

Bibkey # 608621

LODGE AREA REVEGETATION PROJECT

OCTOBER 1993

S. Edward Franz, Bio-tech

Introduction

The hilltop between the lodge and Motel Unit "B" (see attached map) was revegetated in the first two weeks of October 1993. This area was at one time the site of a group of "Standard Cabins." In the years following the removal of the cabins the area remained mostly barren of vegetation. In 1990 John Bladh (Maintenance Division) transplanted 24 ponderosa pines to the area. As of the time of this report, all but one have survived (although several were removed to expand the Boys' Dorm parking lot).

The Soil Conservation Service (SCS) in Meeker, Colorado collected native seed in the park and grew them in pots in Meeker. On October 7, 1993 they delivered approximately 750 plants to Bryce Canyon.

The plants were grown by SCS for the road reveg project, but at the time of delivery there was no way to use them directly for this purpose. Instead, they will be monitored to provide data for reveg once the road project gets underway.

Methods

Since the reveg area was very rocky and hard, holes for the plants were dug with a tractor-mounted auger. Approximately 500 holes were dug, 12 - 18 inches deep.

Grass plugs came in 8" break-away pots, with the leaves grown to a height of about 6". Manzanita and rabbitbrush came in one-gallon, tar paper pots. The manzanita averaged about 5" in height, and the rabbitbrush averaged about 1"-5" in height. Sagebrush came in plastic, one-gallon, tall pots, and averaged about 3" in height.

When the plants arrived they were unloaded onto the ground at the reveg site. A 500 gallon portable water tank was positioned on high ground at the site, and garden hose was attached so that gravity-feed could be used in watering. During the time it took to put the plants in the ground (one week), deer were moderately browsing the potted plants (especially the grass plugs).

The holes were watered immediately before planting. The plants were then removed from their pots and placed in the holes. The potting soil was loosened by hand, and the holes were then filled the rest of the way with the fill that was removed by the auger. The soil was then tamped by hand, creating a water-catching basin around the plants. Immediately after the plants were in the ground they were watered. No fertilizers or other amendments were used.

Some holes received 1-3 grass plugs; others received only one shrub

each; still others got one shrub and 1-3 grass plugs. Occasionally, two shrubs were planted together.

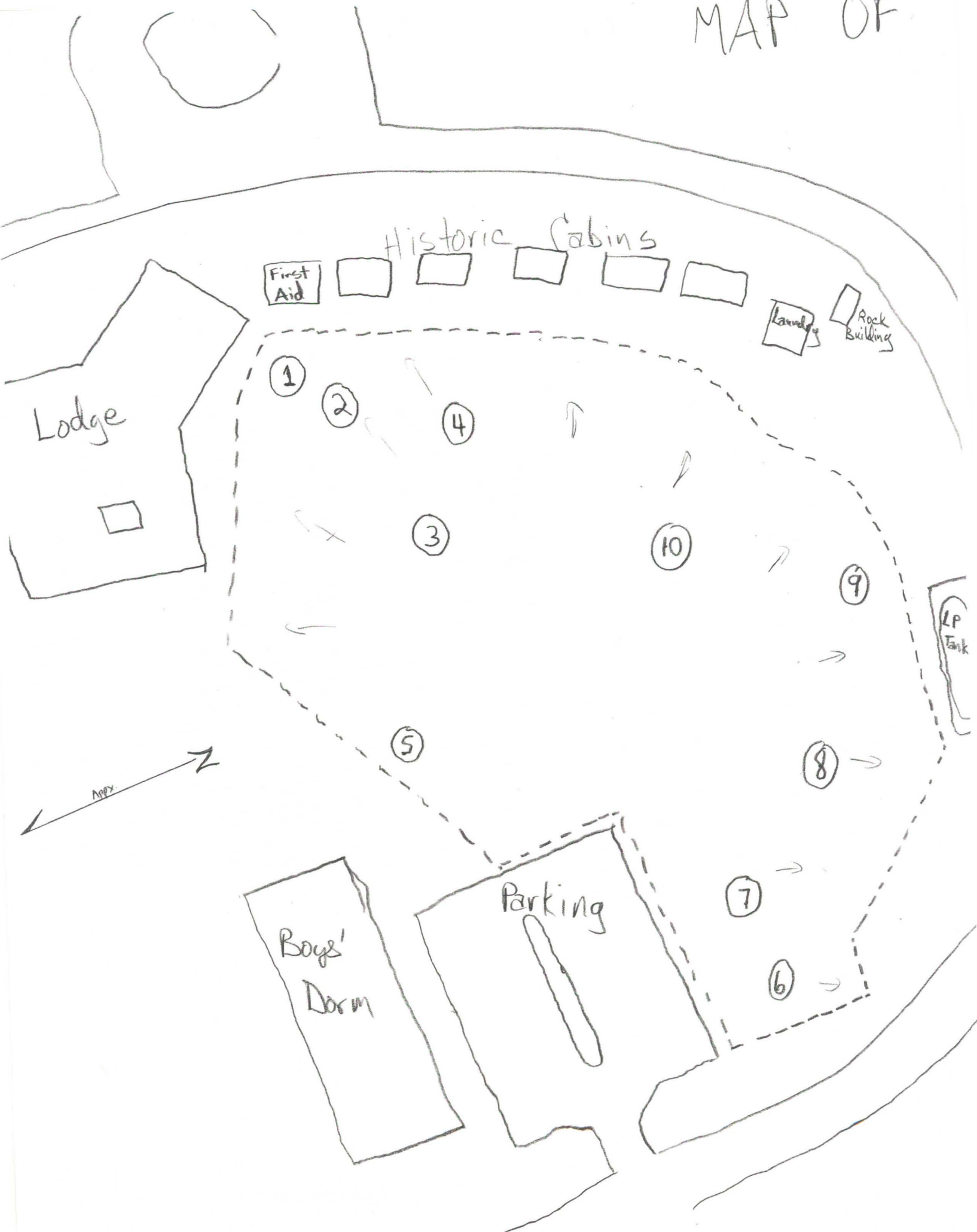
The plants were watered one last time two weeks after planting.

Ten plots have been mapped out for monitoring purposes (see attached map). The plots are circles with 6 meter radii. A stake has been placed at the center of each and marked 1 through 10. The attached data sheets give plant locations within each plot using distance in meters from the stake and a compass bearing. Compass bearings are oriented to true north (magnetic declination 13.5 degrees east). Monitoring plots document only a portion of plants put in the ground.

<u>Plant Name</u>	<u>Abbreviation</u>	<u>Quantity</u>
Artemisia nova	ArNo	204
black sagebrush		
Arctostaphylos patula	ArPa	184
greenleaf manzanita		
Chrysothamnus nauseosus	ChNa	94
rubber rabbitbrush		
Elymus trachycaulus	Gras	280
ssp. trachycaulus		
slender wheatgrass		

Note: Most of the rabbitbrush and many of the sagebrush plants were in poor condition upon arrival.

MAP OF



REVEGETATION DATA SHEET
"GROUND ZERO" PROJECT
OCTOBER 1993
S. Edward Franz, Bio-tech

<u>PLOT #</u>	<u>PLANT GROUP</u>	<u>BEARING</u>	<u>DISTANCE FROM STAKE</u>	<u>SPECIES</u>
1	1	308°	4.5 m	ChNa
1	2	340°	3 m	ChNa
1	3	344°	5.5 m	ArPa
1	4	352°	6 m	ArPa
1	5	4°	4.5 m	ChNa
1	6	16°	6 m	ArPa
1	7	98°	5 m	ChNa, 2(Gras)
1	8	124°	3 m	ArNo, 2(Gras)
1	9	136°	6 m	ArNo
1	10	184°	2.5 m	ArNo
1	11	188°	5.5 m	ArPa, Gras
1	12	216°	6 m	ArNo
1	13	240°	3.5 m	ArPa
1	14	246°	5.5 m	ArPa
1	15	center	0	ArPa
2	1	268°	4 m	ArNo, Gras
2	2	286°	2.5 m	ArNo, 2(Gras)
2	3	286°	6 m	ArPa, Gras
2	4	304°	5 m	ArPa
2	5	336°	3 m	ChNa, Gras
2	6	346°	6 m	ChNa, Gras
2	7	20°	2.5 m	ArPa

PLOT #	PLANT GROUP	BEARING	DISTANCE FROM STAKE	SPECIES
2	8	30°	5.5 m	ArNo
2	9	52°	4 m	ArNo, Gras
2	10	80°	3 m	2(Gras)
2	11	122°	4 m	ChNa
2	12	150°	2 m	ArPa, Gras
2	13	162°	6 m	ChNa
2	14	164°	4.5 m	ArPa
2	15	186°	4.5 m	ChNa
2	16	216°	3 m	ArNo
2	17	center	0 m	ArPa, 2(Gras)
3	1	300°	3 m	ArPa, 2(Gras)
3	2	300°	5 m	ArPa, 2(Gras)
3	3	300°	1.5 m	ChNa
3	4	326°	4.5 m	ArPa
3	5	350°	3 m	ChNa, 2(Gras)
3	6	28°	5 m	ArNo
3	7	30°	3 m	Gras
3	8	38°	4.5 m	ArPa
3	9	58°	2 m	Gras
3	10	62°	4 m	2(Gras)
3	11	92°	6 m	2(Gras)
3	12	92°	3.5 m	ChNa, 2(Gras)
3	13	124°	3 m	Gras
3	14	160°	3 m	ChNa
3	15	170°	5 m	ChNa

PLOT #	PLANT GROUP	BEARING	DISTANCE FROM STAKE	SPECIES
3	16	182°	6 m	Grass
3	17	192°	3.5 m	ArNo
3	18	208°	1.5 m	ArPa
3	19	212°	5 m	ArNo
3	20	232°	4.5 m	Grass
3	21	252°	4 m	ChNa
3	22	266°	2.5 m	Grass
3	23	center	0 m	ArNo
4	1	302°	6 m	Grass
4	2	318°	2.5	ArPa, 2 (Grass)
4	3	342°	6	ArNo, 2 (Grass)
4	4	45°	3	2 (Grass)
4	5	68°	5	2 (Grass)
4	6	82°	2.5	ArNo
4	7	122°	2	ArNo
4	8	130°	6	2 (Grass)
4	9	148°	4	2 (Grass)
4	10	160°	2.5	3 (Grass)
4	11	174°	4	ArNo, Grass
4	12	188°	6	ChNa
4	13	208°	4	ArPa
4	14	224°	2	ArNo
4	15	center	0 m	2 (Grass)

PLOT #	PLANT GROUP	BEARING	DISTANCE FROM STAKE	SPECIES
5	1	286°	2.5 m	ArPa
5	2	298°	1 m	ArPa
5	3	346°	2.5 m	ArPa, Gras
5	4	360°	4 m	ArNo, 2(Gras)
5	5	18°	3 m	ArNo, 2(Gras)
5	6	26°	1.5 m	ArPa
5	7	26°	4.5 m	ArNo
5	8	36°	4 m	ArNo
5	9	36°	6 m	ArPa
5	10	46°	5 m	ArNo
5	11	96°	5.5 m	ArPa
5	12	178°	2 m	ChNa
5	13	244°	6 m	Gras
5	14	256°	3.5 m	ArPa
5	15	256°	5 m	ArNo
5	16	center	0 m	ArPa
6	1	296°	6 m	PiPo transplant
6	2	306°	4.5 m	JuSc. transplant
6	3	328°	5 m	ArPa transplant
6	4	354°	2.5 m	Gras
6	5	354°	3.5 m	Gras
6	6	24°	3 m	ArPa, Gras
6	7	42°	5.5 m	ArPa
6	8	58°	4.5 m	ArNo, Gras
6	9	68°	1.5 m	ArPa, 3(Gras)

PLOT #	PLANT GROUP	BEARING	DISTANCE FROM STAKE	SPECIES
6	10	76°	4 m	ArPa, Gras
6	11	92°	3.5 m	ArPa
6	12	96°	5 m	ArNo
6	13	108°	6 m	ArPa
6	14	116°	4.5 m	ArNo
6	15	122°	2.5 m	ArNo
6	16	128°	5.5 m	ArNo
6	17	140°	4.5 m	Gras
6	18	158°	3.5 m	ArNo
6	19	164°	1.5 m	ArPa
6	20	170°	4.5 m	Gras
6	21	188°	3 m	ArPa, Gras
6	22	202°	4.5 m	ArPa, Gras
6	23	218°	3.5 m	ArPa
6	24	224°	4.5 m	ArNo
6	25	250°	4.5 m	ArNo
6	26	256°	5.5 m	Gras
6	27	268°	2.5 m	Gras
6	28	270°	5.5 m	ArPa
6	29	Center	0 m	ArNo
7	1	240°	1.5 m	ArNo
7	2	240°	6 m	ArPa
7	3	260°	4 m	ArPa
7	4	260°	6 m	ArPa
7	5	274°	5 m	ArPa

<u>PLOT #</u>	<u>PLANT GROUP</u>	<u>BEARING</u>	<u>DISTANCE FROM STAKE</u>	<u>SPECIES</u>
7	6	280°	3 m	ArPa
7	7	284°	4.5 m	ArPa
7	8	288°	6 m	ArPa
7	9	304°	3.5 m	ArPa
7	10	306°	5 m	ArPa
7	11	320°	1.5 m	ArNo
7	12	322°	4.5 m	ArNo
7	13	322°	6 m	ArPa
7	14	346°	2 m	ArNo
7	15	354°	3.5 m	ArPa
7	16	6°	4.5 m	ArPa
7	17	18°	2.5 m	ArPa
7	18	22°	4.5 m	ArNo
7	19	32°	5.5 m	ArNo
7	20	46°	4.5 m	ArPa
7	21	50°	2 m	ArPa, Gras
7	22	58°	3.5 m	ArNo, Gras
7	23	58°	5 m	ArNo
7	24	72°	4.5 m	ArNo
7	25	76°	2.5 m	ArNo
7	26	82°	5.5 m	ArPa, Gras
7	27	98°	4.5 m	ArPa
7	28	102°	1.5 m	ArPa, Gras
7	29	110°	3.5 m	ArNo
7	30	134°	5.5 m	ArNo
7	31	136°	2 m	ArNo, Gras

PLOT #	PLANT GROUP	BEARING	DISTANCE FROM STAKE	SPECIES
7	32	140°	4 m	ArPa
7	33	152°	5.5 m	ArNo
7	34	162°	4 m	ArPa
7	35	192°	3.5 m	ArNo
7	36	202°	2 m	ArPa
7	37	206°	5.5 m	ArNo
7	38	214°	4.5 m	ArNo
7	39	230°	3 m	ArPa
7	40	236°	4.5 m	ArNo
7	41	center	0 m	2(ChNa)
8	1	264°	5 m	ArPa
8	2	276°	3.5 m	ArNo
8	3	284°	5.5 m	ArNo
8	4	284°	1.5 m	ArNo
8	5	318°	5 m	ArPa
8	6	352°	3.5 m	ArPa
8	7	352°	2 m	ArPa
8	8	8°	3.5 m	ArNo
8	9	10°	6 m	ArNo
8	10	16°	3 m	ArPa
8	11	36°	4.5 m	ArPa
8	12	46°	2 m	ArPa
8	13	46°	3.5 m	ArPa
8	14	50°	4.5 m	ArNo
8	15	68°	4 m	ArNo

<u>PLOT #</u>	<u>PLANT GROUP</u>	<u>BEARING</u>	<u>DISTANCE FROM STAKE</u>	<u>SPECIES</u>
8	16	102°	3 m	ArNo
8	17	132°	5 m	ArNo
8	18	140°	4 m	ArNo
8	19	146°	5.5 m	ArNo
8	20	206°	6 m	ArNo
8	21	222°	4.5 m	ArNo
8	22	224°	6 m	ArNo
8	23	228°	3 m	ArNo
8	24	240°	1.5 m	ArNo
8	25	242°	6 m	ArNo
8	26	244°	4 m	ArNo
8	27	252°	3 m	ArNo
8	28	center	0 m	ArNo
9	1	302°	5.5 m	ArNo
9	2	318°	2 m	ArNo
9	3	324°	4 m	ChNa
9	4	74°	1.5 m	ArNo
9	5	120°	2 m	ArNo
9	6	120°	4 m	ArNo
9	7	132°	5.5 m	ArPa
9	8	144°	6 m	ArPa
9	9	144°	1.5 m	ArPa
9	10	156°	4.5 m	ChNa
9	11	166°	2.5 m	ArNo
9	12	234°	3 m	ChNa

<u>PLOT #</u>	<u>PLANT GROUP</u>	<u>BEARING</u>	<u>DISTANCE FROM STAKE</u>	<u>SPECIES</u>
9	13	258°	3.5 m	ArPa
9	14	260°	2 m	ArNo
9	15	268°	4.5 m	ArPa
9	16	286°	5 m	ArNo
9	17	290°	3.5 m	ArNo
9	18	294°	6 m	ArNo
9	19	Center	0 m	ArNo
10	1	254°	3.5	ArPa
10	2	260°	4.5	2 (Gras)
10	3	274°	2	ArPa
10	4	274°	5.5	ChNa
10	5	304°	4.5	2 (Gras)
10	6	322°	3.5	ArPa
10	7	346°	4.5	ArNo
10	8	354°	6	ArNo
10	9	6°	3.5	ArNo
10	10	8°	5.5	ArNo
10	11	14°	1.5	2 (Gras)
10	12	18°	4.5	ArNo
10	13	36°	3	2 (Gras)
10	14	46°	5.5	2 (Gras)
10	15	166°	3.5	2 (Gras)
10	16	198°	5	2 (Gras)
10	17	198°	2.5	ArPa
10	18	236°	2	ArPa
10	19	Center	0	2 (Gras)