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BRYCE CANYON
Vegetation Rehabilitation Project
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August 1988

The purpose of this project is to develop rehabilitation plans and guidelines for the disturbed areas within the park. Revegetating arid lands such as those of the Bryce Canyon area is a very difficult task because of the environmental limitations (low precipitation and alkaline soils) and the high amount of visitor traffic. This is the first attempt at an extensive rehabilitation project within Bryce Canyon and there was very little specific information available on this subject. Some of the procedures are almost experimental. There are several guidelines for seeding and planting that will be presented within these reports. It is important that these guidelines be followed closely in order for the revegetation efforts to be successful. The five areas included in this report are all high visitor impact areas and it is important that they be stringently protected for the specified amount of time and beyond following revegetation.

Initially, each site needing rehabilitation was identified visually. After identifying the site, an assessment was made as to what it would need in order to be rehabilitated. The areas to be revegetated were determined by a number of different criteria. These included the presence of unwanted social trails, excessive erosion, presence of exotic plant species and damage caused by past and present projects (i.e. construction, unused service roads and the abandoned gravel pit at Agua Canyon). The seeding and planting procedures were roughly determined by referring to document FWS/OBS-82/56 (Ecology and Culture of Selected Species Useful in Revegetating Disturbed Lands in the West). The advice of seed suppliers and others with experience in the rehabilitation of arid environments was also solicited. The plant species that are recommended for each site were determined on site. The predominant and successfully reproducing native species were identified and used for each list. Where an individual species is unavailable for the seeding/planting procedure as recommended, another of the same type of plant from the list can be substituted (i.e. a forb for a forb or a grass for a grass).

In the cases involving the campgrounds, it is especially important that revegetation efforts be carried out concurrent with any campsite removal. This is necessary as a deterrent, to prevent visitors in the adjacent sites from continued encroachment onto the site. Recommendations for individual site removal were based on several factors. Taken into account was the amount of disturbance created by the use and presence of the

site, the aesthetic value, amount of privacy provided, how the site reacts to adverse weather (such as flooding) and the amount of crowding in the particular area. Recommendations are also made for alterations to some sites. These are made in an effort to minimize the amount of disturbance and to improve the aesthetic values of the campground. Jack Roberts and I did a thorough walk-through of both campgrounds and discussed in some detail the advantages and disadvantages of removing any sites. In some cases the advice/opinions of the campground hosts were solicited because of their everyday exposure to the conditions and activities of the campgrounds.

Seeding and Planting Information

There are three revegetation procedures specified in these reports. These methods include, hand broadcasting of seed, drill seeding and live planting (either from container-grown stock or replanting of stock taken from within the park). Each site may use one, two or all three methods, depending on needs, terrain and availability of equipment and supplies.

When hand broadcasting seed, it is important to have the seedbed appropriately prepared. The soil must be either raked or tilled (depending on the amount of compaction) prior to broadcasting. In some cases, topsoil will need to be brought in prior to seeding due to loss of soil through erosion or other factors. After the seed has been set out, it is mandatory that it be covered to the specified depth in order to achieve greatest results. Soil is the preferred coverage, but a biodegradable mulch is acceptable. When downed material is used as a chipmulch, it is important to ensure that such material comes only from the Habitat Type in which the chip is to be applied. This is to ensure that no species exotic to that area are introduced through seeds carried in the mulch.

In all the reports, hand broadcasting is the specified method of seeding. This is due to the fact, that at the writing of this report, we (Bryce Canyon) did not have a drill seeder. In the areas where terrain permits use of a drill seeder, the utilization of one may provide better results than broadcasting. In those cases where a drill seeder is used, the seed depth should be set for the same measure of coverage specified for in hand broadcasting or slightly deeper.

The seed quantities for this report are specified in quantities of Pure Live Seed (PLS). PLS is the best measure of seed quality. The percentage of PLS for a given seed lot is a product of Percent Germination and Percent Purity for that lot (quantities given by the seed supplier).

$$\% \text{ PLS} = \frac{\% \text{ Germination} \times \% \text{ Purity}}{100}$$

(For further computations, this value is converted to a decimal. i.e. 97.5 % to .975)

The best way to ensure these values is to have the seed lot tested by a Government or independent laboratory. To determine the total amount of seed needed for a given lot, the following formula is used.

$$\begin{aligned} \% \text{ PLS}(x) &= \text{Lbs. of PLS desired} \\ X &= \text{Total Lbs of seed needed from this lot.} \end{aligned}$$

When ordering seed, it should be specified that the seed be collected from the same altitude as the area onto which it is to be applied. Also, the seed should be taken from as similar environmental conditions as possible.

The reasoning behind using live plantings along with seedings is twofold. By using live plants, we hope to create enough of a barrier against visitor traffic to prevent continued disturbance of the reseeded area. This barrier would also serve to protect the fragile seed until they can establish a strong hold. Live plants should also provide a quicker source of erosion control than seeding alone will.

Live plants should be placed/spaced so as to create an adequate barrier against further traffic. Shrubs will tend to prune themselves but the trees might have to be thinned at a later time so as to allow for natural and healthy growth of the trees themselves and the undergrowth.

The live plants can be obtained either through nurseries or collected from within the park. Again, as with seeds, it is important that any plants obtained from outside the park come from the same elevation and as similar environmental conditions to the site they are to be used on as possible.

Trees can be either hand planted or transplanted with a tree transplanter (depending on the size of the tree seedling and the adaptability of the equipment to the terrain). Numerous shrub species can also be transplanted with the tree transplanters (see attached # 1). All live plantings should be done either in early Fall (September) or early Spring. A springtime planting is the most preferred. All the seedings should be carried out in late Fall (October). Since the two procedures cannot be done adequately at the same time, on sites where both seedings and plantings take place together, the live plantings should be done prior to the seedings. This is to prevent disturbance/damage to the fragile seeds.

Protection of Rehabilitated Sites

Each site will need to be protected for a minimum of two growing seasons following planting. The most effective way of doing this is to close the area to all visitor traffic. Short of that, the best methods of protection would be to use fencing,

planting substantial plant barriers, interpretive signing and interpretive programs to inform the visitors of the importance of these projects. I feel that an interpretive program(perhaps integrated into the slide show) held within the Visitor Center would be an important step in protecting the park by showing the visitors what kind of damage they are really doing. I think this would be one of the most effective methods because it reaches the visitors before they enter the park-proper. Since all people entering the park receive a "HooDoo", an article in the park newspaper might be an effective means of getting to the visitors also.

Note: Photos for Sunset Point were unavailable at the time of this writing.

C: ref

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C: rehab

BRYCE CANYON
VEGATATION REHABILITATION PLANS

Rehabilitation Site:

Area Description:

A) Habitat Type:

B) Rehabilitation Needs:

Possible Rehabilitation Plants:

Planting/Seeding Requirements:

A) Guidelines:

B) Time of Year:

Seeding Rates:

Methods of Seeding/Planting:

Time Needed for Rehabilitation:

Recommended Methods of Protection:

Special Needs:

Additional Comments:

C: YVRPT

BRYCE CANYON
VEGATATION REHABILITATION PLANS

Rehabilitation Site: Yovimpa/Rainbow Points

Area Description:

A) Habitat Type: *Abies concolor*/*Arctostaphylos patula*
(Refer to Youngblood & Mauk for an explanation of habitat typing and habitat descriptions.)

B) Rehabilitation Needs: Revegetate disturbed areas on northeast side of water tower continuing over to paths leading to portable outhouses. Rehabilitate the trail from watertower to picnic area created by burial of water line. Stabilize rim areas that have been disturbed by heavy traffic (especially directly out from Yovimpa Point overlook).

Possible Rehabilitation Plants:

Juniperus communis (Common juniper)
Arctostaphylos patula (Manzanita)
Ceanothus martini (Mountain lilac)
Chrysothamnus parryi (Perry's rabbitbrush)
Purshia tridentata (Bitterbrush)
Ribes cereum (Wax currant)
Symphoricarpos oreophilus (Snowberry)

Berberis repens (Creeping barberry)
Hymenoxys richardsoni (Colorado Rubberweed)
Lithospermum multiflorum (Manyflower Gromwell)

Agropyron scribneri (Scribner wheatgrass)
Carex rosii (Ross Sedge)

Abies concolor (White Fir)
Pseudotsuga menziessi (Douglas Fir)

Planting/Seeding Requirements:

- A) Guidelines: (Seeding Mixtures)
- | | |
|-------------------------------------|------------------------|
| <i>Purshia tridentata</i> | 1 1/2 lbs. PLS/acre |
| <i>Ribes cereum</i> | 1 1/2 lbs. PLS/acre |
| <i>Lithospermum multiflorum</i> ... | 1/4 lb. PLS/acre |
| <i>Hymenoxys richardsoni</i> | 1/4 lb. PLS/acre |
| <i>Berberis repens</i> | 1/2 lb. PLS/acre |
| <i>Agropyron scribneri</i> | 1 lb. PLS/acre |
| | 5 lbs. total PLS/acre. |
- B) Live Plants:
Arctostaphylos patula
Ribes cereum
Abies concolor
Any of those from list that are available.

C) Time of Year: Seedings should be done in late Fall(October). All live plantings should be done in early Fall(September) or early Spring prior to the seedings.

Methods of Seeding/Planting:

A) Seeding: Seed should be hand broadcast onto a prepared seedbed and covered with 3/4 inch of soil or biodegradable mulch.

B) Plantings: Seedlings/plants should be either mechanically or hand planted with spacing so as to create a visual and physical barrier against visitor traffic.

Time Needed for Rehabilitation: Two full growing seasons following planting with no traffic.

Recommended Methods of Protection:

1) Close area to visitor traffic until plants can establish themselves.

2) Use fencing along with plant barriers to prevent visitors from leaving established trails.

3) Interpretive signing and programs to inform visitors of the importance of the rehabilitation projects.

Special Needs: Use shrub plants around rim overlook to create a substantial buffer zone in order to prevent visitor traffic on rim. These will also serve as a safety barrier to keep visitors away from hazardous rim areas.

The trail from the water tower to the picnic area will have to be scraped clear of the majority of gravel and possibly need top soil to cover area.

C: NOCG

BRYCE CANYON
VEGATATION REHABILITATION PLANS

Rehabilitation Site: North Campground

Area Description:

A) Habitat Type: *Pinus ponderosa*/*Arctostaphylos patula*
(Refer to Youngblood & Mauk for an explanation of habitat typing and habitat descriptions.)

B) Rehabilitation Needs: Rehabilitation of social trails and manipulation/removal of individual campsites so as to reduce visitor impact and improve the aesthetic value of the campground. Justification for removal of each individual site is given in the Special Needs section of this report. Also, any recommendations for changes in location are given in this section.

Possible Rehabilitation Plants:

Stipa comata(Needle and Thread Grass)
Agropyron spicatum(Bluebunch Wheatgrass)
Elymus salinus(Salina Wildrye)
Bromus ciliatus(Fringed Brome)

Amelanchier utahensis(Utah Serviceberry)
Arctostaphylos patula(Manzanita)
Purshia tridentata(Bitterbrush)
Ceanothus martini(Mountain Lilac)
Symphoricarpos oreophilus(Snowberry)
Rosa woodsii(Wild Rose)

Gutierrezia sarothrae(Snakeweed)
Castilleja linariaefolia(Indian Paintbrush)
Berberis repens(Creeping Barberry)
Oenothera brachycarpa(Evening Primrose)
Haplopappus armerioides(Goldenweed)

Pinus ponderosa(Ponderosa Pine)
Juniperus scopulorum(Rocky Mountain Juniper)

Planting/Seeding Requirements:

A) Guidelines:(Seeding Mixture)

<i>Stipa comata</i>	1/4 lbs. PLS/acre
<i>Agropyron spicatum</i>	1 lb. PLS/acre
<i>Amelanchier utahensis</i>	1/2 lbs. PLS/acre
<i>Purshia tridentata</i>	1 lb. PLS/acre
<i>Rosa woodsii</i>	1/2 lb. PLS/acre
<i>Castilleja linariaefolia</i> ...	1/4 lb. PLS/acre
<i>Oenothera brachycarpa</i>	1/2 lb. PLS/acre
	6 lbs. total PLS/acre.

B) Plantings:

Rosa woodsii
Pinus ponderosa
Amelanchier utahensis
Symphoricarpos oreophilus

Any of the shrub or trees from the list that are available.

C) Time of Year: Seedings should be done in late Fall(October). All live plantings should be done in the early Fall(September) or early Spring prior to the seedings.

Methods of Seeding/Planting:

A) Seeding: Seed should be hand broadcast onto a prepared seedbed and covered with a 1/2 inch of soil or biodegradable mulch.

B) Plantings: Seedlings/plants should be either mechanically or hand planted with spacing so as to create a visual barrier against visitor traffic.

Time Needed for Rehabilitation: Area will need two full growing seasons following planting with stringent protection from traffic.

Recommended Methods of Protection:

1) Close off area to visitor traffic until plants can establish themselves.

2) Use fencing along with vegetation barriers to prevent visitors from leaving established trails.

3) Interpretive signing and programs to inform visitors of the importance of the rehabilitation project.

Special Needs:

Sites Recommended for Removal:(See map "A")

16: This site is barren and its use has caused an extensive amount of disturbance to the surrounding area. It is also very open with little shade provided. This causes campers to spread out further from the site, increasing the amount of disturbance. It also has its own social trail leading to the bathrooms.

31: This site is on a three-way corner right at the entrance to the campground. It is closely crowded with site #32 and provides little privacy to those occupying the sites. It also has an extensive amount of disturbed area.

32: This is also on the three-way corner and is greatly crowded. Besides being crowded with site #31 it has site #35 looking right down on top of it further reducing the amount of privacy.

51: This site is located right on top of the entrance to the bathrooms, causing people to have to walk around it to gain access to the bathrooms. It is also a very barren and unattractive site with little vegetation present.

52: This is another corner site with considerable disturbance. It provides little privacy from passing traffic and is an unattractive sight for those traveling through the campground.

53: This is a very high disturbance site. For this site alone, the contour of the slope has been altered. There are also trails leading from this one site towards the rim.

55: Same as for site # 52.

56: This is another site that is right on top of the bathrooms. This one is causing people to create social trails by having to walk around it. It should be removed as a camp site and a marked established trail to the bathrooms should be put in its place. Doing this should help reduce the number of social trails around the bathrooms.

58: This site is very barren with lots of disturbance and social trails leading from it to the rim. It should be removed, in its place a marked trail to the rim along the wash leading up the slope should be established.

62: This site has lots of disturbance and is right on the edge of a culvert. Elimination would also get rid of the social trail leading to the bathroom created by those occupying this site.

71: This site is at the base of the hill leading to the bathrooms and is in a high rain run-off area. There is high disturbance around this site and it has social trails leading from it up to the bathrooms.

77: This is another site on a three-way corner with high disturbance and little privacy provided for its occupants.

89: Removal of this site would allow for the relocation of #87 and help in reducing the crowding on that side of the road. It also should be removed because of its close proximity to the slope. There is strong potential for erosion and slippage because of this location.

107: This site along with the whole lower portion of "D" loop should be removed(see map B). There is approximately 103 feet of paved road servicing this one campsite. With little potential for other sites along this loop there is little justification for its existence and the amount of disturbance created by it. Upon removal the roadcut will have to be out-sloped and recontoured prior to planting.

Additional Comments: I feel that the fresh-water faucets should be moved out from behind the various campsites, to within 6-8 feet of the road. This should be done so all visitors can have access to them without having to walk through other campers' campsites.

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BRYCE CANYON
VEGATATION REHABILITATION PLANS

Rehabilitation Site: Sunset Point

Area Description:

A) Habitat Type: *Pinus ponderosa*/*Arctostaphylos patula*
(Refer to Youngblood & Mauk for an explanation of habitat typing and habitat descriptions.)

B) Rehabilitation Needs: Vegetate areas of recent trail work with emphasis on area around Rim Trail relocation. Rehabilitate disturbed areas (mostly maverick/social trails) inclusive of whole area starting at Rim Trail on far southeast end of site extending to north end of site. Past rehabilitation attempts give evidence that use of tree seedlings and Manzanita may provide adequate barriers and/or incentive to visitors to prevent their continued trampling of vegetation belts.

Possible Rehabilitation Plants:

Purshia tridentata (Bitterbrush)
Cercocarpus montanus (Mountain Mahogany)
Ceanothus martini (Mountain lilac)
Chrysothamnus nauseosus (Rubber Rabbitbrush)
Chrysothamnus viscidiflorus (Rabbitbrush)
Arctostaphylos patula (Manzanita)

Castilleja linariaefolia (Indian Paintbrush)
Carex rosii (Ross Sedge)
Tetradymia canescens (Horsebrush)

Agropyron trachycaulum (Bluebunch wheatgrass)
Stipa comata (Needle and Thread grass)
Poa nevadensis (Nevada Bluegrass)
Poa pretensis (Kentucky Bluegrass)
Sitanion hystrix (Squirreltail)

Planting/Seeding Requirements:

A) Guidelines: (Seeding Mixture)

<i>Castilleja linariaefolia</i>	1/4 lb. PLS/acre
<i>Tetradymia canescens</i>	1/4 lb. PLS/acre
<i>Agropyron trachycaulum</i>	1 1/2 lbs. PLS/acre
<i>Sitanion hystrix</i>	1 1/4 lb. PLS/acre
<i>Chrysothamnus viscidiflorus</i> ...	1/4 lb. PLS/acre
<i>Purshia tridentata</i>	1 lb. PLS/acre
<i>Cercocarpus montanus</i>	1/2 lb. PLS/acre
	5 lbs. total PLS/acre.

B) Live Plants: (Any plants from the list, that are available)

<i>Arctostaphylos patula</i>	<i>Pinus ponderosa</i>
<i>Chrysothamnus nauseosus</i>	<i>Ceanothus martini</i>

C) Time of Year: Seedings should be done in late Fall(October). All live plantings should be done in early Fall(September) or early Spring prior to the seedings

Methods of Seeding/Planting:

A) Seeding: Seed should be hand broadcast onto a prepared seedbed and covered with a 1/2 inch of soil or biodegradable mulch.

B) Plantings: Seedlings/plants should be either mechanically or hand planted with spacing so as to create a visual and physical barrier against visitor traffic.

Time Needed for Rehabilitation: Two full growing seasons following planting with no traffic.

Recommended Methods of Protection:

1) Close area to visitor traffic until plants can establish themselves.

2) Use fencing along with plant barriers to prevent visitors from leaving established trails.

3) Interpretive signing and programs to inform visitors of the importance of the rehabilitation project.

Additional Comments:

Some areas(those with any substantial accumulation greater than 1'-2' from trail edge) adjacent to the trails will need to be scraped clear of gravel prior to planting.

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BRYCE CANYON
VEGETATION REHABILITATION PLANS

Rehabilitation Site: Inspiration Point

Area Description:

A) Habitat Type: *Pseudotsuga menziessi*/*Arctostaphylos patula*
(Refer to Youngblood & Mauk for an explanation of habitat typing and habitat descriptions.)

B) Rehabilitation Needs: 1) Control erosion of slopes caused largely by visitor traffic and runoff due to angle of trails.
2) Reestablish vegetation ground cover lost due to trampling and erosion.

Rehabilitation Plants Recommended:

**Linum lewisii* (Blue Flax)
Berberis repens (Creeping Barberry)
Oenothera brachycarpa (Evening Primrose)
Carex rosii (Ross Sedge)
Erigeron speciosus / Variety-*macranthus* (Largeleaf Fleabane)

**Arctostaphylos patula* (Manzanita)
Symphoricarpos oreophilus (Snowberry)
**Cercocarpus montanus* (Alder-Leaf Mountain Mahogany)
Ceanothus martini (Mountain Lilac)
Holodiscus dumosus (Bush Oceanspray)
Purshia tridentata (Bitterbrush)
Tetradymia canescens (Horsebrush)

Agropyron scribneri (Western Wheatgrass)
Agropyron trachycaulum (Bluebunch Wheatgrass)
Stipa comata (Needle and Thread grass)
Hilaria jamesii (Galleta)

**Pinus ponderosa* (Ponderosa Pine)
Pinus longaeva (Bristlecone Pine)
Pseudotsuga menziessi (Douglas Fir)

Planting/Seeding Requirements:

A) Guidelines: (Seeding Mixture)
Linum lewisii.....1/2 lb. PLS/acre
Erigeron speciosus
Variety-*marcanthus*.....1/4 lb. PLS/acre
Stipa comata.....1 1/2 lbs. PLS/acre
Agropyron trachycaulum...1 1/4 lbs. PLS/acre
Purshia tridentata.....1 1/4 lbs. PLS/acre
Cercocarpus montanus.....1 lb. PLS/acre
5 3/4 total PLS/acre.

B) Live Plants:

Symphoricarpos oreophilus Pinus ponderosa
Cercocarpus montanus Arctostaphylos patula

Any of the shrubs or trees from the list that are available.

C) Time of Year: Seedings should be done in late Fall(October). All live plantings should be done in early Fall(September) or early Spring prior to the seedings.

Methods of Seeding/Planting:

A) Seeding: Seed should be hand broadcast onto a prepared seedbed and covered with a 1/2 inch of soil or biodegradable mulch.

B) Plantings: Seedlings/plants should be either mechanically or hand planted with spacing so as to create a visual and physical barrier against visitor traffic.

Time Needed for Rehabilitation: Two growing seasons following planting with no traffic.

Recommended Methods of Protection:

1) Close area to visitor traffic until plants can establish themselves.

2) Use fencing along with plant barriers to prevent visitors from leaving established trails.

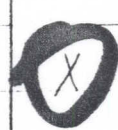
3) Interpretive signing and programs to inform visitors of the importance of the rehabilitation project.

Additional Comments: Coordinate rehabilitation plans with Trail Maintenance projects scheduled for this area. Adjust amount and intensity of seeding in accordance with level of disturbance caused by these projects.

NORTH CAMPGROUND - Reich's Plans 1990

SITE NUMBER	REPLACE WOODEN PICNIC TABLE	PARKING AREA NEEDS ROCKS OR CONCRETE BARRIERS	NEEDS LOG, BOLLARD, OR VEGET. TO PREVENT ILLEGAL TENTING	OTHER ITEMS	COMMENTS / JUSTIFICATION
2		X			NEED BOULDERS OR CONCRETE BARRIER BETWEEN SITE DELINEATOR AND FIRST 5 FEET OF ROCK WALL
3		X			NEED BOULDERS OR CONCRETE BARRIER BETWEEN SITE DELINEATOR AND POND. PINE AT ROCK WALL
		X			SAME AS ABOVE AT NORTH END OF ROCK WALL
4		X			TO KEEP VEH. OUT OF CAMPSITE
5		X			SAME AS ABOVE ALONG SOUTH / WEST EDGE OF DRIVEWAY
6	X	X		(X)	LEVEL ABOVE (EAST) OF FIRE GRATE
8		X			ALONG NORTH END OF DRIVEWAY
9	X	X			ALONG SOUTH END OF DRIVEWAY, FROM ROCK WALL, WEST
10		X			ALONG NORTH SIDE OF DRIVEWAY
11		X			" " " " "
16		X			" " AND WEST SIDE OF DRIVEWAY, WEST OF BOULDERS
17				X	REPLACE SMALL ROCKS WITH IMMOVABLE BARRIERS AT SOUTH EAST SIDE OF DRIVEWAY.
18		X			NEEDS GRAVEL PAD. SITE FLOODS AND MUD RUTS DEVELOP
20		X			ALONG SOUTH EAST SIDE OF DRIVEWAY - OVER TO SITE 20
		X			" " NORTH EAST " " " " " " " " 18
21		X			" " SOUTH EAST " " " " " " " " 22. THERE HAS BEEN NUMEROUS VEH. DRIVE UP TO WATER FAUCET.
22		X			NEEDS GRAVEL TO FILL IN FLOOD AREA BETWEEN GRAVEL & GRASS
24				X	SEE COMMENT ON ALONG NORTH END SIDE OF DRIVEWAY - OVER TO SITE 20. SITE 20
26		X			NEEDS GRAVEL TO FILL IN FLOOD AREA BETWEEN GRAVEL PAD AND ROAD
31	X				BETWEEN TWO SECTIONS OF ROCK WALL
32		X			ALONG EAST SIDE TO PREVENT VEH. DRIVING DOWN IN GRASSY AREA
33				X	RAISE CAMPGROUND HOT PAD WITH 6 INCHES OF GRAVEL, FROM SOUTH, WEST, TO END OF EXISTING GRAVEL
34	X				
35	X			X	FILL IN ERODED AREAS WEST SIDE OF DRIVEWAY
36	X				
38	X				
39	X				

NUMBER	SETBACK PICNIC TABLE	PARKING ROWS OR CONCRETE PARKING BARRIER	NEEDS LOG OR VISIT. TO PREVENT ILLEGAL TAKING	ITEMS
41			☒	LEVEL SOUTH WEST AND BELOW LEVEL OF FIREGRATE. MANY TENTS ERECTED HERE BEYOND 20 FOOT MAX. DISTANCE
42			☒	NO AREA SOUTHEAST OF TWO BIG PINE TREES
43	X			
44	X			
47	X			
50	X			
51	X			X NEED FIREGRATE INSTALLED
54	X			
55	X			
57	X		☒	NO OPEN AREA SOUTHWEST OF SMALL PINE TREE
58	X	X	☒	YES NORTHEAST FROM STONE WALL TO PINE TREE
59	X			
60	X	X		BETWEEN TWO PINE TREES WEST OF SITE DELINEATOR
61	X			
62	X			
63	X			
64	X			
65	X			
66	X			
67	X			
68	X			
69	X			
70	X			
71	X	X		BETWEEN TWO BIG PINES ALONG ROAD
73	X	X		ALONG WEST SIDE OF DRIVEWAY, NORTH FROM BARRIERS
74	X	X		ALONG NORTH " " " , EAST FROM BARRIER TO SITE DELINEATOR
75	X			

SITE NUMBER	REPLACE WOODEN PICNIC TABLE	PARKING AREA NEEDS ROCKS OR CONCRETE BARRIER	NEEDS LOG, BOULDER, OR VEGT. TO PREVENT ILLEGAL TENTING	OTHER ITEMS	COMMENTS / JUSTIFICATION
76	X				
77	X				
78	X			X	REPLACE BROKEN FIREGRATE BASE
79	X				
80					OPEN AREA BOUNDED BY TREES ON SOUTH AND BARRIER ON NORTH
81	X				
83	X				
84	X				SMALL OPEN AREA BOUNDED BY TREES ON SOUTH AND RABBIT BRUSH ON NORTH. NORTHEAST OF MANHOLE COVER, ABOUT 10' <i>and large open area on North</i>
85	X				
86	X			X	MOVE SITE DELINIATOR TO SOUTH SIDE OF SITE DRIVEWAY
87	X				
88	X				
89	X				
90	X				
91	X				OPEN AREA NORTH OF SITE 86 DRIVEWAY AND WEST OF ROAD.
92	X				
93	X				
94	X				
95	X				
96	X				
98	X				
100	X				
101	X				
102	X				
103	X				
104	X				
105	X				
106	X				OPEN AREA NORTH WEST OF DRIVEWAY
107	X	X			EAST SIDE OF DRIVEWAY BETWEEN BARRIERS AND ROAD

RECOMMENDATION FOR REVEGETATION
OF
NORTH AND SUNSET CAMPGROUND

Background

Both North and Sunset Campgrounds experience heavy usage. Every site in both campgrounds are occupied from May through October. North Campground was built on very poor soils and on areas of extensive slopes (exceeding 20% in places). The heavy usage, poor soils and relative poor design have resulted in high impacts to the vegetation. In some areas there is no vegetation in or near individual campsites. There are extensive social trails and no reproduction of vegetation is occurring.

Solution

Both North and Sunset Campgrounds require reworking to improve the individual campsites. In some cases, sites need to be removed or relocated to areas that can tolerate the heavy usage. Pads for tents and paved areas for recreational vehicles must be designated. Pathways, especially in areas of heavy usage (i.e. near restrooms and leading to trailheads) should be hardened. It is desirable to establish vegetation screening between sites to give the visitor more privacy.

Methods

Revegetation of the two campgrounds will require an extensive number of plants, including trees, shrubs and grasses. The first step in the process is to determine the approximate number of shrubs and grasses required to adequately revegetate the campgrounds. Since this step has not been completed, the following will be "guesstimates" as to what may be necessary.

The park desires to maintain a genetic integrity of the plants used in any revegetation project. Therefore the park does not wish to purchase plants of origins outside the Pansagaunt Plateau. Note that the source of any plant materials does not strictly have to be within the boundaries of the park, but sources must be from the immediate area of the park boundaries.

Trees may be transplanted into the area from two sources. They may be contained stock of ponderosa pine obtained from the U. S. Forest Service from seeds collected on the plateau. A second source of ponderosa pines would be to transplant the appropriate sized trees using a tree spade. The park has a small sized spade that can move trees up to three feet in height. In the past, we have borrowed a larger tree spade from the Dixie National Forest. This spade can move trees up to eight feet in height.

Shrubs need to be grown in containers. In order to maintain genetic integrity, cuttings or seeds need to be collected from within or near

the park and be grown to the appropriate size. Since the park does not have the personnel necessary to operate a nursery/greenhouse, it is necessary to contract the production of shrubs. Since 1990, Bryce has had a cooperative agreement with the Soil Conservation Service to collect and produce containerized shrubs from genetically correct seeds or cuttings.

Grass seeds and/or plugs also are unavailable from a commercial source due to genetics considerations. Therefore, it will be necessary to again get the appropriate grass seeds from the Soil Conservation Service.

Timing

Due to length of time needed to collect and produce the proper seeds and shrubs, the timing of the funding needs to be as follows:

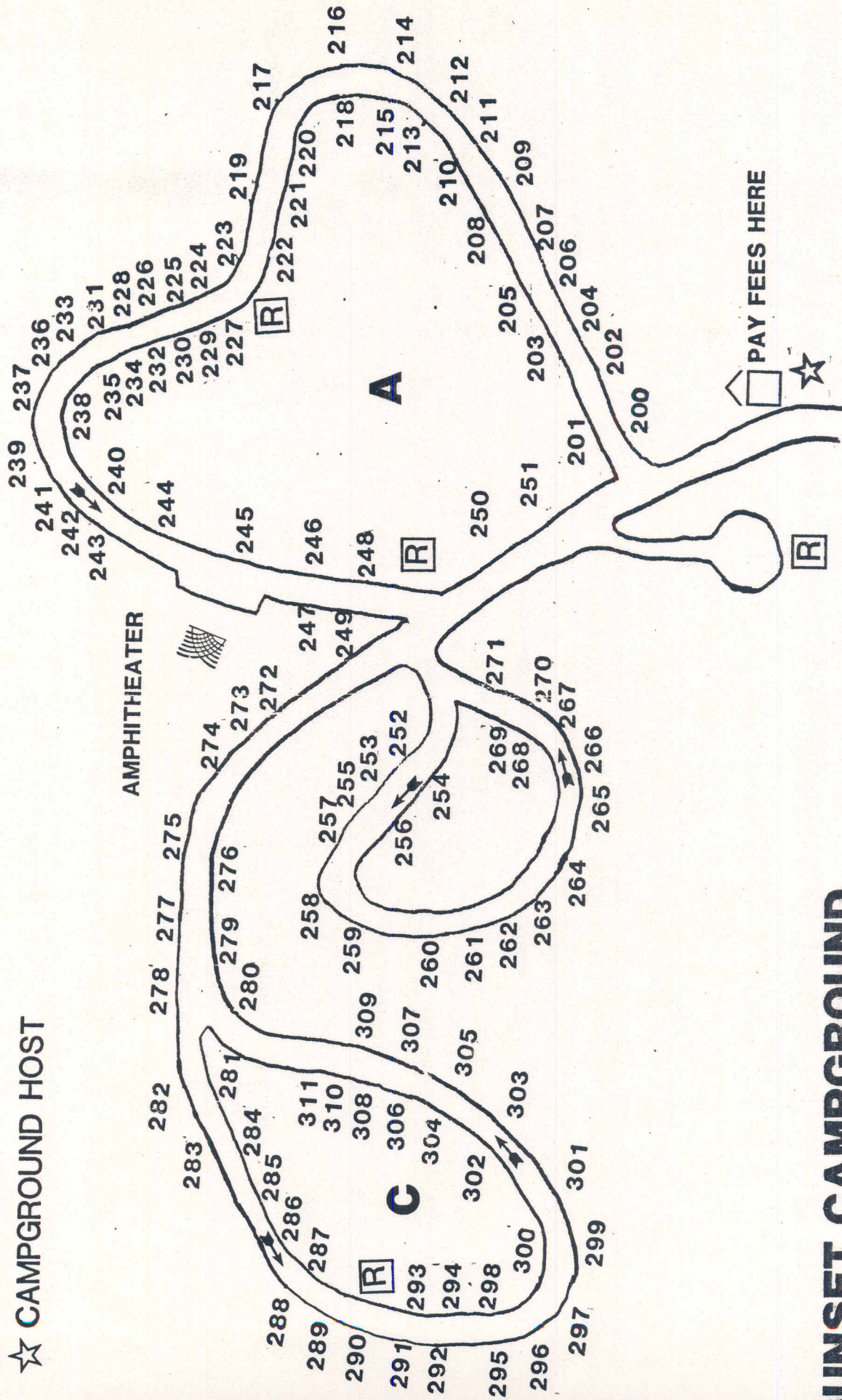
FY1	seed collection
FY2	seed and shrub production
FY3	rehab and revegetation of North Campground
FY4	rehab and revegetation of Sunset Campground
	water shrubs in North Campground
FY5	water shrubs in Sunset Campground

Costs

1.	Through mutual agreement with Soil Conservation Service	
	a. Consultation /Administration	\$6,000
	b. Seed collection	7,500
	c. Seed conditioning	1,500
	d. Seed production	7,000
	e. Transplant production	18,000
	Total	39,500
2.	Rental of Forest Service tree spade	1,000
3.	Rental of backhoe/auger	3,000
4.	Supplies and materials (fertilizers, erosion control fabric, water pump, etc.	5,000
5.	Labor to plant shrubs, grasses and trees	
	FY3	16,000
	FY4	17,000
6.	Labor to water plants for two summers	
	FY4	2,000
	FY5	2,000
	Grand Total	85,500

[R] RESTROOM

☆ CAMPGROUND HOST



SUNSET CAMPGROUND

- Trash dumpsters located at
the entrance to the campground and
at the dump station -

to camper store,
laundromat,
showers,
& Sunrise Point

