

2006-T3 FMW 8 MW Ethanol Plant System Impact Study

September 2006



Study conducted by Zea Baca

Introduction

In July 2006, 2006-T3 requested an ethanol plant interconnection to Western Area Power Administration's (WAPA) 115 kV transmission line between Fort Morgan West and Bijou substations.

The purpose of this study is to determine if there are any system criteria violations on the Eastern Colorado power grid caused by the proposed 8 MW load. A map of the major transmission lines residing in the area of 2006-T3 proposed 8 MW ethanol plant is shown. (Figure 1) The scheduled in-service date is 2008.

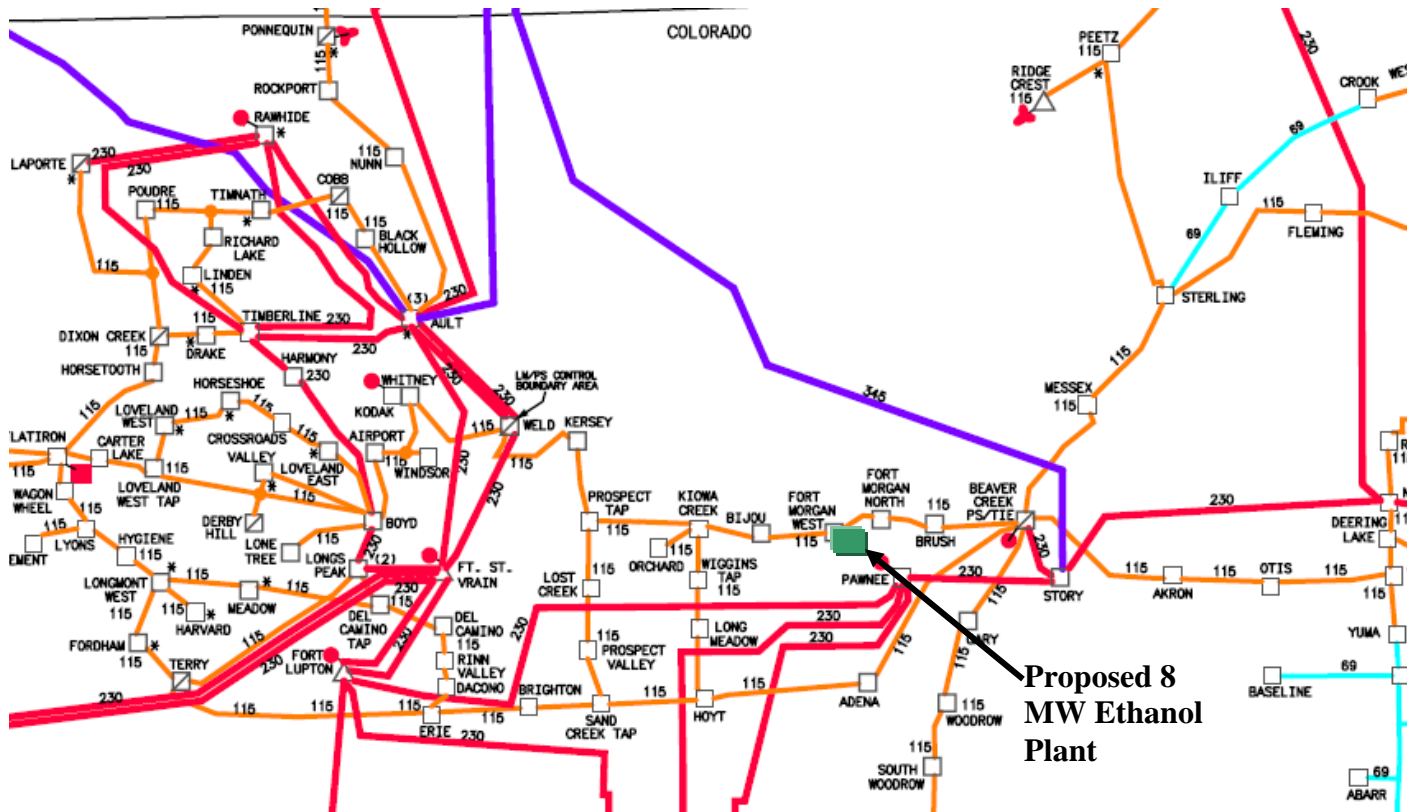


Figure 1: Major Transmission Lines in the Area

The interconnection location requested is along a transmission line that includes one existing tap – Bijou Tap. In accordance with WAPA’s general practice, Western only allows one tap per 115-kV transmission line section, i.e. - between the two substations at either end where breakers are located. Since the Fort Morgan West (FMW) substation is the closest substation to the site of the plant, it is recommended that the Ethanol Plant be served as a radial load off of the FMW substation. The transmission line right-of-way will be the decision of 2006 - T3. Two possible scenarios were studied. The first version (V1) is to follow along the side of the interstate I76. The second (V2) is to go aside the railway to the east and then head directly north to FMW substation. Both of these options can be seen below in Figure 2.

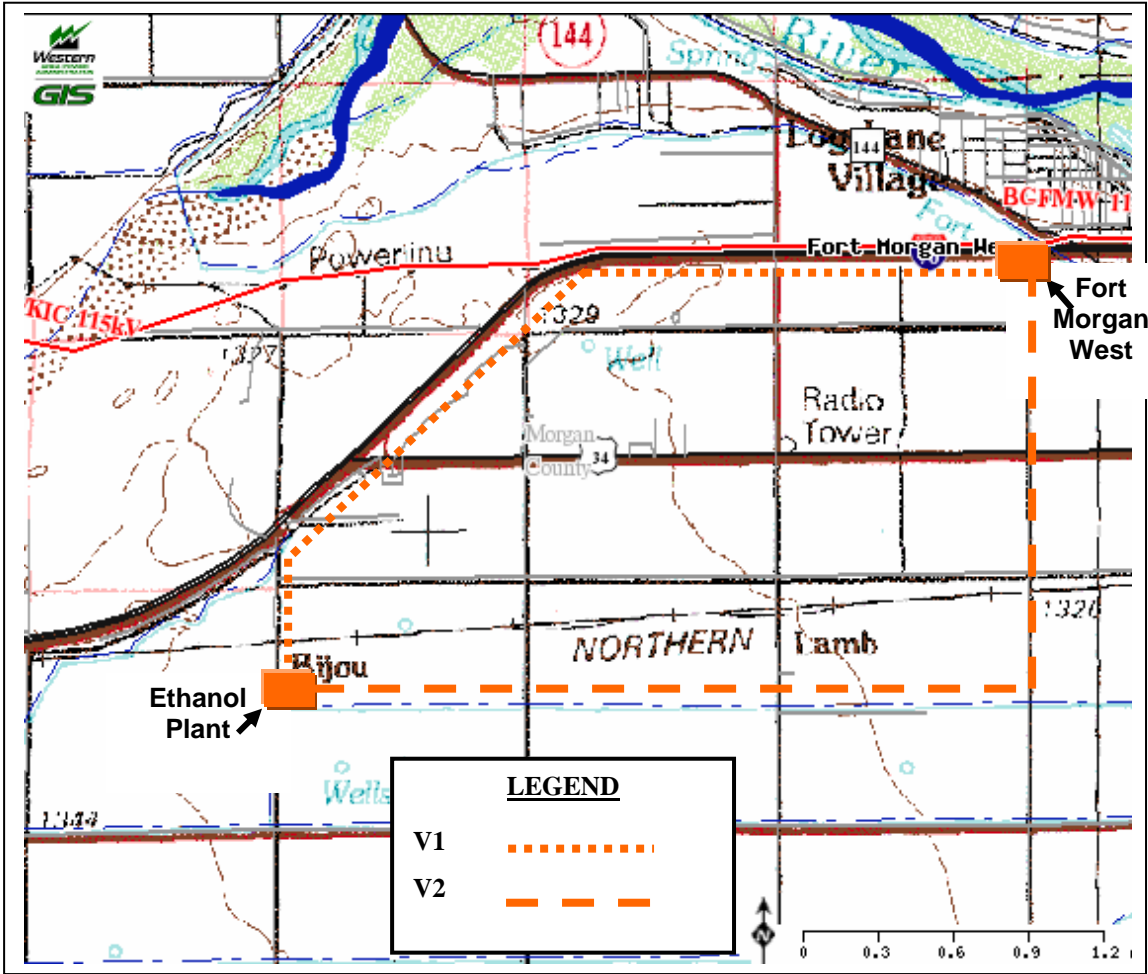


Figure 2: Transmission Line Options

I. Procedure

A. Base Case

To correctly determine system impact, a Western Electricity Coordinating Council (WECC) 2008 HS (Heavy Summer) base case must be utilized for analysis. In addition, future planned system modifications in Wyoming and Colorado were added to this case. These include:

- A 30 MW Wind farm interconnecting Cheyenne to Happy Jack transmission line and upgrades
- A 100 MW Wind farm interconnecting Cheyenne to Laramie transmission line and upgrades
- Re-building the Beaver Creek-Adena-Hoyt 115 kV transmission line with 1272 ACSR conductor.
- A 120 MW wind farm interconnection re-building
 - Fleming-Haxtun 115 kV transmission line
 - Laramie River – Ault 345 kV terminal equipment
- A 100 MW Wind farm interconnection upgrading lines
 - Wauneta - Wauneta Wind raised to 240 MVA
 - Sterling - Beaver Creek raised to 135 MVA
 - Wauneta - Wages raised to 85 MVA
 - Fleming Wind - Sterling raised to 200 MVA
 - Wauneta - Alvin raised to 105 MVA
- 25 MW Load tapped into the 115 kV transmission line between Eckley and Deering Lake. Also 17.5 MVARs capacitance was added due to the load.

In order to accurately represent the system at the proposed interconnection time of the Ethanol Plant's in service date, the base case needed to be developed in four steps. They are as follows:

- Case A – The 2008HS WECC base case is updated with a 60MW of wind generation (located near Peetz Colorado and referred to as 'Spring Canyon'), which connects to the Sidney – North Yuma 230 kV transmission line.
- Case B – Building on Case A, 30MW of wind generation, referred to as 'Ridge Crest, connecting to the Peetz substation. Study system effects on TOT3 and the Northeastern Colorado transmission system. This is done to test the reliability and establish a base of power flow data in the area based on predicted future system upgrades.
- Case C - Building on Case B, the system modifications listed above.
- Case D - Using Case C the 2006 - T3's proposed 8MW Ethanol Plant was modeled interconnecting to the Fort Morgan West substation. Reanalyze system effects.

TOT 3 currently consists of six transmission lines between Southeastern Wyoming and Northeastern Colorado (Figure 3). The current Total Transfer Capability (TTC) is the WECC Accepted Rating of 1605 MW. Power transfers in Case C across TOT 3 were increased to 1585MW. The limiting element for all cases is the Sidney 230/115 kV transformer during the Laramie River - Ault 345 kV contingency. For the purposes of this study, the 08HS case will have a TOT3 rating of 1585 MW as derived in case C. Case D begins here and uses case C as a basis for comparison of effects on the system directly related to the new ethanol plant.

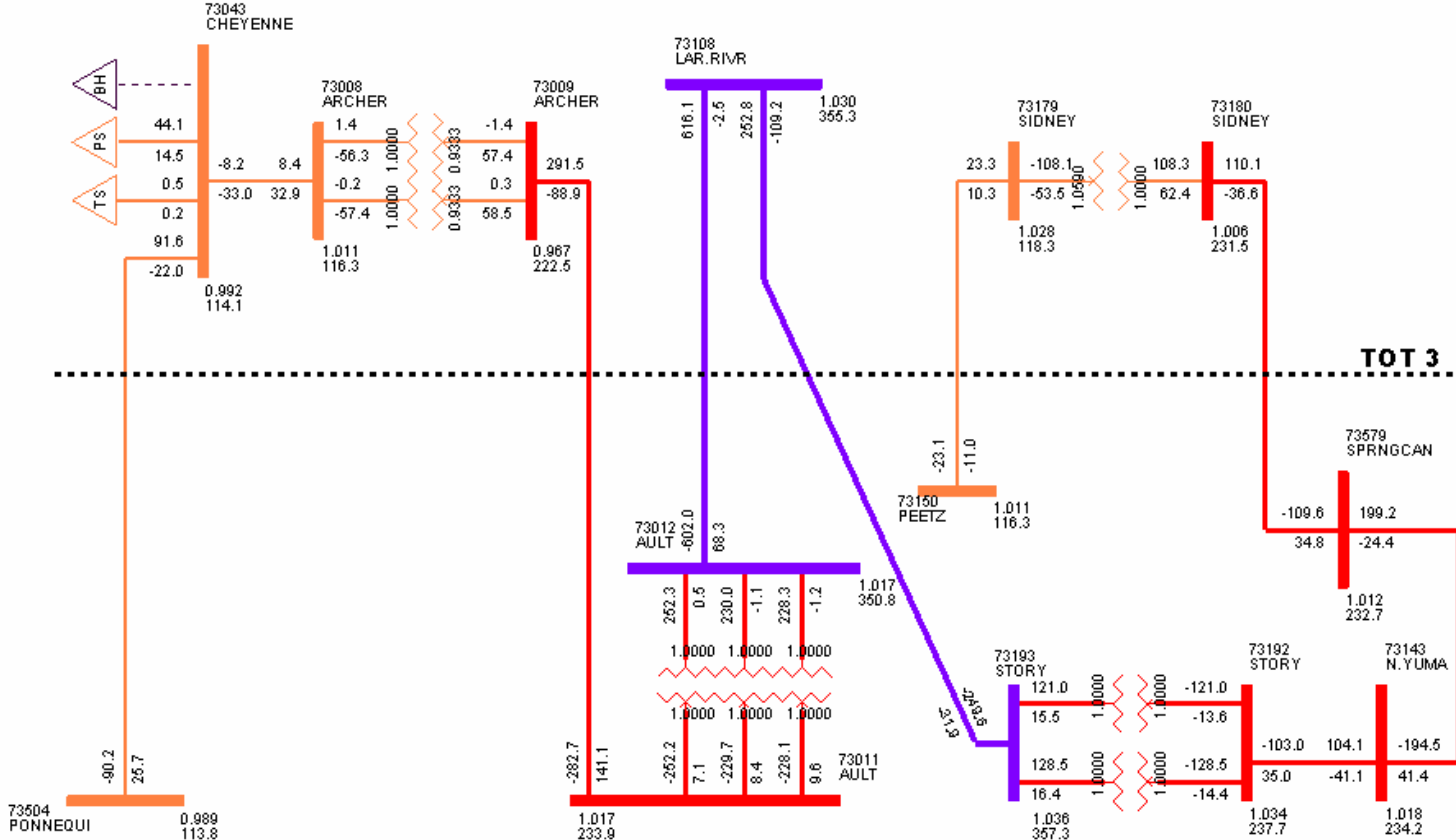


Figure 3: TOT 3 Boundary Definition

B. Criteria

1. System Intact

Voltages will remain within the required 0.95 to 1.05 per unit range. Transmission lines and transformers may not exceed 100 % of their nominal rating.

2. Single Contingency

Voltages will remain between 0.90 and 1.10 per unit. Transmission lines and transformers may not exceed either 100% of their nominal rating or an established emergency rating.

II. Findings

A. Base Case Power flow results

Figure 4 below displays the electrical connection of the load at system intact. All the contingencies applied to the case are shown below in table A. A list of monitored buses is found in Table D in addition; monitored lines in Table E.

B. Case D Power flow results

1. Conclusion: After completing the power flow portion of this study, it can be observed that the Ethanol Plant load of 8 MW does not affect WAPA's system.
2. Recommendations: As a result of having two construction options, two cost estimates will be given. Both versions are calculated based on a 115 kV transmission line built similar to WAPA's system. The line structures and conductor type may vary in accordance to who constructs the line. This cost estimate does not include cost due to planning, lands and rights, environmental, surveys, geologic investigations, designs and specifications, or construction supervision. At WAPA's Fort Morgan West a single breaker line bay will need to be added. This consists of one breaker along with three disconnect switches.
 - The 115 kV line bay addition estimated price is \$489,000
 - V1 transmission line is about 4.5 miles for a price of \$522,585
 - V2 transmission line is about 3.8 miles for a price of \$441,294

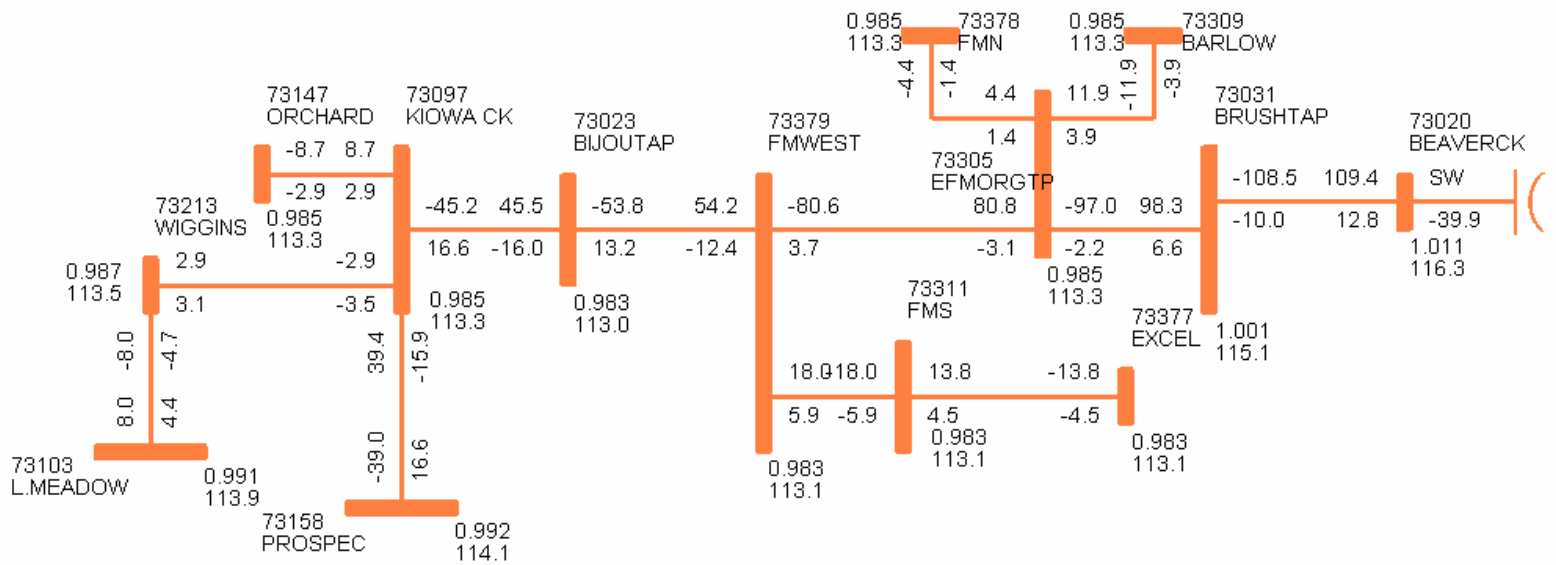


Figure 4: System Intact without Load

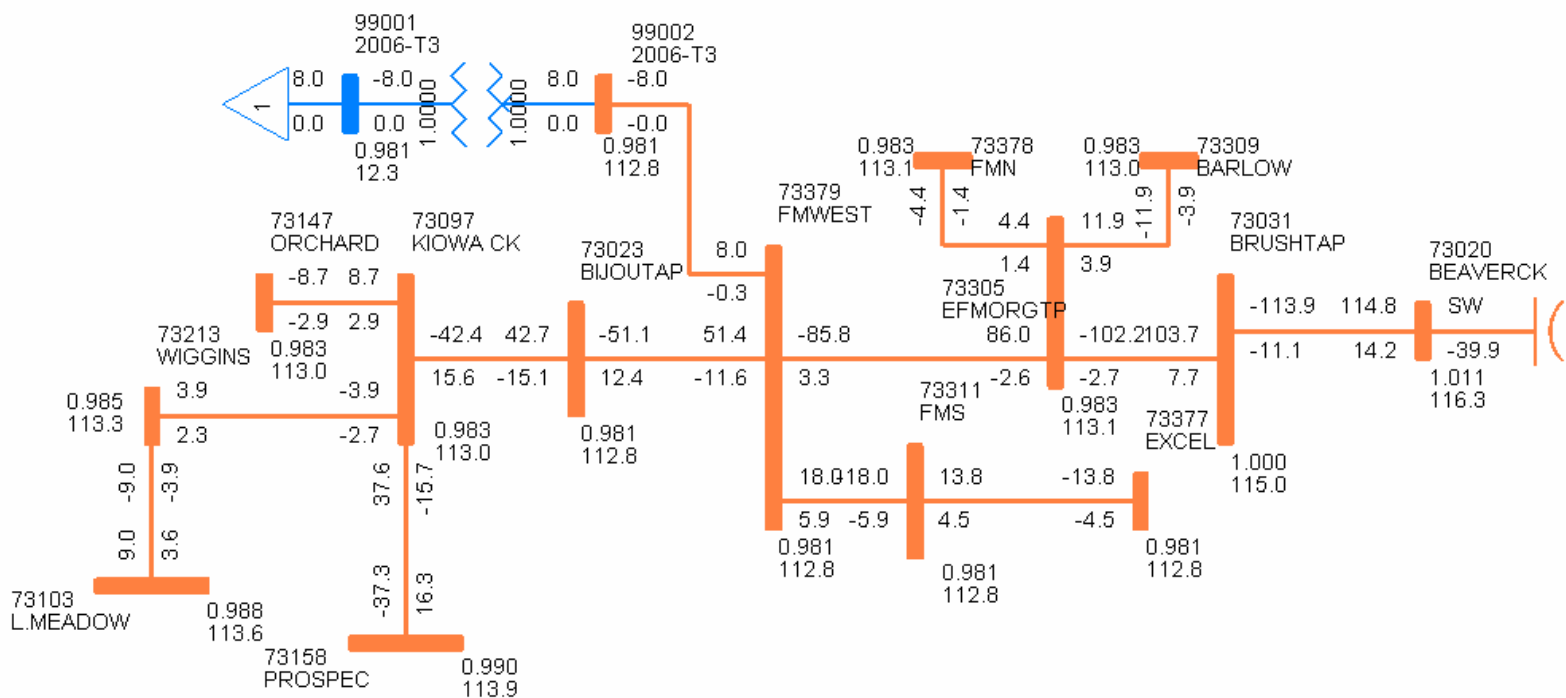


Figure 5: System Intact with Load

Table A: Contingencies Applied

Contingency Name	Event	Bus #	From Bus	Bus #	To Bus
FRCHCK_WAUN1:	TRIP LINE	73063	[FRENCHCK 115.00]	73540	[WAUNETA1 115.00]
FLEMWIND_STG:	TRIP LINE	73900	[FLEMWIND 115.00]	73191	[STERLING 115.00]
FLEMWIND_FRC:	TRIP LINE	73900	[FLEMWIND 115.00]	73063	[FRENCHCK 115.00]
LRS_AULT :	TRIP LINE	73108	[LAR.RIVR 345.00]	73012	[AULT 345.00]
LRS_STY :	TRIP LINE	73108	[LAR.RIVR 345.00]	73193	[STORY 345.00]
SPCNYN_NYUMA:	TRIP LINE	73579	[SPRNGCAN 230.00]	73143	[N.YUMA 230.00]
SPCNYN_SID :	TRIP LINE	73579	[SPRNGCAN 230.00]	73180	[SIDNEY 230.00]
BCKPS_STY :	TRIP LINE	73013	[B.CK PS 115.00]	73192	[STORY 230.00]
BCKTS_BCK :	TRIP LINE	73016	[B.CK TRI 230.00]	73020	[BEAVERCK 115.00]
STY_PAWN :	TRIP LINE	73192	[STORY 230.00]	70311	[PAWNEE 230.00]
BCK_STRLG :	TRIP LINE	73020	[BEAVERCK 115.00]	73191	[STERLING 115.00]
BCK_FMW :	TRIP LINE	73020	[BEAVERCK 115.00]	73379	[FMWEST 115.00]
KIC_FMW :	TRIP LINE	73097	[KIOWA CK 115.00]	73379	[FMWEST 115.00]
KIC_LSTC :	TRIP LINE	73097	[KIOWA CK 115.00]	73370	[LOSTCKTP 115.00]
KIC_WLD :	TRIP LINE	73095	[KERSEYTP 115.00]	73211	[WELD LM 115.00]
BCK_LST :	TRIP LINE	73020	[BEAVERCK 115.00]	73125	[LSCHANCE 115.00]
BCK_HYT :	TRIP LINE	73020	[BEAVERCK 115.00]	73088	[HOYT 115.00]
HYT_ERIE :	TRIP LINE	73088	[HOYT 115.00]	73503	[ERIE SW 115.00]
RINN_ERIE :	TRIP LINE	73503	[ERIE SW 115.00]	73501	[RINNVALL 115.00]
TRR_ERIE :	TRIP LINE	73196	[TERRY 115.00]	73503	[ERIE SW 115.00]
DCAM_LPK :	TRIP LINE	73049	[DELCAMIN 115.00]	73115	[LONGPEAK 115.00]
DCAM_MDW :	TRIP LINE	73049	[DELCAMIN 115.00]	73133	[MEADOW 115.00]
BCK_DEERL :	TRIP LINE	73020	[BEAVERCK 115.00]	73047	[DEERINGL 115.00]
SID_PEETZ :	TRIP LINE	73179	[SIDNEY 115.00]	73150	[PEETZ 115.00]
PEETZ_STG :	TRIP LINE	73150	[PEETZ 115.00]	73191	[STERLING 115.00]
SID_ARH :	TRIP LINE	73179	[SIDNEY 115.00]	73008	[ARCHER 115.00]
SID_SG230 :	TRIP LINE	73180	[SIDNEY 230.00]	73190	[STEGALL 230.00]
ARH_SG :	TRIP LINE	73009	[ARCHER 230.00]	73190	[STEGALL 230.00]
NYUMA_WRAY :	TRIP LINE	73143	[N.YUMA 230.00]	73224	[WRAY 230.00]
SID_BPT :	TRIP LINE	73179	[SIDNEY 115.00]	73029	[BRIDGEPT 115.00]
STG_BPT :	TRIP LINE	73189	[STEGALL 115.00]	73029	[BRIDGEPT 115.00]
SID_DC :	TRIP LINE	73180	[SIDNEY 230.00]	73181	[SIDNEYDC 230.00]
ARH_AULT :	TRIP LINE	73009	[ARCHER 230.00]	73011	[AULT 230.00]
WLD_AULT :	TRIP LINE	73212	[WELD LM 230.00]	73011	[AULT 230.00]
STVR_WLD :	TRIP LINE	70410	[ST.VRAIN 230.00]	70471	[WELD PS 230.00]
STVR_FTLUP :	TRIP LINE	70410	[ST.VRAIN 230.00]	70192	[FTLUPTON 230.00]
SID230_115 :	TRIP LINE	73180	[SIDNEY 230.00]	73179	[SIDNEY 115.00]
STG230_115 :	TRIP LINE	73189	[STEGALL 115.00]	73190	[STEGALL 230.00]
STG230_115 :	TRIP LINE	73115	[LONGPEAK 115.00]	73116	[LONGPEAK 230.00]
STY345_230 :	TRIP LINE	73192	[STORY 230.00]	73193	[STORY 345.00]
BCKPS230_115:	TRIP LINE	73016	[B.CK TRI 230.00]	73015	[B.CK TRI 115.00]
WRAY230_115 :	TRIP LINE	73224	[WRAY 230.00]	73223	[WRAY 115.00]

Table A: Contingencies Applied Continued

Contingency Name	Event	Bus #	From Bus	Bus #	To Bus
BURL230_115 :	TRIP LINE	73035	[BURLNGTN 115.00]	73036	[BURLNGTN 230.00]
AULT345_230 :	TRIP LINE	73011	[AULT 230.00]	73012	[AULT 345.00]
PAW_FTLUPT :	TRIP LINE	70311	[PAWNEE 230.00]	70192	[FTLUPTON 230.00]
NYUMA_WAUNET:	TRIP LINE	73210	[WAUNETA 115.00]	73142	[N.YUMA 115.00]
WRAY_CRT :	TRIP LINE	73223	[WRAY 115.00]	73304	[CRETESWT 115.00]
WRAY_WRAYTS :	TRIP LINE	73223	[WRAY 115.00]	73331	[WRAYWAPA 115.00]
WRAY_BURL :	TRIP LINE	73223	[WRAY 115.00]	73035	[BURLNGTN 115.00]
SFOR_LCT :	TRIP LINE	73185	[SO. FORK 115.00]	73125	[LSCHANCE 115.00]
CHY_PON_RCK :	TRIP LINE	73043	[CHEYENNE 115.00]	73504	[PONNEQUI 115.00]
BOYD_HARM :	TRIP LINE	73027	[BOYD 230.00]	73078	[HARMONY 230.00]
BOYD_ARP :	TRIP LINE	73026	[BOYD 115.00]	73002	[AIRPORT 115.00]
WNY_WLD :	TRIP LINE	73558	[WHITNEY 115.00]	73211	[WELD LM 115.00]
ARP_WNY :	TRIP LINE	73002	[AIRPORT 115.00]	73558	[WHITNEY 115.00]

Table D- Monitored Busses – page 1

Bus #	Bus Name	kV	Bus #	Bus Name	kV	Bus #	Bus Name	kV
65095	BADWATER	230	70194	FULTONTS	115	70401	SOUTH 1	115
65293	CARRDRAW	230	70198	GILCREST	115	70402	SOUTH 2	115
65305	CASPERPP	115	70200	GLENN PS	230	70406	ST.VR 2	18
65306	CASPERPP	69	70202	GODFRETP	115	70407	ST.VR 3	18
65415	DAVEJO&1	230	70208	GRAY ST	115	70408	ST.VR 4	18
65420	DAVEJOHN	230	70209	GREELEY	115	70409	ST.VRAIN	22
65425	DAVEJOHN	115	70210	GREELEY	46	70410	ST.VRAIN	230
66020	MUSTANG	230	70212	GREENWD	230	70416	STRASBRG	115
66410	SPENCE	230	70215	HARRISPS	115	70417	SULLIVN	230
70005	BRUSHCPP	115	70216	HAVANA1	115	70428	TECH CTR	230
70010	QF MNFRT	13.8	70217	HAVANA2	115	70430	TOLGATE1	115
70018	SODALAKE	230	70224	HOGBACK	115	70431	TOLGATE2	115
70021	ROCKYTMP	115	70234	HUDSON	115	70432	TOWER	230
70023	ALLISON	115	70238	IDEALCEM	46	70439	UNC	115
70034	ARAP3	13.8	70239	JEWELL2	230	70441	UNIVERS1	115
70035	ARAP4	13.8	70240	JOHNSTN	115	70442	UNIVERS2	115
70036	ARAPAOA	115	70241	JORDAN	230	70443	UNIVRSTP	115
70037	ARAPAHOB	115	70242	KENDRICK	115	70450	VASQUEZ	115
70038	ARAPAHOE	230	70251	LAKEWOD1	115	70461	WASHINGTON	230
70039	ARGO	115	70252	LAKEWOD2	115	70463	WATERTON	115
70040	ARSENAL	115	70255	LAPORTE	46	70464	WATERTON	230
70041	ARVADA	115	70256	LAPORTPS	115	70469	WELD	46
70045	BANCROFT	115	70259	LEETSDAL	115	70470	WELD PS	115
70046	BUCKLEY2	230	70260	LEETSDAL	230	70471	WELD PS	230
70047	BARRLAKE	230	70263	LITTLET1	115	70474	WINDSOR	230
70048	GREENVAL	230	70264	LITTLET2	115	70478	ZUNI1	13.8
70067	BUCKLEY1	230	70265	LOOKOUT	115	70479	ZUNI2	13.8
70073	CALIFOR1	115	70266	LOOKOUT	230	70480	WESTPS	230
70074	CALIFOR2	115	70276	MAPLETO1	115	70481	MONACO12	230
70075	CALIFOR3	115	70277	MAPLETO2	115	70482	MONACO 3	230
70087	CAPHILL1	115	70278	MARCY	230	70487	QF TC1	13.8
70088	CAPHILL2	115	70279	MARTIN 1	115	70490	QF TC2	13.8
70100	CHATFLD	230	70280	MARTIN 2	115	70491	TOLGATE	230
70103	CHEROK1	15.5	70283	MEADOWHL	230	70493	QF T11	13.8
70104	CHEROK2	15.5	70284	SURREYRG	230	70495	QF T12	13.8
70105	CHEROK3	20	70290	MONFORT	115	70498	QF BCP 1	13.8
70106	CHEROK4	22	70291	MONROEPS	230	70499	QF BCP 2	13.8
70107	CHEROKEE	230	70298	NORTH PS	115	70500	QF CPP 1	13.8
70108	CHEROKEE	115	70299	NORTH542	115	70501	QF CPP 2	13.8
70112	CLARK	230	70300	NORTH547	115	70502	QF UNC	13.8
70116	COBBLAKE	115	70307	P.VALLEY	115	70512	JEWELL1	230
70126	CONOCO	115	70310	PAWNEE	22	70523	SULPHUR	115
70127	COORSREC	115	70311	PAWNEE	230	70524	SULPHUR	230
70137	DAKOTA	230	70313	ORCHARD	230	70527	SANTEFE	230
70138	DANIELPK	115	70314	MANCHEF1	16	70528	SPRUCE	230
70139	DANIELPK	230	70315	MANCHEF2	16	70529	JLGREEN	230
70142	DEERCREEK	115	70322	PLAINVW	115	70530	PICADILY	230
70144	DENV12R	13.8	70323	PLATTEPS	115	70531	AIR LIQ	115
70145	DENV13R	13.8	70324	LACOMBE	230	70533	LEMON	230
70146	DENV23R	13.8	70331	PRAIRIE	230	70537	FITZSMNS	115
70147	DENVSYNC	13.8	70340	QUAKER1	115	70538	CHAM48TH	115
70148	DENVTM	115	70341	QUAKER2	115	70539	CHAM48TH	230
70149	DENVTM	230	70342	QUAKERTP	115	70544	ISABELLE	230
70150	DENVTM1	13.8	70343	QUINCY	230	70551	MURPHY	230
70151	DENVTM2	13.8	70345	RALSTON1	115	70553	ARAP5-6	13.8
70152	DENVTM3	13.8	70346	RALSTON2	115	70554	ARAP7	13.8
70153	DERBY 1	115	70350	RAWHIDE	24	70556	QF BCP 3	12.5
70154	DERBY 2	115	70351	RAWHIDEA	13.8	70562	SPRUCE1	18
70162	EAST	115	70354	RIDGE	115	70563	SPRUCE2	18
70163	ELATI1	230	70355	RIDGE	230	70565	BARRLAK1	13.8
70165	ENGLE3TP	115	70362	RIVERDAL	230	70566	BARRLAK2	13.8
70166	ENGLEWD1	115	70365	ROCKYFLA	115	70567	RAWHIDED	13.8
70167	ENGLEWD2	115	70368	ROSEDALE	115	70568	RAWHIDEB	13.8
70168	ENGLEWD3	115	70369	RUSSELL	115	70569	RAWHIDEC	13.8
70169	ENNIS	115	70377	SANDOWN	115	70588	RMEC1	15
70170	ELATI2	230	70382	SEMPER	115	70589	RMEC2	15
70172	FED CNTR	115	70384	SHERIDAN	115	70590	RMEC	230
70173	FEDCT RTP	115	70389	MONFORT	46	70591	RMEC3	23
70174	FEDERHT1	115	70392	SKYRANCH	230	70605	HENRYLAK	230
70175	FEDERHT2	115	70393	SKYRANCH	230	70606	HENRYLAK	115
70177	ELATI3	230	70395	SMOKYHIL	115	70607	BROMLEY	115
70188	FTLUP1-2	13.8	70396	SMOKYHIL	230	70610	REUNION	230
70191	FTLUPTON	115	70398	SOUTH1TP	115	70611	REUNION	115
70192	FTLUPTON	230	70400	SODALAKE	115	70612	PRARIETS	115

Table D - Monitored Busses – page 2

Bus #	Bus Name	kV	Bus #	Bus Name	kV	Bus #	Bus Name	kV
73002	AIRPORT	115	73112	LINGLE	115	73223	WRAY	115
73003	AKRON	115	73113	LNGMNTNW	115	73224	WRAY	230
73004	ALCOVA	115	73117	LOST CK	115	73225	WRAY TAP	115
73005	ALVIN	115	73124	LOVEWTAP	115	73230	YUMA	115
73006	ANTON	115	73125	LSCHANCE	115	73236	GREENWOD	115
73007	ARAPASUB	115	73126	LYMAN	115	73255	LINGLETP	115
73008	ARCHER	115	73127	LYONS	115	73256	LYMANTP	115
73009	ARCHER	230	73128	MAY	115	73302	BRLNGTN1	13.8
73010	ARICKARE	115	73129	MBPP-1	24	73303	BRLNGTN2	13.8
73011	AULT	230	73130	MBPP-2	24	73304	CRETESWT	115
73012	AULT	345	73131	MCGREW	115	73305	EFMORGTP	115
73013	B.CK PS	115	73134	MED BOW	115	73309	BARLOW	115
73014	B.CK PS	230	73135	MIRACLEM	230	73310	FME	115
73015	B.CK TRI	115	73136	MESSEX	115	73311	FMS	115
73016	B.CK TRI	230	73137	MIRACLEM	115	73318	LIMON	115
73017	B.SANDY	115	73139	MYERS	115	73326	ROBB	115
73018	B.SANDY	230	73140	MYERS TP	115	73331	WRAYWAPA	115
73020	BEAVERCK	115	73142	N.YUMA	115	73332	ALCOVA1	6.6
73023	BIJOUTAP	115	73143	N.YUMA	230	73348	CORLETT	115
73024	BLKHLWTP	115	73145	NUNN	115	73349	FREMONT1	12
73025	BONNY CK	115	73146	OASISTAP	115	73350	FREMONT2	12
73026	BOYD	115	73147	ORCHARD	115	73351	GLENDO1	6.9
73029	BRIDGEPT	115	73149	OVERLAND	115	73352	GLENDO2	6.9
73030	BRIGHTNW	115	73150	PEETZ	115	73354	JACKLOPE	115
73031	BRUSHTAP	115	73152	PINEBLUF	115	73355	KIMBALLC	115
73034	BURL PSC	115	73153	PODOLAK	115	73356	KORTES1	6.9
73035	BURLNGTN	115	73154	POLE CK	115	73357	KORTES2	6.9
73036	BURLNGTN	230	73155	POLEHILL	115	73358	KORTES3	6.9
73037	BUSHNELL	115	73156	POUDRE	115	73359	LIMESTON	115
73038	BUSHNLTP	115	73157	POWELLTP	69	73360	LIMESTON	34.5
73039	CARTERLK	115	73158	PROSPEC	115	73361	MEDBOWHS	115
73042	CASPERLM	115	73159	PROSPVAL	115	73362	MEDBOWTP	115
73043	CHEYENNE	115	73161	QUALLS	115	73363	SMNOE1-2	6.9
73044	COBBLKTP	115	73166	REDWILLW	115	73364	WARMSPGS	115
73046	DALTON	115	73167	REFNRYTP	115	73365	EMIGRANT	115
73047	DEERINGL	115	73169	RICHARDS	115	73366	WAGNHNDS	115
73051	DIXON CK	115	73172	ROCKPRTP	115	73367	FTSANDER	115
73053	ECKLEY	115	73173	ROUNDTOP	115	73368	GUERNRRL	115
73056	ESTES	115	73174	SAGEBRSH	115	73369	KODAKETP	115
73059	FLEMING	115	73175	SANDHILL	115	73370	LOSTCKTP	115
73060	FORDHAM	115	73176	SEMINOE	115	73371	BETHELLM	115
73062	FREMONT	115	73177	SEMINOTP	115	73372	OTIS LM	115
73063	FRENCHCK	115	73178	SENTINEL	115	73373	VALLEYLM	115
73065	GARY	115	73179	SIDNEY	115	73374	VERNONLM	115
73066	GEMCTYTP	115	73180	SIDNEY	230	73375	WARRENLM	115
73067	GERING	115	73181	SIDNEYDC	230	73377	EXCEL	115
73069	GLENDO	115	73182	SINCLAIR	115	73378	FMN	115
73070	GLENRCKN	115	73183	SKYLINE	115	73379	FMWEST	115
73071	GLENRCKS	115	73184	SMOKYHLW	115	73432	KODAKWTP	115
73076	GUERNTP	115	73185	SO. FORK	115	73437	ROGERSRD	115
73077	HAPPYJCK	115	73187	SPRINGCK	115	73438	ALCOVA2	6.6
73078	HARMONY	230	73188	STEGALDC	230	73441	SEMINOE3	6.9
73080	HAXTUN	115	73189	STEGALL	115	73443	CHEYENNE	230
73083	HELL CK	115	73190	STEGALL	230	73455	BLKFORTP	115
73084	HELL TAP	115	73191	STERLING	115	73464	ADENA	115
73088	HOYT	115	73192	STORY	230	73478	GALIEN	115
73089	HRSTHTAP	115	73193	STORY	345	73480	CROWCRK	115
73090	HYGIENE	115	73194	SWOODROW	115	73482	GRANBY	138
73091	IDALIA	115	73196	TERRY	115	73485	BURL KC	115
73092	JACINTO	115	73199	TIMBERLN	230	73493	SANDCRK	115
73094	JOES	115	73201	TIMNTHTP	115	73503	ERIE SW	115
73095	KERSEYTP	115	73202	TORRNGTN	115	73504	PONNEQUI	115
73096	KIMBALL	115	73205	TROWBRDG	115	73506	LAPORTAP	115
73097	KIOWA CK	115	73206	VERNONTP	115	73531	LINCOLNT	230
73098	KODAK	115	73207	WAANIBE	115	73532	LINCOLN1	13.8
73099	KORTES	115	73208	WAGES	115	73533	LINCOLN2	13.8
73100	KORTESTP	115	73209	WANIBETP	115	73552	AULT	115
73103	L.MEADOW	115	73210	WAUNETA	115	76400	HARTZOG	230
73104	LAGRANGE	115	73211	WELD LM	115	76401	BARBERCK	230
73106	LAPORTE	230	73212	WELD LM	230	79038	HAYDEN	138
73107	LAR.RIVR	230	73213	WIGGINS	115	79039	HAYDEN	230
73108	LAR.RIVR	345	73214	WILDCAT	115	79040	HAYDEN1	18
73109	LARAMIE	115	73218	WINDSOR	115	79041	HAYDEN2	22
73110	LIBERTY	115	73221	WOODROW	115	99109	SNWYRNGE	230

Table E - Monitored Transmission lines in Zones: 700,706, 752, 753, 756

65235	BUFFALO	230.00	- to -	65293	CARRDRAW	230.00	70396	SMOKYHIL	230.00	to -	0551	MURPHY	230.00
65293	CARRDRAW	230.00	- to -	66725	WYODAK	230.00	70398	SOUTH1TP	115.00	to -	0401	SOUTH 1	115.00
65293	CARRDRAW	230.00	- to -	76400	HARTZOG	230.00	70400	SODALAKE	115.00	to -	0429	TINYTOWN	115.00
65293	CARRDRAW	230.00	- to -	76401	BARBERCK	230.00	70402	SOUTH 2	115.00	to -	0531	AIR LIQ	115.00
65305	CASPERPP	115.00	- to -	73042	CASPERLM	115.00	70410	ST.VRAIN	230.00	to -	0447	VALMONT	230.00
65305	CASPERPP	115.00	- to -	73167	REFNRYTP	115.00	70410	ST.VRAIN	230.00	to -	0471	WELD PS	230.00
65420	DAVEJOHN	230.00	- to -	73107	LAR.RIVR	230.00	70410	ST.VRAIN	230.00	to -	0474	WINDSOR	230.00
65420	DAVEJOHN	230.00	- to -	73190	STEGALL	230.00	70410	ST.VRAIN	230.00	to -	0544	ISABELLE	230.00
65425	DAVEJOHN	115.00	- to -	73070	GLENRCKN	115.00	70410	ST.VRAIN	230.00	to -	3116	LONGPEAK	230.00
65425	DAVEJOHN	115.00	- to -	73071	GLENRCKS	115.00	70410	ST.VRAIN	230.00	to -	3562	FORDHAM	230.00
66410	SPENCE	230.00	- to -	73135	MIRACLEM	230.00	70417	SULLIVN	230.00	to -	0428	TECH CTR	230.00
70005	BRUSHCPP	115.00	- to -	73013	B.CK PS	115.00	70417	SULLIVN	230.00	to -	0512	JEWELL1	230.00
70005	BRUSHCPP	115.00	- to -	73013	B.CK PS	115.00	70428	TECH CTR	230.00	to -	0482	MONACO 3	230.00
70018	SODALAKE	230.00	- to -	70100	CHATFLD	230.00	70432	TOWER	230.00	to -	0528	SPRUCE	230.00
70018	SODALAKE	230.00	- to -	70266	LOOKOUT	230.00	70432	TOWER	230.00	to -	0530	PICADILY	230.00
70021	ROCKYTMP	115.00	- to -	70322	PLAINVW	115.00	70441	UNIVERS1	115.00	to -	0442	UNIVERS2	115.00
70023	ALLISON	115.00	- to -	70242	KENDRICK	115.00	70441	UNIVERS1	115.00	to -	0443	UNIVRSTP	115.00
70023	ALLISON	115.00	- to -	70400	SODALAKE	115.00	70461	WASHINGT	230.00	to -	0529	JLGREEN	230.00
70036	ARAPAOHA	115.00	- to -	70037	ARAPAHOB	115.00	70463	WATERTON	115.00	to -	0522	ROXBOROU	115.00
70036	ARAPAOHA	115.00	- to -	70384	SHERIDAN	115.00	70470	WELD PS	115.00	to -	3211	WELD LM	115.00
70036	ARAPAOHA	115.00	- to -	70442	UNIVERS2	115.00	70471	WELD PS	230.00	to -	3212	WELD LM	230.00
70036	ARAPAOHA	115.00	- to -	70531	AIR LIQ	115.00	70474	WINDSOR	230.00	to -	3011	AULT	230.00
70037	ARAPAHOB	115.00	- to -	70165	ENGLE3TP	115.00	70517	PARKERPS	115.00	to -	0523	SULPHUR	115.00
70037	ARAPAHOB	115.00	- to -	70167	ENGLEWD2	115.00	70524	SULPHUR	230.00	to -	0533	LEMON	230.00
70037	ARAPAHOB	115.00	- to -	70398	SOUTH1TP	115.00	70524	SULPHUR	230.00	to -	0551	MURPHY	230.00
70038	ARAPAOHA	230.00	- to -	70137	DAKOTA	230.00	70528	SPRUCE	230.00	to -	0539	CHAM48TH	230.00
70038	ARAPAOHA	230.00	- to -	70527	SANTEFE	230.00	70530	PICADILY	230.00	to -	0539	CHAM48TH	230.00
70039	ARGO	115.00	- to -	70108	CHEROKEE	115.00	70537	FITZSMNS	115.00	to -	0538	CHAM48TH	115.00
70039	ARGO	115.00	- to -	70323	PLATTEPS	115.00	70606	HENRYLAK	115.00	to -	0607	BROMLEY	115.00
70040	ARSENAL	115.00	- to -	70153	DERBY 1	115.00	70611	REUNION	115.00	to -	0612	PRARIETS	115.00
70040	ARSENAL	115.00	- to -	70217	HAVANA2	115.00	73003	AKRON	115.00	to -	3020	BEAVERCK	115.00
70041	ARVADA	115.00	- to -	70108	CHEROKEE	115.00	73003	AKRON	115.00	to -	3372	OTIS LM	115.00
70041	ARVADA	115.00	- to -	70369	RUSSELL	115.00	73004	ALCOVA	115.00	to -	3042	CASPERLM	115.00
70045	BANCROFT	115.00	- to -	70208	GRAY ST	115.00	73004	ALCOVA	115.00	to -	3042	CASPERLM	115.00
70045	BANCROFT	115.00	- to -	70242	KENDRICK	115.00	73004	ALCOVA	115.00	to -	3062	FREMONT	115.00
70045	BANCROFT	115.00	- to -	70398	SOUTH1TP	115.00	73004	ALCOVA	115.00	to -	3137	MIRACLEM	115.00
70046	BUCKLEY2	230.00	- to -	70396	SMOKYHIL	230.00	73004	ALCOVA	115.00	to -	3137	MIRACLEM	115.00
70046	BUCKLEY2	230.00	- to -	70491	TOLGATE	230.00	73004	ALCOVA	115.00	to -	3162	RADERVIL	115.00
70047	BARRLAKE	230.00	- to -	70048	GREENVAL	230.00	73005	ALVIN	115.00	to -	3175	SANDHILL	115.00
70047	BARRLAKE	230.00	- to -	70610	REUNION	230.00	73005	ALVIN	115.00	to -	3210	WAUNETA	115.00
70048	GREENVAL	230.00	- to -	70192	FTLUPTON	230.00	73005	ALVIN	115.00	to -	3304	CRETESWT	115.00
70048	GREENVAL	230.00	- to -	70392	SKYRANCH	230.00	73006	ANTON	115.00	to -	3010	ARICKARE	115.00
70048	GREENVAL	230.00	- to -	70393	SKYRANCT	230.00	73006	ANTON	115.00	to -	3125	LSCHANCE	115.00
70048	GREENVAL	230.00	- to -	70410	ST.VRAIN	230.00	73007	ARAPASUB	115.00	to -	3207	WAANIBE	115.00
70048	GREENVAL	230.00	- to -	70528	SPRUCE	230.00	73008	ARCHER	115.00	to -	3043	CHEYENNE	115.00
70048	GREENVAL	230.00	- to -	70590	RMEC	230.00	73008	ARCHER	115.00	to -	3140	MYERS TP	115.00
70048	GREENVAL	230.00	- to -	70590	RMEC	230.00	73008	ARCHER	115.00	to -	3152	PINEBLUF	115.00
70050	BERGENPK	115.00	- to -	70224	HOGBACK	115.00	73008	ARCHER	115.00	to -	3183	SKYLINE	115.00
70065	BROMFLD1	115.00	- to -	70382	SEMPER	115.00	73008	ARCHER	115.00	to -	3480	CROWCRK	115.00
70065	BROMFLD1	115.00	- to -	70382	SEMPER	115.00	73009	ARCHER	230.00	to -	3011	AULT	230.00
70066	BROMFLD2	115.00	- to -	70174	FEDERHT1	115.00	73009	ARCHER	230.00	to -	3190	STEGALL	230.00
70066	BROMFLD2	115.00	- to -	70175	FEDERHT2	115.00	73009	ARCHER	230.00	to -	9039	HAYDEN	230.00

70067	BUCKLEY1	230.00	- to -	70396	SMOKYHIL	230.00	73010	ARICKARE	115.00	to -	3094	JOES	115.00
70067	BUCKLEY1	230.00	- to -	70512	JEWELL1	230.00	73011	AULT	230.00	to -	3443	CHEYENNE	230.00
70072	CABINCRK	230.00	- to -	70266	LOOKOUT	230.00	73012	AULT	345.00	to -	3108	LAR.RIVR	345.00
70073	CALIFOR1	115.00	- to -	70075	CALIFOR3	115.00	73013	B.CK PS	115.00	to -	3020	BEAVERCK	115.00
70073	CALIFOR1	115.00	- to -	70299	NORTH542	115.00	73014	B.CK PS	230.00	to -	3192	STORY	230.00
70074	CALIFOR2	115.00	- to -	70075	CALIFOR3	115.00	73015	B.CK TRI	115.00	to -	3020	BEAVERCK	115.00
70074	CALIFOR2	115.00	- to -	70215	HARRISPS	115.00	73016	B.CK TRI	230.00	to -	3192	STORY	230.00
70087	CAPHILL1	115.00	- to -	70088	CAPHILL2	115.00	73017	B.SANDY	115.00	to -	3125	LSCHANCE	115.00
70087	CAPHILL1	115.00	- to -	70215	HARRISPS	115.00	73017	B.SANDY	115.00	to -	3318	LIMON	115.00
70087	CAPHILL1	115.00	- to -	70300	NORTH547	115.00	73018	B.SANDY	230.00	to -	3036	BURLNGTN	230.00
70088	CAPHILL2	115.00	- to -	70148	DENVTM	115.00	73018	B.SANDY	230.00	to -	3531	LINCOLNT	230.00
70091	CASTLRCK	115.00	- to -	70138	DANIELPK	115.00	73020	BEAVERCK	115.00	to -	3031	BRUSHTAP	115.00
70100	CHATFLD	230.00	- to -	70464	WATERTON	230.00	73020	BEAVERCK	115.00	to -	3065	GARY	115.00
70107	CHEROKEE	230.00	- to -	70200	GLENN PS	230.00	73020	BEAVERCK	115.00	to -	3136	MESSEX	115.00
70107	CHEROKEE	230.00	- to -	70324	LACOMBE	230.00	73020	BEAVERCK	115.00	to -	3464	ADENA	115.00
70107	CHEROKEE	230.00	- to -	70355	RIDGE	230.00	73023	BIJOUTAP	115.00	to -	3097	KIOWA CK	115.00
70107	CHEROKEE	230.00	- to -	70362	RIVERDAL	230.00	73023	BIJOUTAP	115.00	to -	3379	FMWEST	115.00
70107	CHEROKEE	230.00	- to -	70610	REUNION	230.00	73025	BONNY CK	115.00	to -	3035	BURLNGTN	115.00
70108	CHEROKEE	115.00	- to -	70126	CONOCO	115.00	73025	BONNY CK	115.00	to -	3185	SO. FORK	115.00
70108	CHEROKEE	115.00	- to -	70153	DERBY 1	115.00	73029	BRIDGEPT	115.00	to -	3131	MCGREW	115.00
70108	CHEROKEE	115.00	- to -	70154	DERBY 2	115.00	73029	BRIDGEPT	115.00	to -	3236	GREENWOD	115.00
70108	CHEROKEE	115.00	- to -	70174	FEDERHT1	115.00	73030	BRIGHTNW	115.00	to -	3493	SANDCRK	115.00
70108	CHEROKEE	115.00	- to -	70175	FEDERHT2	115.00	73030	BRIGHTNW	115.00	to -	3503	ERIE SW	115.00
70108	CHEROKEE	115.00	- to -	70276	MAPLETO1	115.00	73031	BRUSHTAP	115.00	to -	3305	EFMORGTP	115.00
70108	CHEROKEE	115.00	- to -	70277	MAPLETO2	115.00	73034	BURL PSC	115.00	to -	3209	WANIBETP	115.00
70108	CHEROKEE	115.00	- to -	70298	NORTH PS	115.00	73034	BURL PSC	115.00	to -	3485	BURL KC	115.00
70108	CHEROKEE	115.00	- to -	70299	NORTH542	115.00	73035	BURLNGTN	115.00	to -	3485	BURL KC	115.00
70108	CHEROKEE	115.00	- to -	70307	P.VALLEY	115.00	73037	BUSHNELL	115.00	to -	3038	BUSHNLTP	115.00
70112	CLARK	230.00	- to -	70212	GREENWD	230.00	73038	BUSHNLTP	115.00	to -	3096	KIMBALL	115.00
70112	CLARK	230.00	- to -	70241	JORDAN	230.00	73038	BUSHNLTP	115.00	to -	3152	PINEBLUF	115.00
70116	COBBLAKE	115.00	- to -	73044	COBBLKTP	115.00	73042	CASPERLM	115.00	to -	3070	GLENRCKN	115.00
70126	CONOCO	115.00	- to -	70377	SANDOWN	115.00	73043	CHEYENNE	115.00	to -	3077	HAPPYJCK	115.00
70127	COORSREC	115.00	- to -	70191	FTLUPTON	115.00	73043	CHEYENNE	115.00	to -	3480	CROWCRK	115.00
70127	COORSREC	115.00	- to -	70194	FULTONTS	115.00	73043	CHEYENNE	115.00	to -	3504	PONNEQUI	115.00
70137	DAKOTA	230.00	- to -	70149	DENVTM	230.00	73046	DALTON	115.00	to -	3179	SIDNEY	115.00
70139	DANIELPK	230.00	- to -	70212	GREENWD	230.00	73046	DALTON	115.00	to -	3236	GREENWOD	115.00
70139	DANIELPK	230.00	- to -	70278	MARCY	230.00	73047	DEERINGL	115.00	to -	3053	ECKLEY	115.00
70139	DANIELPK	230.00	- to -	70284	SURREYRG	230.00	73047	DEERINGL	115.00	to -	3142	N.YUMA	115.00
70139	DANIELPK	230.00	- to -	70286	MIDWAYPS	230.00	73047	DEERINGL	115.00	to -	3230	YUMA	115.00
70139	DANIELPK	230.00	- to -	70286	MIDWAYPS	230.00	73047	DEERINGL	115.00	to -	3372	OTIS LM	115.00
70139	DANIELPK	230.00	- to -	70311	PAWNEE	230.00	73053	ECKLEY	115.00	to -	3225	WRAY TAP	115.00
70139	DANIELPK	230.00	- to -	70331	PRAIRIE	230.00	73053	ECKLEY	115.00	to -	3326	ROBB	115.00
70139	DANIELPK	230.00	- to -	70427	TARRYALL	230.00	73053	ECKLEY	115.00	to -	3371	BETHELLM	115.00
70139	DANIELPK	230.00	- to -	70527	SANTEFE	230.00	73059	FLEMING	115.00	to -	3478	GALIEN	115.00
70139	DANIELPK	230.00	- to -	73477	FULLER	230.00	73059	FLEMING	115.00	to -	3900	FLEMWIND	115.00
70142	DEERCREK	115.00	- to -	70400	SODALAKE	115.00	73063	FRENCHCK	115.00	to -	3080	HAXTUN	115.00
70142	DEERCREK	115.00	- to -	70463	WATERTON	115.00	73063	FRENCHCK	115.00	to -	3210	WAUNETA	115.00
70144	DENV12R	13.800	- to -	70147	DENVSYNC	13.800	73065	GARY	115.00	to -	3221	WOODROW	115.00
70144	DENV12R	13.800	- to -	70150	DENVTM1	13.800	73066	GEMCTYTP	115.00	to -	3077	HAPPYJCK	115.00
70144	DENV12R	13.800	- to -	70151	DENVTM2	13.800	73066	GEMCTYTP	115.00	to -	3109	LARAMIE	115.00
70145	DENV13R	13.800	- to -	70150	DENVTM1	13.800	73066	GEMCTYTP	115.00	to -	3187	SPRINGCK	115.00
70145	DENV13R	13.800	- to -	70152	DENVTM3	13.800	73067	GERING	115.00	to -	3131	MCGREW	115.00
70146	DENV23R	13.800	- to -	70151	DENVTM2	13.800	73067	GERING	115.00	to -	3189	STEGALL	115.00
70146	DENV23R	13.800	- to -	70152	DENVTM3	13.800	73067	GERING	115.00	to -	3365	EMIGRANT	115.00

70146	DENV23R	13.800	- to -	70479	ZUNI2	13.800	73069	GLENDO	115.00	to -	3070	GLENRCKN	115.00
70148	DENVTM	115.00	- to -	70173	FEDCTRTP	115.00	73069	GLENDO	115.00	to -	3076	GUERN TAP	115.00
70148	DENVTM	115.00	- to -	70208	GRAY ST	115.00	73069	GLENDO	115.00	to -	3153	PODOLAK	115.00
70148	DENVTM	115.00	- to -	70323	PLATTEPS	115.00	73069	GLENDO	115.00	to -	3255	LINGLETP	115.00
70149	DENVTM	230.00	- to -	70177	ELATI3	230.00	73069	GLENDO	115.00	to -	3366	WAGNHNS	115.00
70149	DENVTM	230.00	- to -	70324	LACOMBE	230.00	73071	GLENRCKS	115.00	to -	3167	REFNRYTP	115.00
70149	DENVTM	230.00	- to -	70480	WESTPS	230.00	73071	GLENRCKS	115.00	to -	3366	WAGNHNS	115.00
70154	DERBY 2	115.00	- to -	70216	HAVANA1	115.00	73076	GUERN TAP	115.00	to -	3189	STEGALL	115.00
70162	EAST	115.00	- to -	70430	TOLGATE1	115.00	73076	GUERN TAP	115.00	to -	3359	LIMESTON	115.00
70162	EAST	115.00	- to -	70431	TOLGATE2	115.00	73076	GUERN TAP	115.00	to -	3368	GUERNRRL	115.00
70162	EAST	115.00	- to -	70537	FITZSMNS	115.00	73077	HAPPYJCK	115.00	to -	3348	CORLETT	115.00
70162	EAST	115.00	- to -	70538	CHAM48TH	115.00	73080	HAXTUN	115.00	to -	3900	FLEMWIND	115.00
70163	ELATI1	230.00	- to -	70170	ELATI2	230.00	73083	HELL CK	115.00	to -	3084	HELL TAP	115.00
70163	ELATI1	230.00	- to -	70177	ELATI3	230.00	73083	HELL CK	115.00	to -	3174	SAGEBRSH	115.00
70164	ELDORADO	115.00	- to -	70322	PLAINVW	115.00	73084	HELL TAP	115.00	to -	3110	LIBERTY	115.00
70164	ELDORADO	115.00	- to -	70365	ROCKYFLA	115.00	73084	HELL TAP	115.00	to -	3185	SO. FORK	115.00
70165	ENGLE3TP	115.00	- to -	70168	ENGLEWD3	115.00	73087	WESTHILL	230.00	to -	3190	STEGALL	230.00
70165	ENGLE3TP	115.00	- to -	70263	LITTLET1	115.00	73088	HOYT	115.00	to -	3103	L.MEADOW	115.00
70166	ENGLEWD1	115.00	- to -	70167	ENGLEWD2	115.00	73088	HOYT	115.00	to -	3464	ADENA	115.00
70166	ENGLEWD1	115.00	- to -	70384	SHERIDAN	115.00	73088	HOYT	115.00	to -	3493	SANDCRK	115.00
70167	ENGLEWD2	115.00	- to -	70168	ENGLEWD3	115.00	73091	IDALIA	115.00	to -	3185	SO. FORK	115.00
70169	ENNIS	115.00	- to -	70234	HUDSON	115.00	73091	IDALIA	115.00	to -	3206	VERNONTP	115.00
70170	ELATI2	230.00	- to -	70291	MONROEPS	230.00	73092	JACINTO	115.00	to -	3096	KIMBALL	115.00
70171	DACONOTP	115.00	- to -	70194	FULTONTS	115.00	73092	JACINTO	115.00	to -	3179	SIDNEY	115.00
70172	FED CNTR	115.00	- to -	70173	FEDCTRTP	115.00	73094	JOES	115.00	to -	3110	LIBERTY	115.00
70173	FEDCTRTP	115.00	- to -	70342	QUAKERTP	115.00	73095	KERSEYTP	115.00	to -	3158	PROSPEC	115.00
70191	FTLUPTON	115.00	- to -	70234	HUDSON	115.00	73095	KERSEYTP	115.00	to -	3554	BOOMERNG	115.00
70191	FTLUPTON	115.00	- to -	70307	P.VALLEY	115.00	73096	KIMBALL	115.00	to -	3355	KIMBALLC	115.00
70191	FTLUPTON	115.00	- to -	70450	VASQUEZ	115.00	73097	KIOWA CK	115.00	to -	3147	ORCHARD	115.00
70192	FTLUPTON	230.00	- to -	70311	PAWNEE	230.00	73097	KIOWA CK	115.00	to -	3158	PROSPEC	115.00
70192	FTLUPTON	230.00	- to -	70410	ST.VRAIN	230.00	73097	KIOWA CK	115.00	to -	3213	WIGGINS	115.00
70192	FTLUPTON	230.00	- to -	70410	ST.VRAIN	230.00	73099	KORTES	115.00	to -	3100	KORTESTP	115.00
70192	FTLUPTON	230.00	- to -	70529	JLGREEN	230.00	73099	KORTES	115.00	to -	3137	MIRACLEM	115.00
70192	FTLUPTON	230.00	- to -	70605	HENRYLAK	230.00	73100	KORTESTP	115.00	to -	3137	MIRACLEM	115.00
70198	GILCREST	115.00	- to -	70202	GODFRETP	115.00	73100	KORTESTP	115.00	to -	3176	SEMINOE	115.00
70198	GILCREST	115.00	- to -	70450	VASQUEZ	115.00	73103	L.MEADOW	115.00	to -	3213	WIGGINS	115.00
70200	GLENN PS	230.00	- to -	70461	WASHINGT	230.00	73104	LAGRANGE	115.00	to -	3173	ROUNDTOP	115.00
70202	GODFRETP	115.00	- to -	70209	GREELEY	115.00	73104	LAGRANGE	115.00	to -	3189	STEGALL	115.00
70202	GODFRETP	115.00	- to -	70240	JOHNSTN	115.00	73107	LAR.RIVR	230.00	to -	3190	STEGALL	230.00
70208	GRAY ST	115.00	- to -	70251	LAKEWOD1	115.00	73108	LAR.RIVR	345.00	to -	3193	STORY	345.00
70208	GRAY ST	115.00	- to -	70252	LAKEWOD2	115.00	73109	LARAMIE	115.00	to -	3146	OASISTAP	115.00
70208	GRAY ST	115.00	- to -	70402	SOUTH 2	115.00	73112	LINGLE	115.00	to -	3255	LINGLETP	115.00
70209	GREELEY	115.00	- to -	70290	MONFORT	115.00	73117	LOST CK	115.00	to -	3370	LOSTCKTP	115.00
70209	GREELEY	115.00	- to -	70470	WELD PS	115.00	73125	LSCHANCE	115.00	to -	3194	SWOODROW	115.00
70212	GREENWD	230.00	- to -	70331	PRAIRIE	230.00	73126	LYMAN	115.00	to -	3202	TORRNGTN	115.00
70212	GREENWD	230.00	- to -	70481	MONACO12	230.00	73126	LYMAN	115.00	to -	3256	LYMANTP	115.00
70212	GREENWD	230.00	- to -	70482	MONACO 3	230.00	73128	MAY	115.00	to -	3146	OASISTAP	115.00
70215	HARRISPS	115.00	- to -	70259	LEETSDAL	115.00	73134	MED BOW	115.00	to -	3362	MEDBOWTP	115.00
70216	HAVANA1	115.00	- to -	70538	CHAM48TH	115.00	73135	MIRACLEM	230.00	to -	9109	SNWYRNGE	230.00
70217	HAVANA2	115.00	- to -	70538	CHAM48TH	115.00	73136	MESSEX	115.00	to -	3191	STERLING	115.00
70224	HOGBACK	115.00	- to -	70265	LOOKOUT	115.00	73137	MIRACLEM	115.00	to -	3177	SEMINOTP	115.00
70224	HOGBACK	115.00	- to -	70400	SODALAKE	115.00	73137	MIRACLEM	115.00	to -	3362	MEDBOWTP	115.00
70237	IDAHO SPG	230.00	- to -	70266	LOOKOUT	230.00	73139	MYERS	115.00	to -	3140	MYERS TP	115.00
70238	IDEALCEM	46.000	- to -	70255	LAPORTE	46.000	73140	MYERS TP	115.00	to -	3154	POLE CK	115.00

70239	JEWELL2	230.00	- to -	70260	LEETSDAL	230.00	73142	N.YUMA	115.00	to -	3166	REDWILLW	115.00
70239	JEWELL2	230.00	- to -	70491	TOLGATE	230.00	73143	N.YUMA	230.00	to -	3192	STORY	230.00
70240	JOHNSTN	115.00	- to -	70470	WELD PS	115.00	73143	N.YUMA	230.00	to -	3224	WRAY	230.00
70241	JORDAN	230.00	- to -	70313	ORCHARD	230.00	73143	N.YUMA	230.00	to -	3905	SIDWIND	230.00
70251	LAKEWOD1	115.00	- to -	70354	RIDGE	115.00	73146	OASISTAP	115.00	to -	3362	MEDBOWTP	115.00
70252	LAKEWOD2	115.00	- to -	70354	RIDGE	115.00	73150	PEETZ	115.00	to -	3179	SIDNEY	115.00
70256	LAPORTPS	115.00	- to -	73105	LAPORTE	115.00	73150	PEETZ	115.00	to -	3191	STERLING	115.00
70259	LEETSDAL	115.00	- to -	70443	UNIVRSTP	115.00	73154	POLE CK	115.00	to -	3161	QUALLS	115.00
70260	LEETSDAL	230.00	- to -	70291	MONROEPS	230.00	73154	POLE CK	115.00	to -	3173	ROUNDTOP	115.00
70260	LEETSDAL	230.00	- to -	70481	MONACO12	230.00	73158	PROSPEC	115.00	to -	3370	LOSTCKTP	115.00
70261	LEGGETT	230.00	- to -	70266	LOOKOUT	230.00	73159	PROSPVAL	115.00	to -	3493	SANDCRK	115.00
70262	LEYDEN	115.00	- to -	70322	PLAINVW	115.00	73166	REDWILLW	115.00	to -	3208	WAGES	115.00
70262	LEYDEN	115.00	- to -	70340	QUAKER1	115.00	73173	ROUNDTOP	115.00	to -	3178	SENTINEL	115.00
70262	LEYDEN	115.00	- to -	70354	RIDGE	115.00	73175	SANDHILL	115.00	to -	3223	WRAY	115.00
70263	LITTLET1	115.00	- to -	70264	LITTLET2	115.00	73176	SEMINOE	115.00	to -	3177	SEMINOTP	115.00
70264	LITTLET2	115.00	- to -	70463	WATERTON	115.00	73177	SEMINOTP	115.00	to -	3182	SINCLAIR	115.00
70265	LOOKOUT	115.00	- to -	70342	QUAKERTP	115.00	73180	SIDNEY	230.00	to -	3181	SIDNEYDC	230.00
70266	LOOKOUT	230.00	- to -	70355	RIDGE	230.00	73180	SIDNEY	230.00	to -	3190	STEGALL	230.00
70266	LOOKOUT	230.00	- to -	70480	WESTPS	230.00	73180	SIDNEY	230.00	to -	3905	SIDWIND	230.00
70266	LOOKOUT	230.00	- to -	70570	PLNENDSS	230.00	73182	SINCLAIR	115.00	to -	3205	TROWBRDG	115.00
70276	MAPLETO1	115.00	- to -	70300	NORTH547	115.00	73183	SKYLINE	115.00	to -	3375	WARRENLM	115.00
70277	MAPLETO2	115.00	- to -	70377	SANDOWN	115.00	73184	SMOKYHLW	115.00	to -	3209	WANIBETP	115.00
70278	MARCY	230.00	- to -	70464	WATERTON	230.00	73187	SPRINGCK	115.00	to -	3367	FTSANDER	115.00
70279	MARTIN 1	115.00	- to -	70463	WATERTON	115.00	73188	STEGALDC	230.00	to -	3190	STEGALL	230.00
70280	MARTIN 2	115.00	- to -	70463	WATERTON	115.00	73189	STEGALL	115.00	to -	3256	LYMANTP	115.00
70283	MEADOWHL	230.00	- to -	70313	ORCHARD	230.00	73189	STEGALL	115.00	to -	3365	EMIGRANT	115.00
70283	MEADOWHL	230.00	- to -	70396	SMOKYHIL	230.00	73191	STERLING	115.00	to -	3478	GALIEN	115.00
70284	SURREYRG	230.00	- to -	70533	LEMON	230.00	73194	SWOODROW	115.00	to -	3221	WOODROW	115.00
70290	MONFORT	115.00	- to -	70439	UNC	115.00	73206	VERNONTP	115.00	to -	3223	WRAY	115.00
70297	NIWOT	230.00	- to -	70544	ISABELLE	230.00	73207	WAANIBE	115.00	to -	3209	WANIBETP	115.00
70298	NORTH PS	115.00	- to -	70377	SANDOWN	115.00	73208	WAGES	115.00	to -	3210	WAUNETA	115.00
70311	PAWNEE	230.00	- to -	70343	QUINCY	230.00	73214	WILDCAT	115.00	to -	3365	EMIGRANT	115.00
70311	PAWNEE	230.00	- to -	73192	STORY	230.00	73220	WINDYGAP	138.00	to -	3482	GRANBY	138.00
70340	QUAKER1	115.00	- to -	70341	QUAKER2	115.00	73223	WRAY	115.00	to -	3225	WRAY TAP	115.00
70341	QUAKER2	115.00	- to -	70342	QUAKERTP	115.00	73225	WRAY TAP	115.00	to -	3331	WRAYWAPA	115.00
70343	QUINCY	230.00	- to -	70396	SMOKYHIL	230.00	73255	LINGLETP	115.00	to -	3256	LYMANTP	115.00
70345	RALSTON1	115.00	- to -	70354	RIDGE	115.00	73276	TEKLA	230.00	to -	6400	HARTZOG	230.00
70345	RALSTON1	115.00	- to -	70444	VALMONT	115.00	73305	EFMORGTP	115.00	to -	3309	BARLOW	115.00
70346	RALSTON2	115.00	- to -	70354	RIDGE	115.00	73305	EFMORGTP	115.00	to -	3378	FMN	115.00
70346	RALSTON2	115.00	- to -	70365	ROCKYFLA	115.00	73305	EFMORGTP	115.00	to -	3379	FMWEST	115.00
70354	RIDGE	115.00	- to -	70369	RUSSELL	115.00	73309	BARLOW	115.00	to -	3310	FME	115.00
70362	RIVERDAL	230.00	- to -	70605	HENRYLAK	230.00	73311	FMS	115.00	to -	3377	EXCEL	115.00
70368	ROSEDALE	115.00	- to -	70439	UNC	115.00	73311	FMS	115.00	to -	3379	FMWEST	115.00
70368	ROSEDALE	115.00	- to -	70470	WELD PS	115.00	73348	CORLETT	115.00	to -	3375	WARRENLM	115.00
70392	SKYRANCH	230.00	- to -	70528	SPRUCE	230.00	73354	JACKLOPE	115.00	to -	3364	WARMSPGS	115.00
70393	SKYRANCT	230.00	- to -	70528	SPRUCE	230.00	73361	MEDBOWHS	115.00	to -	3362	MEDBOWTP	115.00
70395	SMOKYHIL	115.00	- to -	70416	STRASBRG	115.00	73364	WARMSPGS	115.00	to -	3366	WAGNHNDS	115.00
70395	SMOKYHIL	115.00	- to -	70430	TOLGATE1	115.00	73371	BTHELLM	115.00	to -	3374	VERNONLM	115.00
70395	SMOKYHIL	115.00	- to -	70431	TOLGATE2	115.00	73413	MIDWAYBR	230.00	to -	3531	LINCOLNT	230.00
70395	SMOKYHIL	115.00	- to -	70521	PEAKVIEW	115.00	73443	CHEYENNE	230.00	to -	9109	SNWYRNGE	230.00
70396	SMOKYHIL	230.00	- to -	70528	SPRUCE	230.00	76400	HARTZOG	230.00	to -	6401	BARBERCK	230.00
70396	SMOKYHIL	230.00	- to -	70528	SPRUCE	230.00							