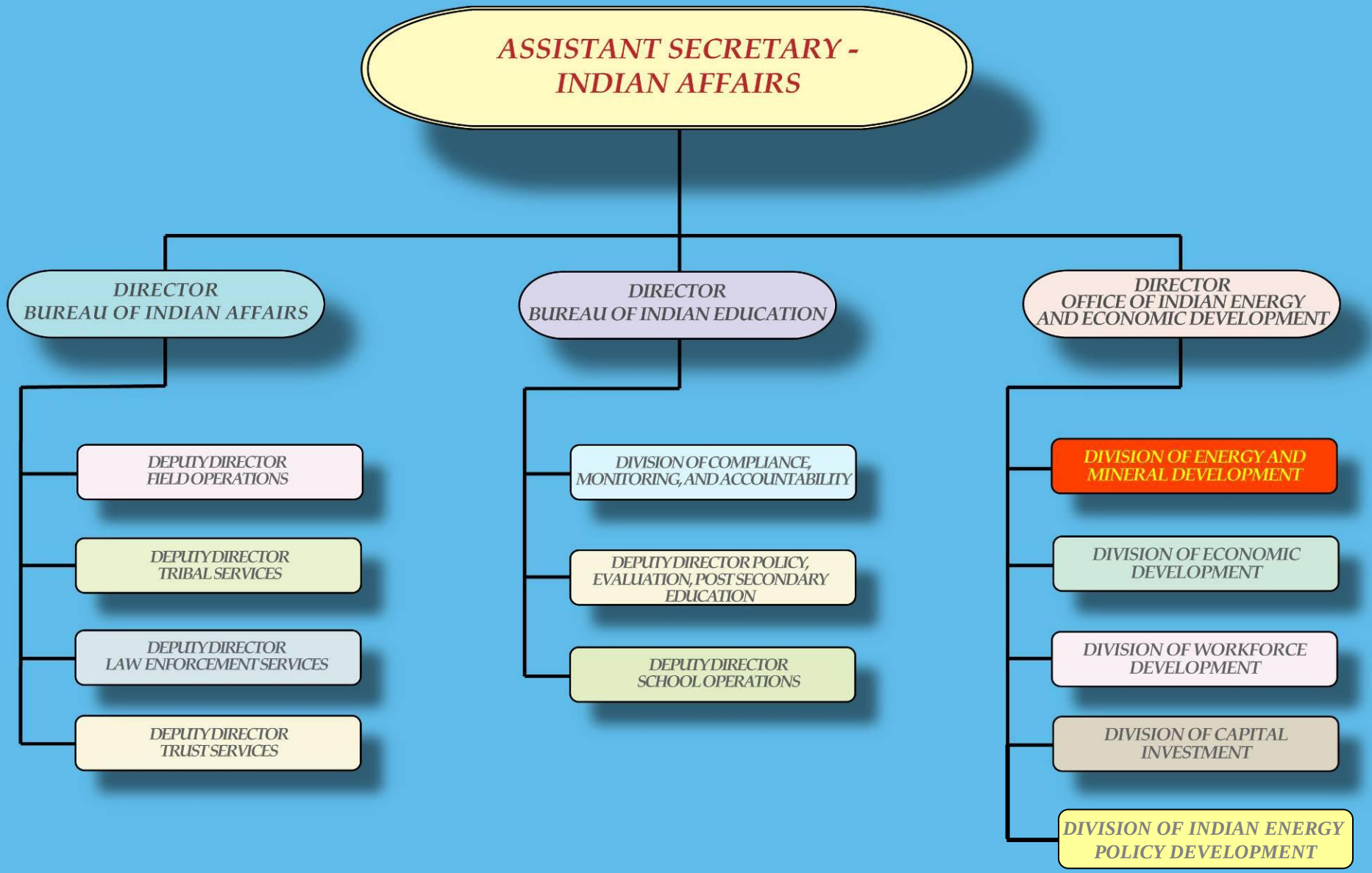
Division Of Energy and Mineral Development

OFFICE OF INDIAN ENERGY AND ECONOMIC DEVELOPMENT

RES 2012 – February 29. 2012

Conventional Energy and Associated Vertical Business Development

Best Practices in Indian Country


ASSISTANT SECRETARY - INDIAN AFFAIRS
DIRECTOR BUREAU OF INDIAN AFFAIRS
DEPUTY DIRECTOR FIELD OPERATIONS
DEPUTY DIRECTOR TRIBAL SERVICES
DEPUTY DIRECTOR LAW ENFORCEMENT SERVICES
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DIVISION OF COMPLIANCE, MONITORING, AND ACCOUNTABILITY
DEPUTY DIRECTOR POLICY, EVALUATION, POST SECONDARY EDUCATION
DEPUTY DIRECTOR SCHOOL OPERATIONS
DIRECTOR OFFICE OF INDIAN ENERGY AND ECONOMIC DEVELOPMENT
DIVISION OF ENERGY AND MINERAL DEVELOPMENT
DIVISION OF ECONOMIC DEVELOPMENT
DIVISION OF WORKFORCE DEVELOPMENT
DIVISION OF CAPITAL INVESTMENT
DIVISION OF INDIAN ENERGY POLICY DEVELOPMENT

MISSION

"Provide the best possible technical and economic advice and services in assisting Indian mineral owners to achieve economic self-sufficiency by creating sustainable economies through the environmentally sound development of their energy and mineral resources."

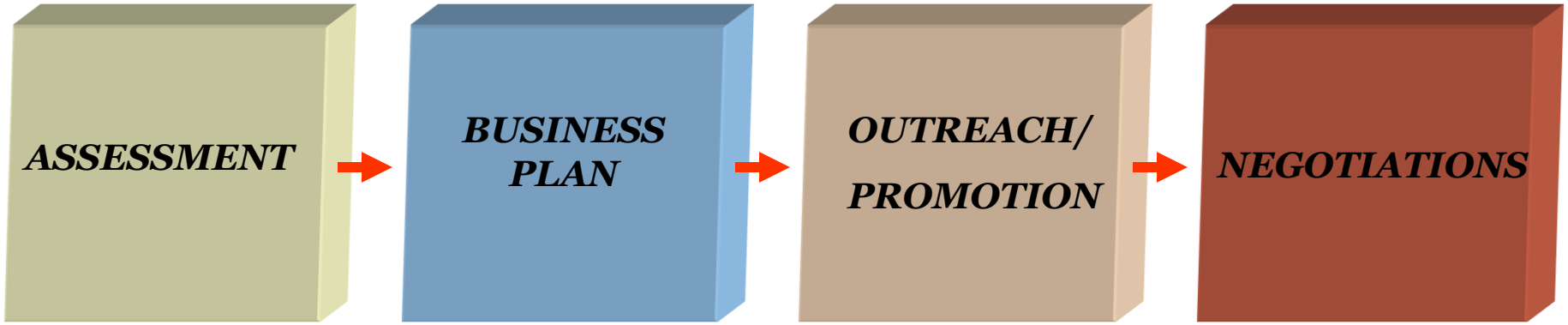
Who We Are and What We Do

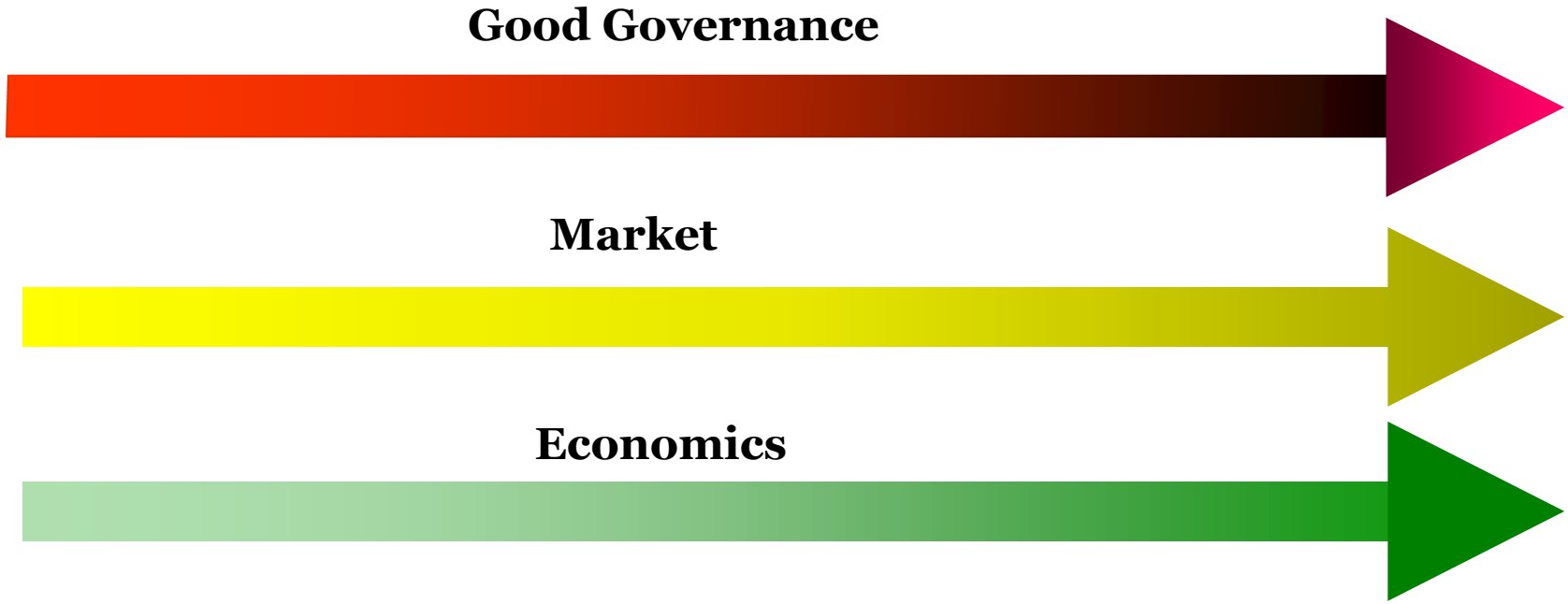
- We are hands-on and proactive
- We are devoted solely to assisting the Indian mineral owners
- Our goal is development – not merely assessment
- 90% of our senior technical staff come from the energy and mineral industry
- Provide technical, engineering and economic advice to Indian landowners seeking to manage and develop their energy and mineral resources
- Generate effective energy and mineral development strategies

DEMD CURRENT PROJECTS

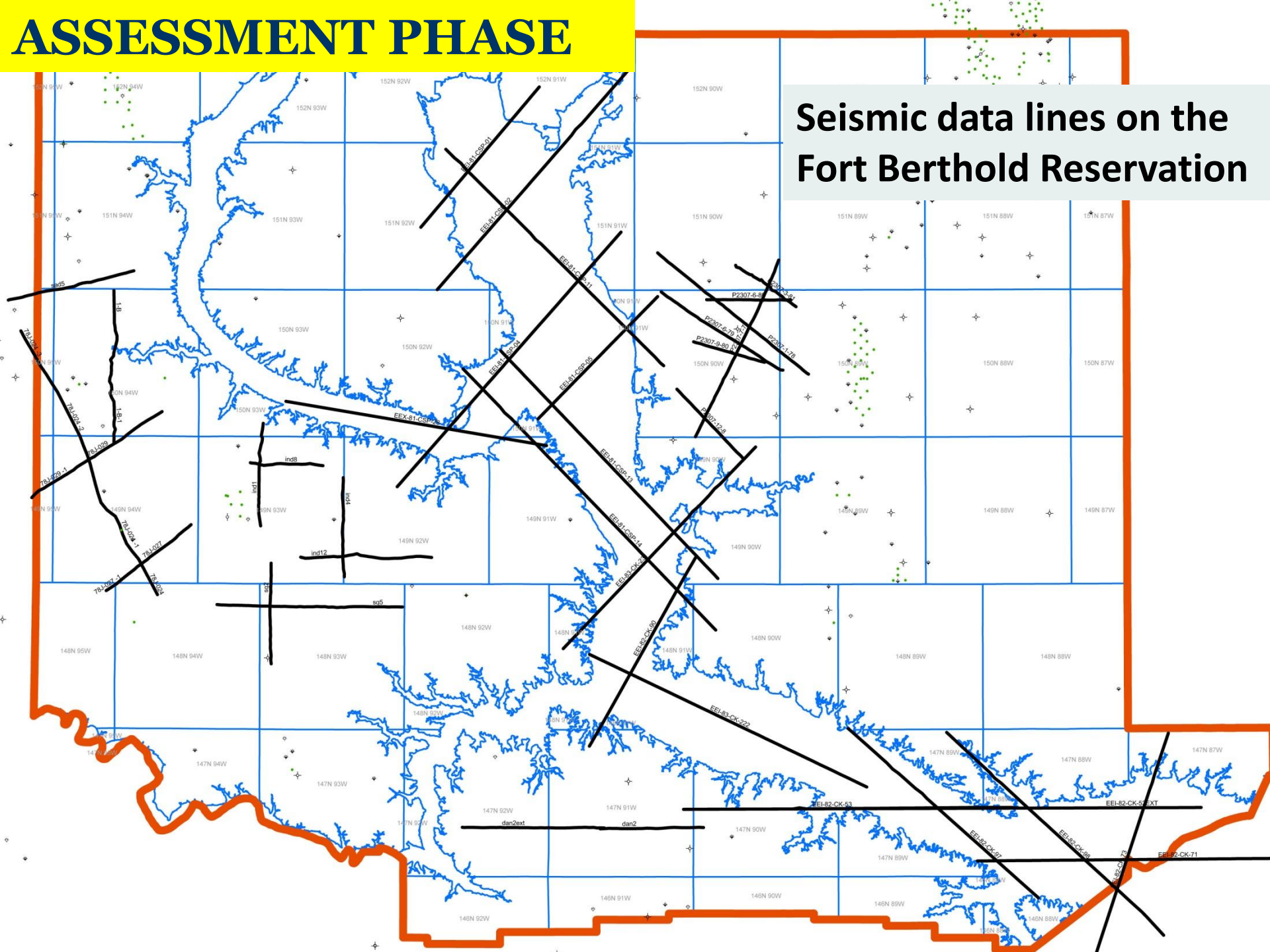
- Oil and gas projects in Colorado, Montana, North Dakota, South Dakota, New York, Oklahoma and Texas
- Coal projects in Montana, Colorado and Arizona
- Hydroelectric projects in Montana, Oklahoma, California and Washington
- Geothermal projects in California, Nevada and South Dakota
- Biomass projects in Washington, Wisconsin, Idaho, New York and Maine
- Wind projects in California, South Dakota, Nebraska, Montana, Oklahoma, Nevada and more
- Solar projects in South Dakota, Arizona, South Carolina, and California
- Sand and gravel projects in Washington, California, North Dakota, South Dakota, New Mexico and Arizona
- One Helium project in Arizona
- Copper project in Washington
- Building houses in Montana using pressed brick

Strategic Plan





ASSESSMENT PHASE



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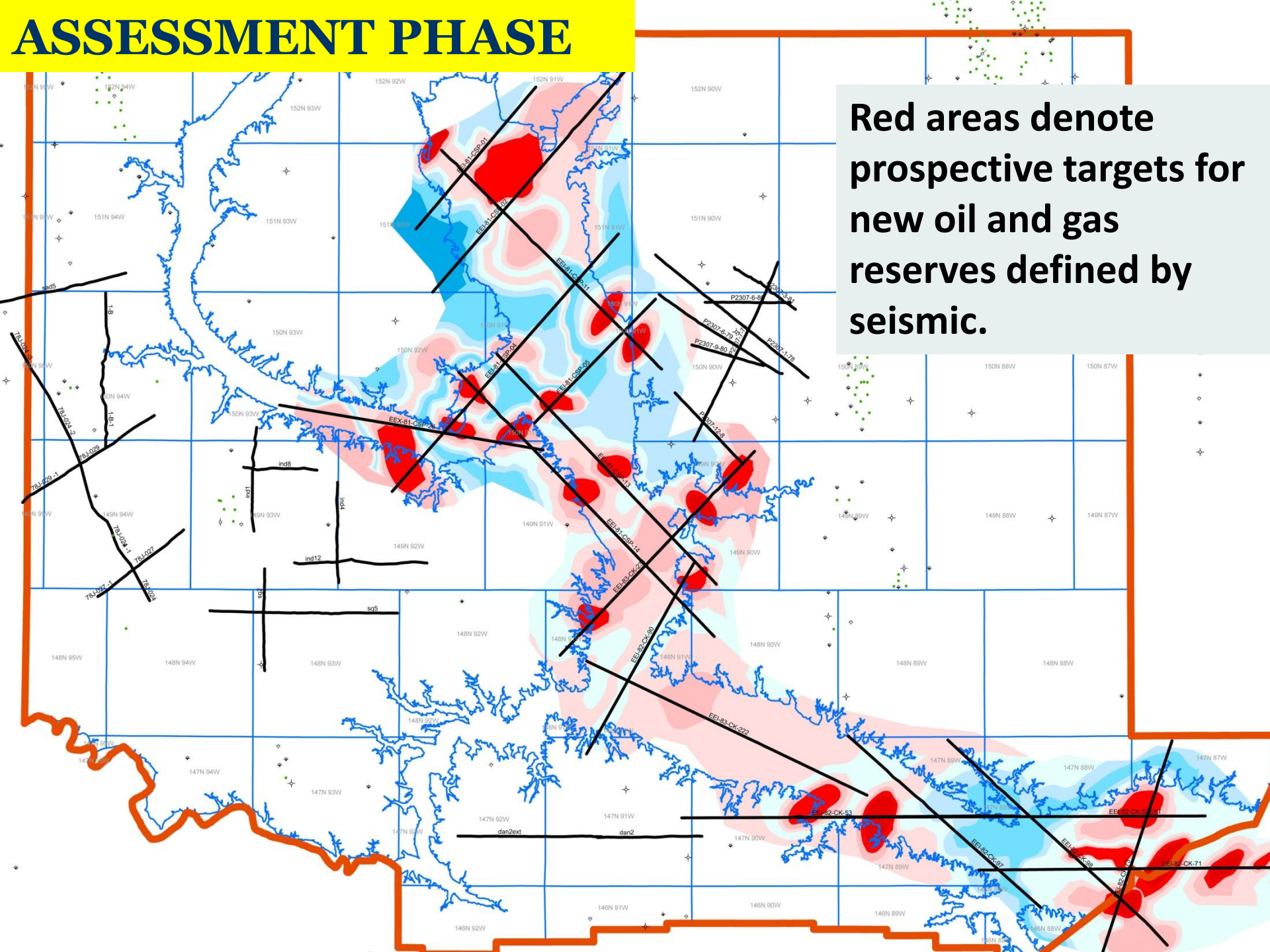



COMPANY CROW PROPERTY Sage Creek
HOLE NO. 1 BOX NO. 2
INTERVAL 21.6 TO
COMPANY CROW PROPERTY Sage Creek
HOLE NO. 1 BOX NO. 3
09.23.2008

Marketing

Goals of the Marketing Program

- Stimulate industry interest to explore and develop energy and mineral resources on Indian lands
- Provide tribes an opportunity (by providing financial and technical assistance) to attend national conferences to present results of mineral assessment projects to industry
- Publish data and results of assessment projects

Industry Prospect Expos

NAPE, 2004
Houston, Texas

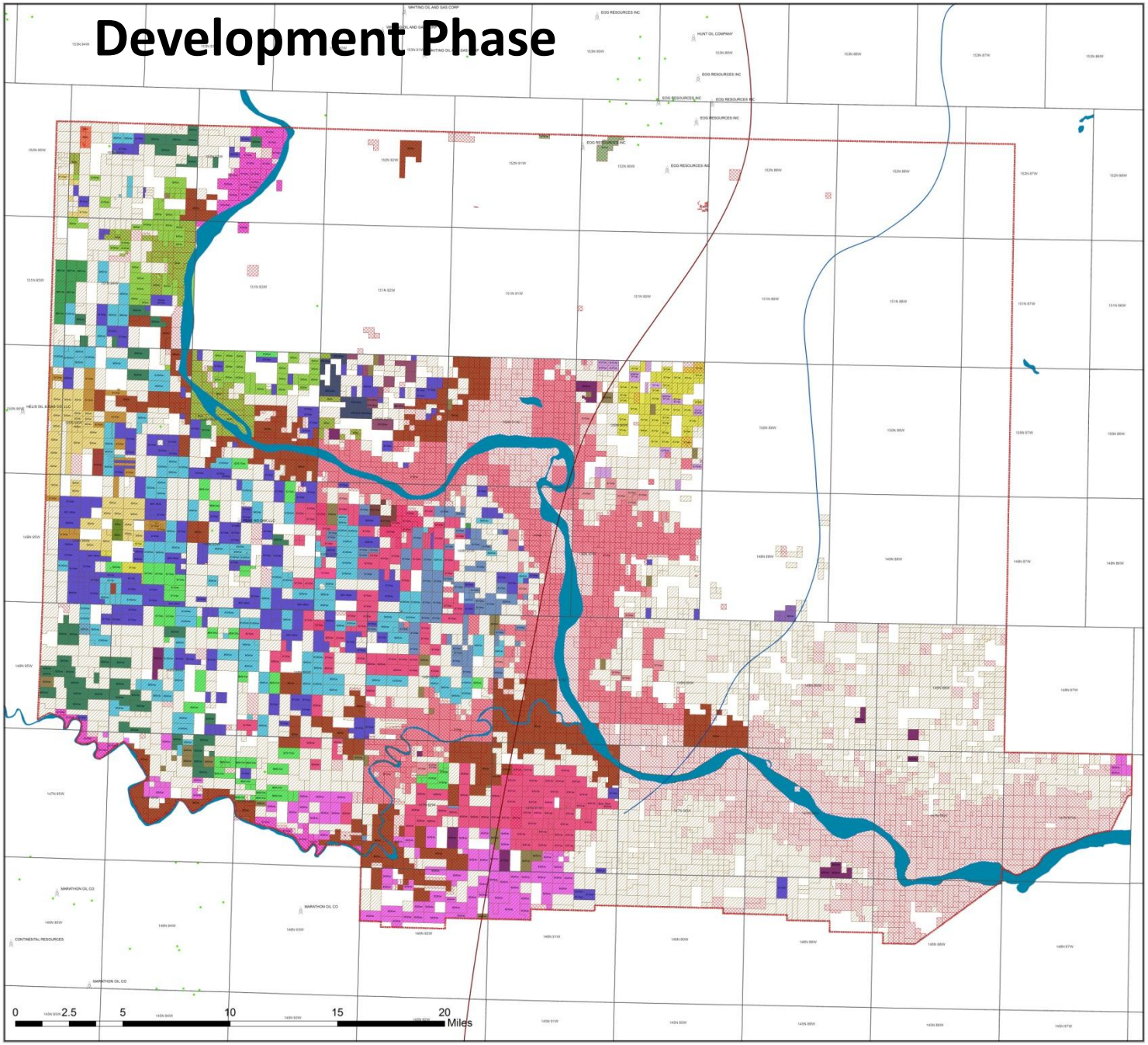

Shoshone and Arapaho Tribes
WIND RIVER INDIAN RESERVATION
WIND RIVER BASIN
01.26.2005


AISLE 600
AISLE 700
AISLE 800
Panhandle Royalty Company
FedEx
01.26.2005

Marketing

Publications

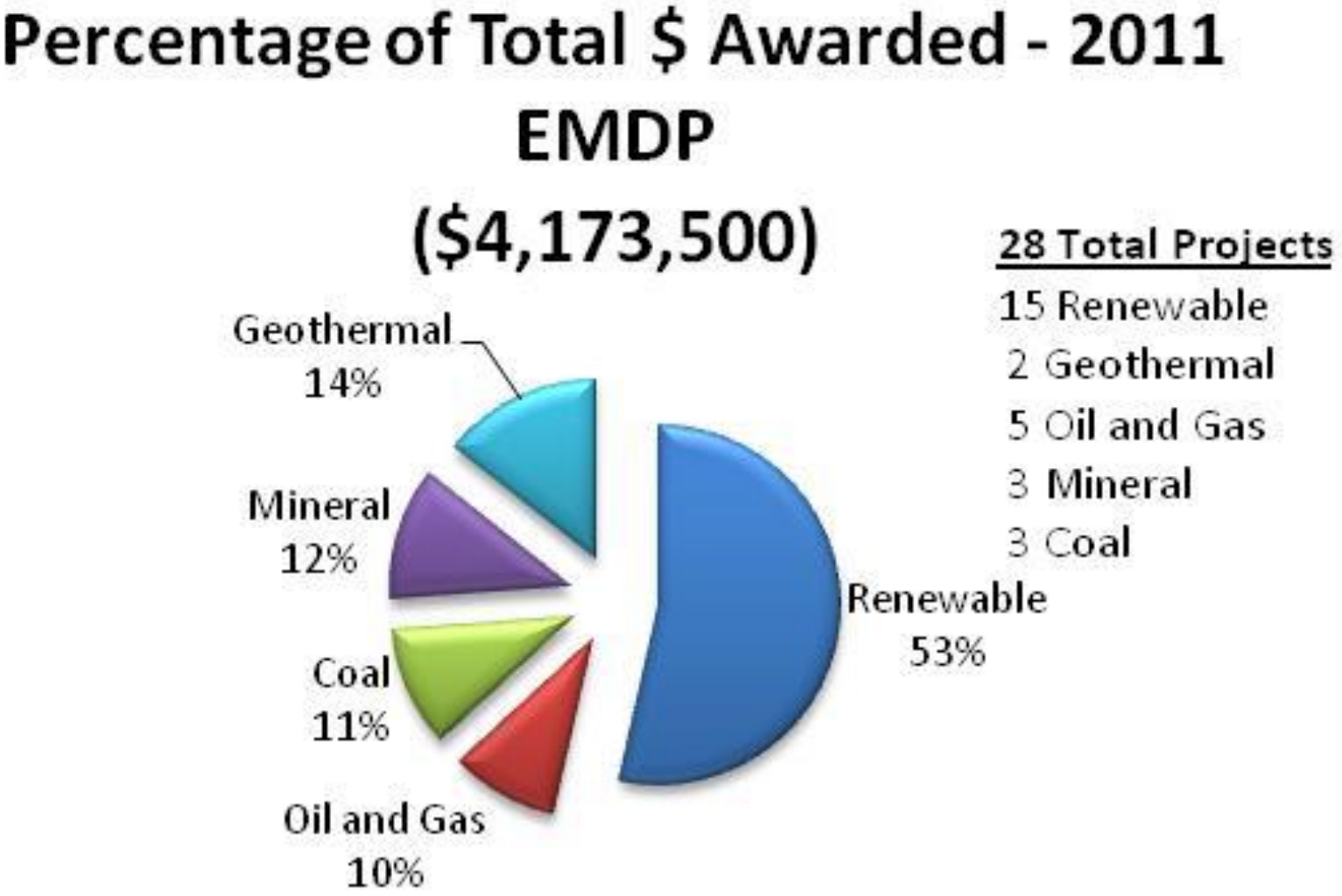
Development Phase



Energy and Mineral Development Program (EMDP)

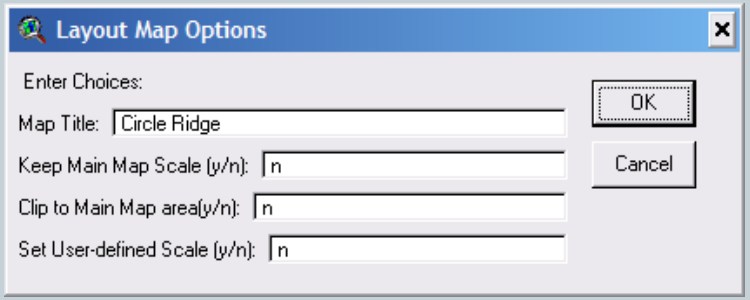
- Annual funding program
- Published in Federal Register
- In FY 2011 we funded 28 projects for $4.2 million

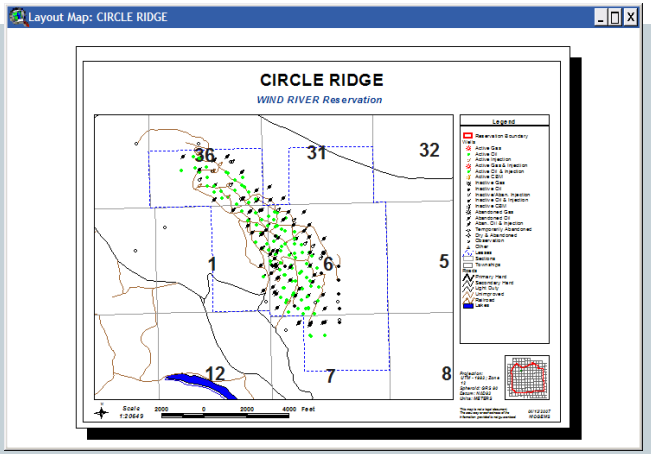
EMDP Project Funded in 2011

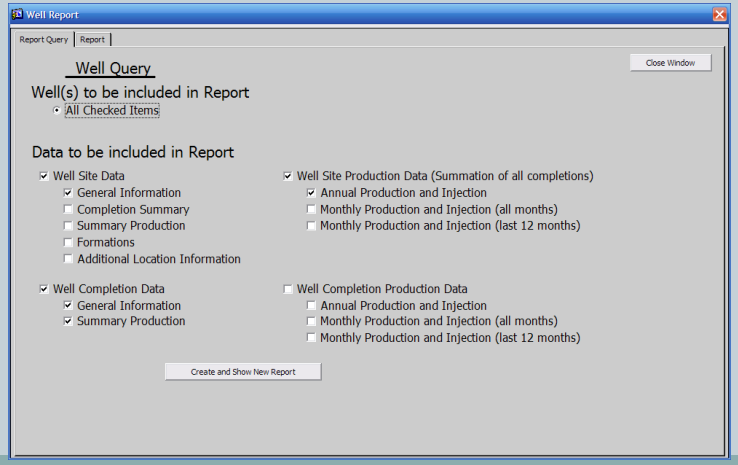


NIOGEMS

Point and click generation of maps and reports

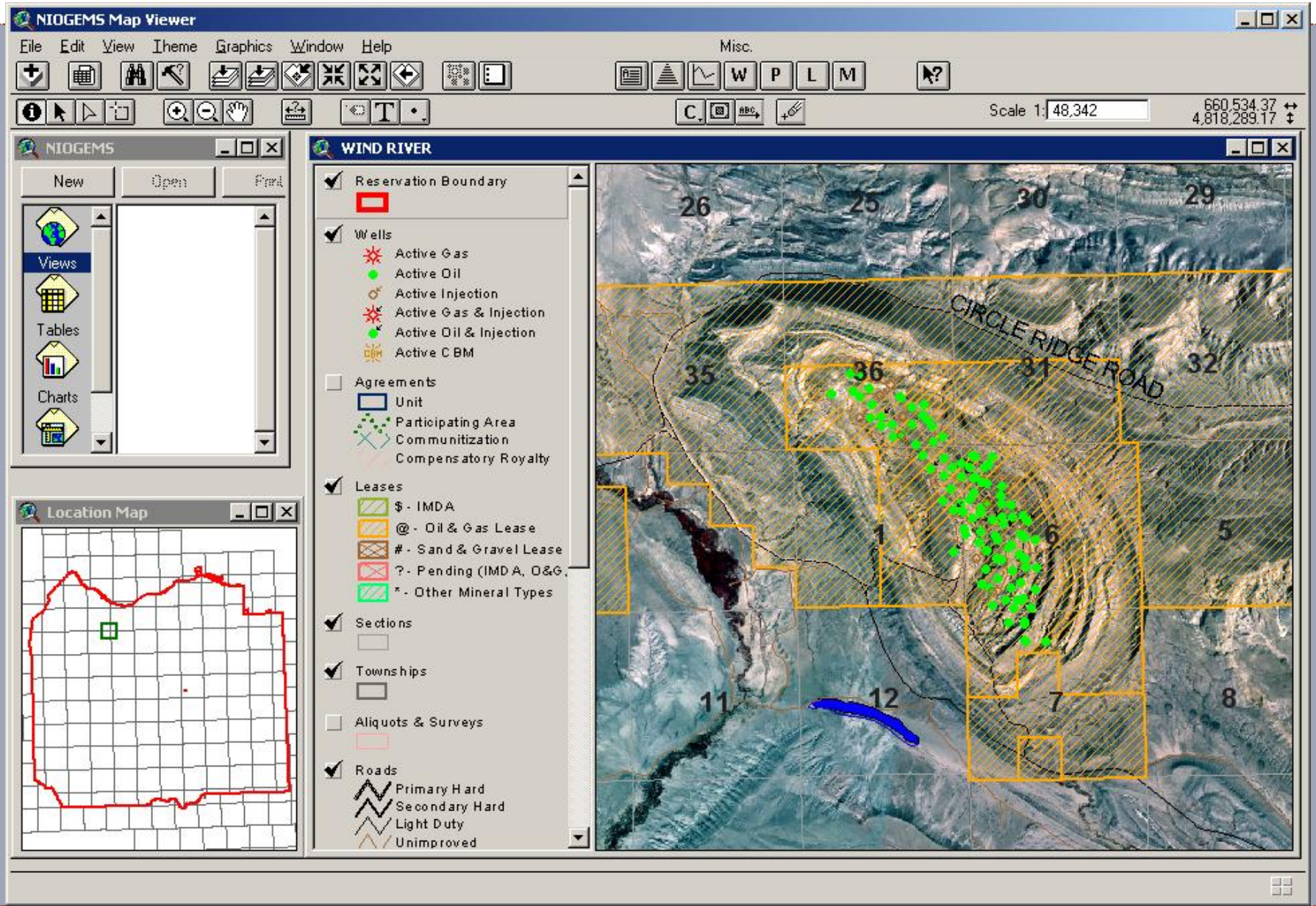






Circle Ridge Anticline with Wells and TAAMS Leases

Wind River Indian Reservation



NIOGEMS

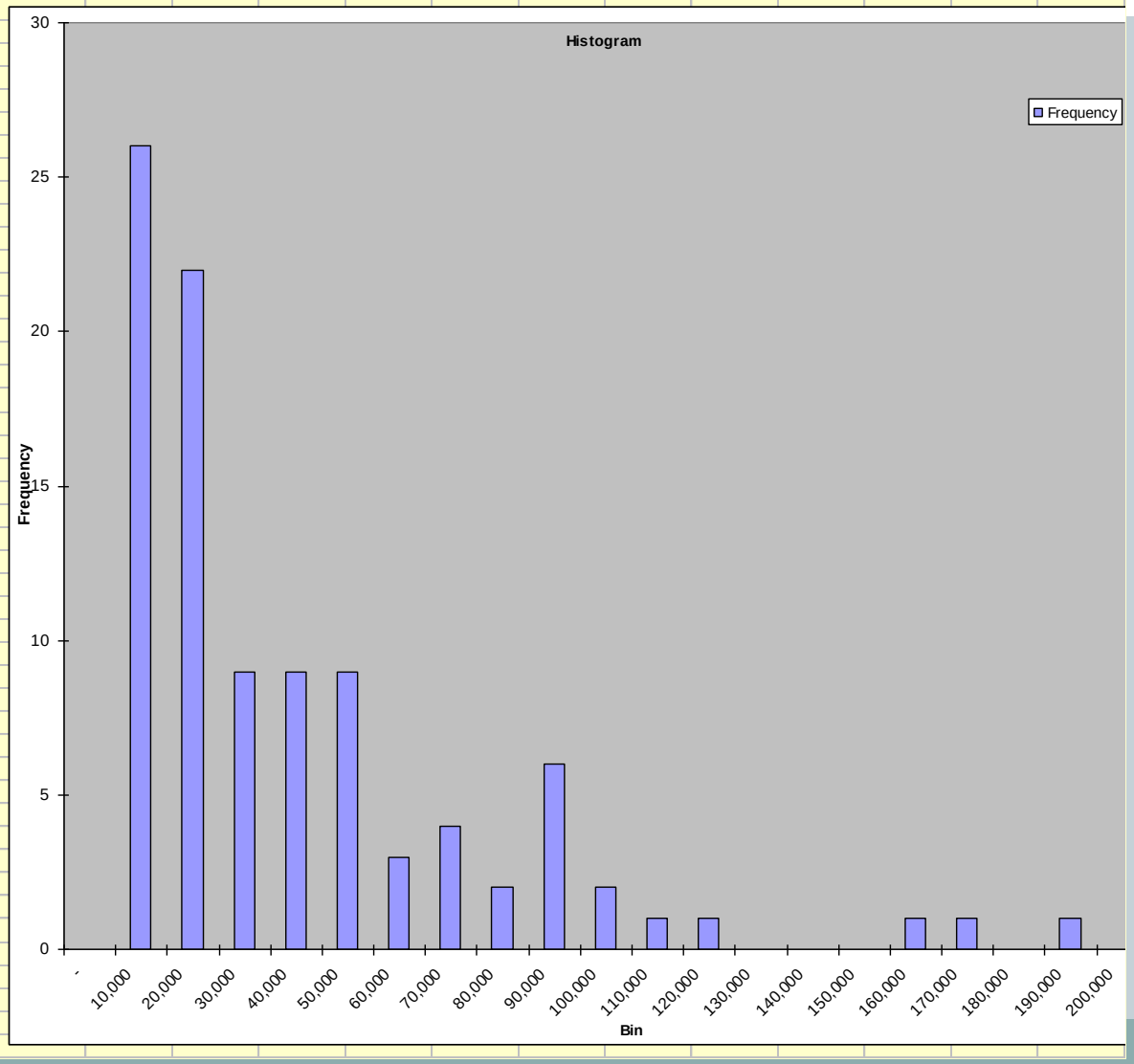
National Indian Oil and Gas Evaluation and Management System

- Consolidates various natural resource, realty, and geo-technical data into a single management software application
- Provides Tribal, BIA, BLM and ONRR managers access to well, production, lease, agreement, and other natural resource data on Indian and non-Indian owned lands, both in and around their reservation to monitor oil & gas and other mineral exploration and development
- Facilitates management decisions on energy & mineral leasing and development for optimal use of Tribal resources
- Presents a user-friendly, 'point & click' interface simplifying the execution of these complex data management operations

Economic Evaluation

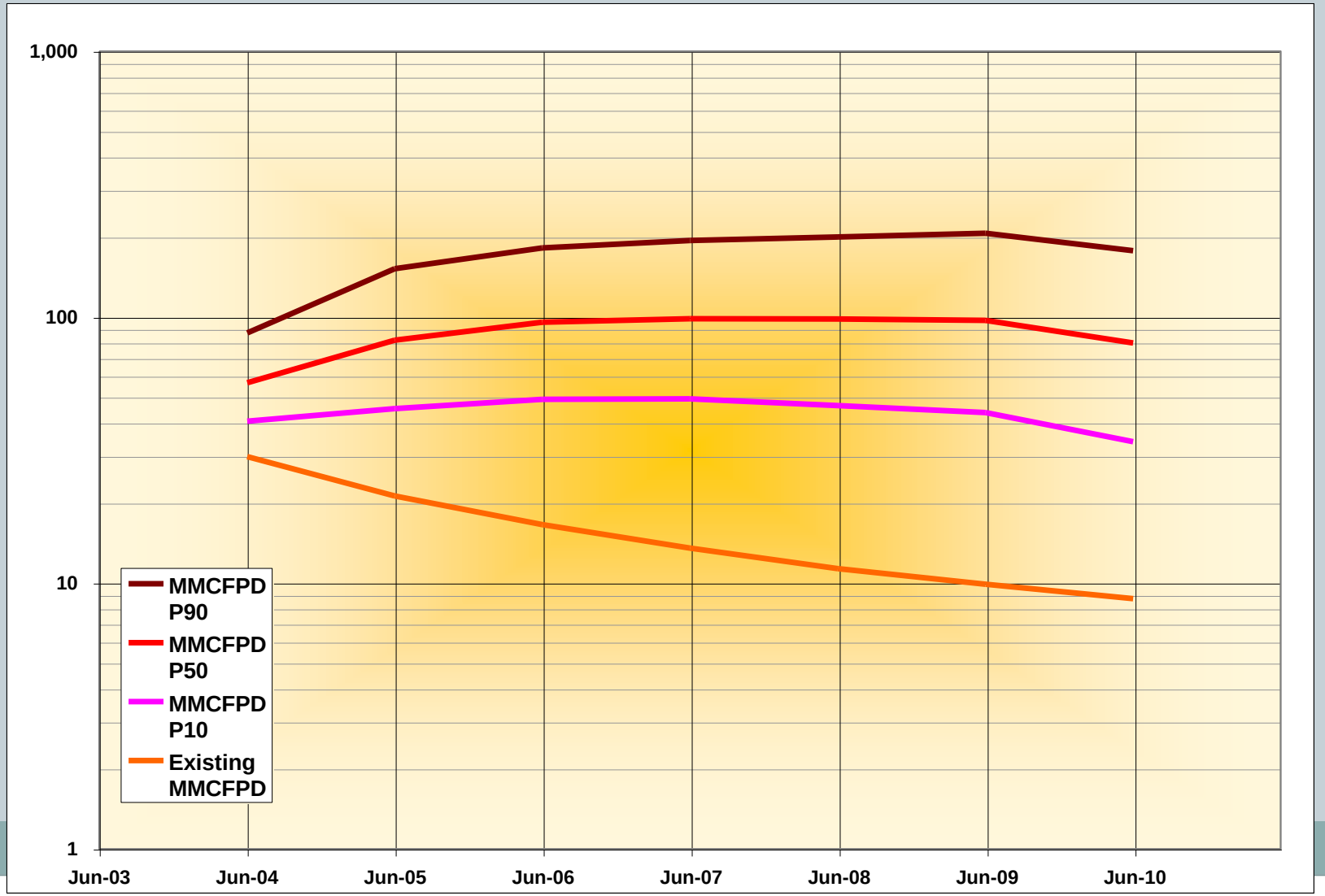
Probabilistic Model of Foreseeable Development

Initial Rate, mcf/m (StartY0)		
Mean	34,708	
Standard Error	3,731	
Median	20,891	
Mode	18,950	
Standard Deviation	36,743	
Sample Variance	1,350,048,121	
Kurtosis	4	
Skewness	2	
Range	188,445	
Minimum	490	
Maximum	188,935	
Sum	3,366,684	
Count	97	
Largest(1)	188,935	
Smallest(1)	490	
Confidence Level(95.0%)	7,405	
BIN	*Bin*	*Frequency*
-	-	0
5	10,000	26
10,005	20,000	22
20,005	30,000	9
30,005	40,000	9
40,005	50,000	9
50,005	60,000	3
60,005	70,000	4
70,005	80,000	2
80,005	90,000	6
90,005	100,000	2
100,005	110,000	1
110,005	120,000	1
120,005	130,000	0
130,005	140,000	0
140,005	150,000	0
150,005	160,000	1
160,005	170,000	1
170,005	180,000	0
180,005	190,000	1
190,005	200,000	0
	More	0
Min:	-	
Max	200,000	
P10	4,226	
P50	20,891	
P90	81,723	



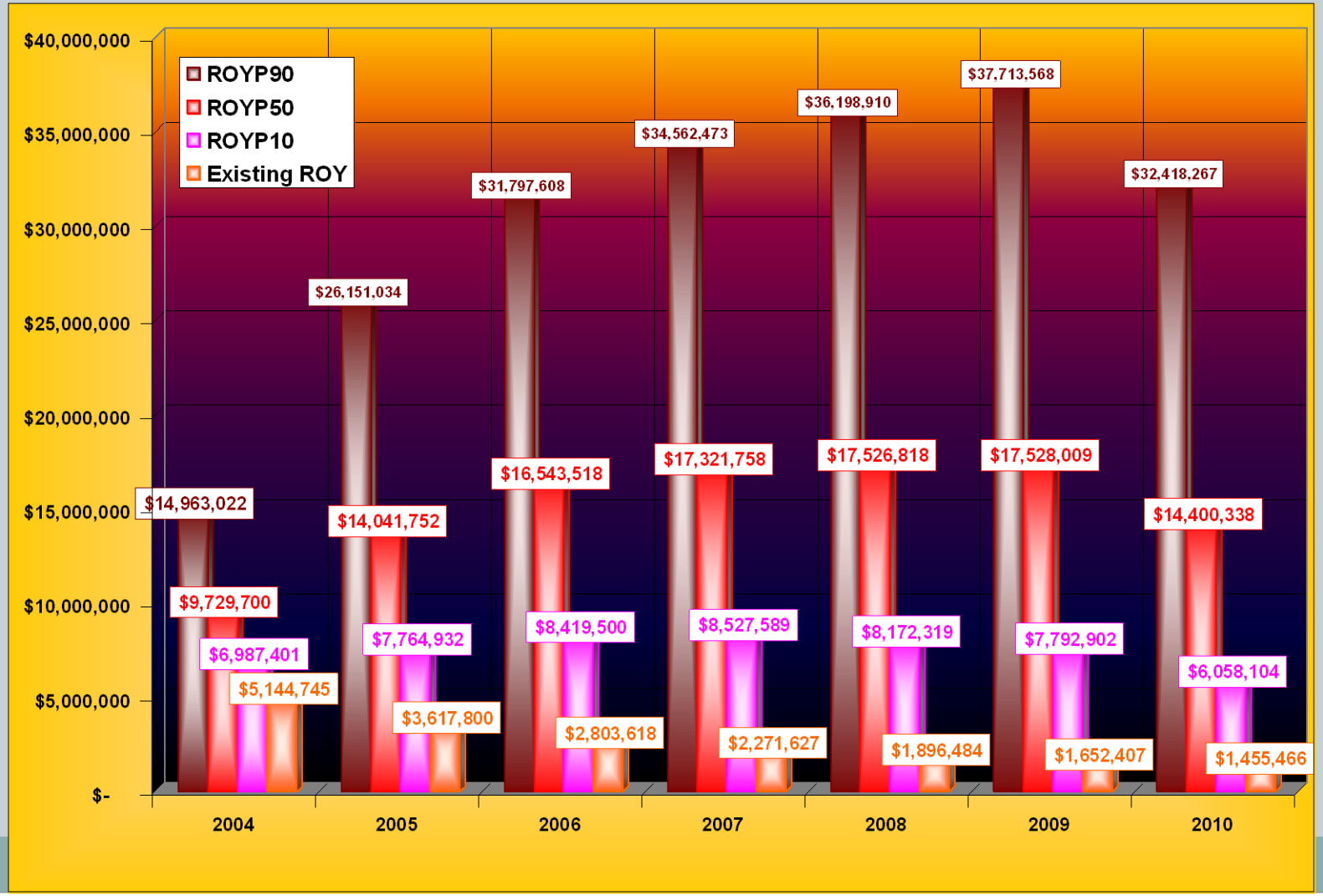
Economic Evaluation

Probabilistic Model of Future Gas Production



Economic Evaluation

Probabilistic Model of Future Royalty Value to the Tribe



Economic Evaluation

Probabilistic Model of Foreseeable CBM Development

D2/D3 + Wall Prospect

Capital/well	$ 152,436.00	
Operating Cost/well	$ 2,324.00	per month
Gas Transportation	$ 0.80	per mcf
Water Disposal	$ 0.28	per bbl
Abandonment	$ 1,850.00	per well
Severance	9.3%	
Ad Valorem	4.5%	
Royalty	18.5%	
Data Cost	$ 150,000.00	
Prospect Bonus	$2,500,000.00	
Lease Bonus	$ 225.00	per acre
Lease Rental	$ 3.00	per acre
Gas Price	$ 3.00	per mcf
Discount Rate	15.0%	
Start Date	July-02	

Total Costs:	$ 929,589,518
TOTAL Ex:	$ 696,628,695
CapEx:	$ 109,753,920
OpEx:	$ 127,503,936
Abandonment:	$ 1,332,000
Gas Trans:	$ 312,841,835
Water Disp:	$ 145,197,004
Total Lease:	$ 232,960,823
Royalty:	$ 217,034,023
Signing Bonus:	$ 2,650,000
Rental:	$ 172,800
Lease Bonus:	$ 12,960,000
Scholarship:	$ 144,000

	Gas Trans: / Water Disp:		Gas Trans: / Water Disp:		Gas Trans: / Water Disp:	
	Rental:	$ 34,560	Rental:	$ 69,120	Rental:	$ 69,120
	Lease Bonus:	$2,592,000	Lease Bonus:	$5,184,000	Lease Bonus:	$5,184,000
	Scholarship:	$ 28,800	Scholarship:	$ 57,600	Scholarship:	$ 57,600
	11,520 acres Pilot Project		23,040 acres Option Block 2&3		23,040 acres Option Block 4&5	
Per Well	16	wells	128	wells	288	wells

												57,600 acres Total of 5 Option Blocks		$ 1,173,156,880
												720	wells	
MM/YY	mcfpd	bwpd	mcf	bw	mcf	bw	mcf	bw	mcf	bw		mcf	bw	Gross Revenue
Jul-02												0	0	$ -
Aug-02												-	-	$ -
Sep-02												-	-	$ -
Oct-02												-	-	$ -
Nov-02												-	-	$ -
Dec-02												-	-	$ -
Jan-03	-	210	-	102,420								-	102,420	$ -
Feb-03	-	377	-	183,753								-	183,753	$ -
Mar-03	22	543	10,844	265,086								10,844	265,086	$ 32,533
Apr-03	38	627	18,677	306,054								18,677	306,054	$ 56,030
May-03	54	711	26,509	347,022								26,509	347,022	$ 79,526
Jun-03	70	795	34,341	387,990								34,341	387,990	$ 103,022
Jul-03	107	879	52,189	428,958								52,189	428,958	$ 156,567
Aug-03	144	963	70,037	469,926								70,037	469,926	$ 210,111
Sep-03	180	921	87,885	449,270								87,885	449,270	$ 263,656
Oct-03	217	878	105,733	428,614								105,733	428,614	$ 317,200
Nov-03	253	836	123,581	407,958								123,581	407,958	$ 370,744
Dec-03	290	794	141,430	387,302	-	819,358						141,430	1,206,660	$ 424,289
Jan-04	326	751	159,278	366,646	-	1,470,025						159,278	1,836,670	$ 477,833
Feb-04	363	709	177,126	345,989	86,756	2,120,691						263,881	2,466,681	$ 791,644
Mar-04	363	667	177,126	325,333	149,412	2,448,435						326,538	2,773,768	$ 979,615
Apr-04	363	642	177,126	313,284	212,069	2,776,178						389,195	3,089,462	$ 1,167,585
May-04	363	617	177,126	301,235	274,726	3,103,921						451,852	3,405,156	$ 1,355,556
Jun-04	363	593	177,126	289,185	417,511	3,431,664						594,637	3,720,849	$ 1,783,911

Initial Phase

Identify key components of project

- Process
- Market
- Site location
- Infrastructure
- Feedstock source
- Capitol expense
- Operating expense

Capital Expense - CAPEX

- Define process
- Equipment required
  - Process equipment
  - Buildings
  - Infrastructure
  - Rolling stock
  - Storage
- Expenditures

Operating Expense - OPEX

- Define expenses
  - Labor
  - Utilities
  - Maintenance
  - Feedstock
  - Separate all potential products
  - Additional

Economic Model - Income

Summary sheet

Income		MM$/yr
Bio-oil		23.127
Glycerine	80%	2.462
Meal		2.172
Tax Credit	$/gal	1.00
Tax Credit, yes=1, no=0		1

Biodiesel income calculation

=(((((AI41*2000*AI35)+(AI42*2000*AI37)+(AI39*AI43*2000))*AI50/1000000))

Assumptions		
Salary Overhead	%	100%
Total Seed stock	tons/yr	81000
canola	tons/yr	81000
canola	%	100%
rape sd	tons/yr	0
rape sd	%	0%
mustard	tons/yr	0
mustard	%	0%
canola	oil yield, gal/lb	0.050
rape sd	oil yield, gal/lb	0.066
mustard	oil yield, gal/lb	0.053
canola	gly yld, gal/lb	0.007
rape sd	gly yld, gal/lb	0.007
mustard	gly yld, gal/lb	0.005
canola	meal yld, lb/lb	65%
rape sd	meal yld, lb/lb	65%
mustard	meal yld, lb/lb	65%
Bio - oil	$/gal	**$2.55**
Glycerine	$/gal	**$1.90**
Meal	$/lb	**$0.08**
Plant Size	sq ft	12000
Office size	sq ft	3000
Acreage yield	ton/ac	0.648
Acreage req	ac	125000
Crop Radius	mi	7.9
base case, yes=1, no=0		1
working cap	M$	3000
meal feed, yes=1, no=0		1
income glycerine/meal $/g		0.6127
solvent case, yes=1, no=0		1

Economic Model - CAPEX

		10%	36
Interest rate	8.00%	8%	45
Debt term yrs.	20		
Tribal Cap. Financial Liability		100.0%	
Cap Exp	100%	M$	
Main building	225	225.00	
seed storage	405	405.00	
oil storage	0.243	0.24	
glycerine storage	0.029	0.03	
Meal Storage	270	269.57	
Transportation	2000	2000.00	
Process Equipment	8100	8100.00	
Base Equipment	8000	8000.00	
glycerol refining	0	0.00	
TOTAL CAPEX	19000	19000	

Summary sheet

Link calculations

Facility worksheet

Tangible					
	Main building	15000	sq ft	15	225
	seed storage	5	/ ton	81000	405
	oil storage	30	/M gal	8	0.243
	glycerine storage	30	/M gal	1	0
	Meal Storage	5	/ Mton	52650	270
	Transportation	2000000	each	1	2000
	processing equipment	100	ton sd	81000	8100
	processing equipment	8000000	base	1	8000
	grain elevator	0.0233	$/lb		0
	glycerol refining				0
					0
					0
					0
					0
					0
	Tangible Total				19000
TOTAL	M$				19000

Economic Model - OPEX

Summary sheet

Expenses	unit	$/unit
Plant manager	1	70000
Chemist	1	36000
Operations employee	10	36000
Sales Mgr	1	45000
Maint.	3	24000
canola	$/lb	0.0840
rape sd	$/lb	0.1300
mustard	$/lb	0.1100
days of operation	days	330
electricity	$/kw	0.035
gas	$/therm	0.023
Transportation meal	$/ton	8
Transportation glyc	$/gal	0.050
Build Maint - equip	$/mo	3000
Build Maint	$/mo	1250
Build Utilities	$/mo	1000
Build Maint - equip	$/mo/sqft	0.250
Build Maint	$/mo/sqft	0.104
Build Utilities	$/mo/sqft	0.083
Process utilties	$/gal	0.00013
Plant Size difference	%	100%
Base Seed Stk Rqd	tons/yr	81000
Gas usage	MMCF/yr	130
gas price	$/mcf	8.30
Process equip replac	$/yr	50000
Avg. feedstock price	$/lb	0.084
Transportation oil	$/gal	0.08
Nat Biodiesel board	$/gal	0.003
Marketing	$/gal	0.03
Chemicals	$/lb	0.014

Bio-Diesel	OPEX	MM$/yr
Personnel		0.583
feedstock		13.608
build utilities/ operating		0.063
Process utilities, gas		1.079
Transportation		0.608
Equipt maint		0.051
Transportation, oil		0.608
Nation Biodiesel board		0.000
Marketing		0.243
Chemicals		1.134
TOTAL OPEX		17.98

Gly/Meal	OPEX	MM$/yr
Transportation, glycol		0.049
Transportation, meal		0.395
Utilities		0.0007
TOTAL OPEX		0.444

Other Labor Costs

Personnel			
	$/hr	$/mo/empl	M$/yr /OH
Manager		4000	62
Acct./ bkg	13.00	$2,080	32
Truck Driver	15.00	$2,400	192
# Trk Drivers	5.13		
1/2 Mechanic	7.50	$1,200	19
Ast. Mgr		$3,000	47
	0	$0	0
	0	$0	0
TOTAL			352
Overhead	130%		

Economic Model - Assumptions

Expenses	unit	$/unit
Plant manager	1	70000
Chemist	1	36000
Operations employee	10	36000
Sales Mgr	1	45000
Maint.	3	24000
canola	$/lb	0.0840
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days of operation	days	330
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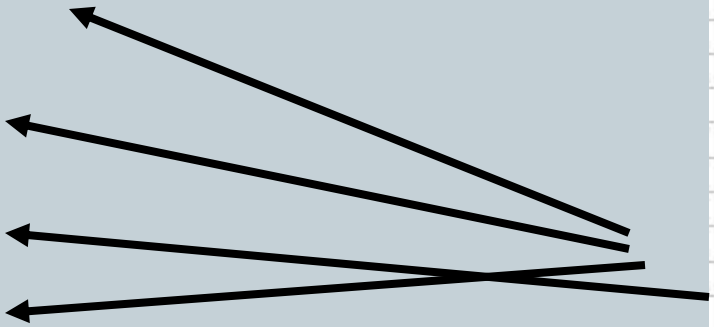

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Acreage req	ac	125000
Crop Radius	mi	7.9
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working cap	M$	3000
meal feed, yes=1, no=0		1
income glycerine/meal $/g		0.6127
solvent case, yes=1, no=0		1

Economic Model – Economic factors

Discount rate

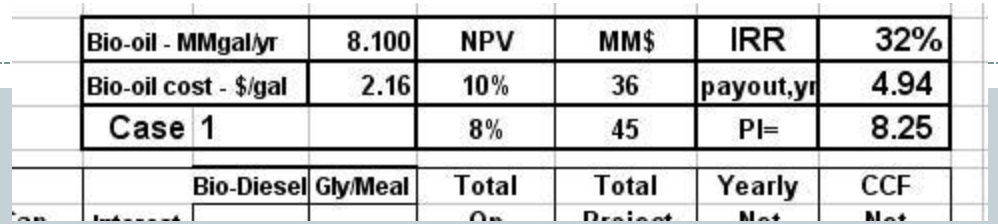
Interest rate

Case 1			
OPEX cost - $/gal/yea	2.274	NPV	MM$
		10%	36
Interest rate	8.00%	8%	45
Debt term yrs.	20		
Tribal Cap. Financial Liability		100.0%	
Cap Exp	100%	M$	
Main building	225	225.00	

Tribal involvement

Discounted net present value

Economic Model - Output



Bio-oil - MMgal/yr		8.100	NPV	MM$	IRR	32%
Bio-oil cost - $/gal		2.16	10%	36	payout,yr	4.94
Case	1		8%	45	PI=	8.25
	Bio-Diesel	Gly/Meal	Total	Total	Yearly	CCF

Summary

- CAPEX - $
- Discount Rate - %
- Discounted Net Present Value - DNPV - $
- Discounted Cumulative Cash Flow – DCCF - $
- Internal Rate of Return – IRR - %
- Payout – PO - years

Division of Energy and Mineral Development (DEMD)

Branch Chief

Dennis Bodenchuk

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