

To: FHWA and UDOT	
From: Vince Izzo	Project: Southern Corridor
CC: Shanna Moosman, File	
Date: July 12, 2004	Job No:

RE: Southern Corridor Indirect Development Analysis

Objective and Background

Objective. The objective of this memo is to determine the potential indirect impacts to the Holmgren milkvetch (*Astragalus holmgreniorum*) and bearclaw poppy (*Arctomecon humilis*) from building the Southern Corridor highway. Specifically, would proposed interchange locations along the highway result in development that would impact these federally listed endangered species? Figure 1 shows the proposed Southern Corridor in relation to the endangered species habitat in the project area. Both endangered species in the vicinity of the Southern Corridor are located on School and Institutional Trust Lands Administration (SITLA) property called “South Block” that consists of about 8,972 acres. Table 1 provides the total habitat for both species and the habitat located near the Southern Corridor in the South Block property. The habitat area provided is based on the soil type where the species are known to occur and may not necessarily contain occurrences of the endangered species. These data were provided by the Bureau of Land Management and SITLA.

Table 1. Holmgren Milkvetch and Bearclaw Poppy Habitat

Land Ownership	Holmgren Milkvetch (acres)	Bearclaw Poppy (acres)
Federal ¹	1,926	3,650
State ^a	2,484	2,060
South Block ²	700	1,000
Other state ¹	1,784	1,060
Private ¹	0	80
Total habitat¹	4,410	5,790

Sources:

¹ Bureau of Land Management, 2001. Faxed correspondence from Bob Douglas to Vince Izzo, December 2001.

² Renee Van Buren, PhD, 2003. Research Results and Recommendations Concerning Three Rare Plants of Washington Co., Utah, July 11.

Area Growth. The population of the southern portion of Washington County, which includes the cities of Ivins, Santa Clara, St. George, Washington City, and Hurricane, is increasing at 3.85% per year with the population forecasted to increase from 53,626 in 1994 to 208,641 in 2030. Dwelling units are expected to increase from 17,379 in 1994 to 77, 527 in 2030. Employment is expected to increase from 42,620 in 1994 to 113,969 in 2030. For comparison, the SITLA South Block property as planned is expected to capture about 21% of the new dwelling units (8,988 units) and 22% of the new employment (11,340 jobs) anticipated in all of Washington County. Most of the area’s growth is expected to occur south and east of I-15 (the area that includes the South Block property) since the areas north and west of I-15 have been developed within the

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limits of the topography. Also, a 61,022-acre area (Red Cliffs Desert Reserve) has been set aside to protect the desert tortoise and other sensitive animal and plant species. By protecting some species and their habitats, Washington County is able to proceed with orderly growth and development. However, the Reserve does not contain Holmgren milkvetch or bearclaw poppy habitat. The establishment of this preserve has also contributed to the indirect impacts on Holmgren milkvetch. The presence of the Red Cliffs Desert Reserve under the Washington County Habitat Conservation Plan approved in 1996, will accelerate development in a southern direction from St. George and other surrounding cities. Thus, the Reserve may hasten development in habitat occupied by the Holmgren milkvetch (Federal Register/Vol. 66, No. 189/Friday, September 28, 2001 – Determination of Endangered Status for *Astragalus holmgreniorum* (Holmgren milk-vetch) and *Astragalus ampullarioides* (Shivwits milk-vetch)).

Current Habitat Impacts. The Holmgren milkvetch and bearclaw poppy habitat within the South Block area has been heavily disturbed by human activity; this is one of the main reasons that the species has been listed as endangered. Unauthorized recreation such as off-road vehicle use and shooting are common in the habitat areas, and these activities have resulted in the loss of individual plants. The White Dome area, which contains bearclaw poppy individuals, is a popular off-road vehicle use area, although this state property is not authorized for off-road vehicle use. As the population increases, the habitat for the two species will come under continue pressure.

Indirect Analysis Approach

South Block Planning Study. To help evaluate the potential indirect impacts from the Southern Corridor on the Holmgren milkvetch and bearclaw poppy habitat, SITLA land planning consultants conducted a study to determine how the South Block property would develop with and without the Southern Corridor by 2030 (*South Block Alternative Plan*, P & D Consultants, May 2004). The two plans developed included the Alternative Plan (without the Southern Corridor) and the Current South Block Framework Plan (with the Southern Corridor) as summarized in Table 2. The following items were developed for each plan for the year 2030:

- Land use map
- Roadway network
- Total acres of residential development
- Number of residential units per development and density per acre
- Total acres of industrial development and associated employment
- Average daily traffic (ADT)

Table 2. Comparison of Alternative Plan and Current South Block Framework Plan, 2030¹

Factors	Alternative Plan (without Southern Corridor)	Current South Block Framework Plan (with Southern Corridor)
Residential development acres	3,323	2,145
Industrial development acres	751	1,272
Town Center	0	60
School	0	65
Commercial/RV Park	0	126
Planning Area	0	36
Total development acres²	4,074	3,704
Total residential dwelling units	3,547	8,988
Residential units per acre	1.07	4.19

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Factors	Alternative Plan (without Southern Corridor)	Current South Block Framework Plan (with Southern Corridor)
Industrial employment	9,012	11,340
Average daily traffic	63,037	139,128

¹ Each plan assumed a 2030 year planning horizon. The amount of development is based on the anticipated market with and without the Southern Corridor in 2030.

² The development area for the Alternative Plan is greater because of the additional access provided without a limited access highway and the additional land made available without the Southern Corridor.

The South Block report concluded that projected growth in Washington County and in St. George will result in substantial buildout of the developable portion of the South Block property by 2030. The ultimate development would differ between the Alternative Plan (without the Southern Corridor) and the Framework Plan (with the Southern Corridor), but pressures would result in development of the area regardless of which plan is implemented. However, without the Southern Corridor, the density of residential development would be substantially less (1.07 units per acre vs. 4.19 units per acre) and there would not likely be the support of commercial and community services. Table 3 provides the number of acres developed for the Alternative Plan and Framework Plan in the area of the Holmgren milkvetch and bearclaw poppy habitat. As shown in Table 3 the number of acres developed by year is greater in the Alternative Plan than the Framework Plan. This shows that there is a greater potential for the endangered plant habitat to be impacted earlier without the Southern Corridor (Alternative Plan).

Table 3. Total Acres Developed by Year in the South Block East Neighborhoods 1, 2, 3A, and 3B¹

Year	Alternative Plan (without Southern Corridor)	Current South Block Framework Plan (with Southern Corridor)
2010	405	194
2015	912	612
2020	1,379	1,059
2025	1,391	1,329
2030	1,391	1,329

¹ The area with potential Holmgren milkvetch and bearclaw poppy habitat includes South Block East Neighborhoods 1, 2, 3A, and 3B.

Indirect Impact Analysis. The data generated from the South Block Report formed the basis for determining the potential indirect impacts from the Southern Corridor. Actual plant habitat was based on the surveys performed by SITLA in 2003 and 2004. These survey data identified the location of plants and included polygons around plant concentrations. To determine these impacts, the following steps were taken:

- The Alternative (without the Southern Corridor) and Framework (with the Southern Corridor) Plans were overlaid on the endangered species habitat to determine acres impacted. Impacts were determined by the polygons that contained plants from the SITLA survey data.
- The acres impacted under each alternative were compared.
- Land use changes associated with Southern Corridor were determined and compared to land use changes without the Southern Corridor.

Indirect Impacts to Holmgren Milkvetch. The following analysis evaluates the impacts to Holmgren milkvetch with and without the Southern Corridor.

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Framework Plan (with Southern Corridor)

Based on the Holmgren milkvetch surveys conducted by SITLA, the Framework Plan could impact up to 158 acres of habitat (Table 4). The first interchange proposed by SITLA on the Southern Corridor would be directly southwest of the Holmgren milkvetch habitat. The area northeast of the interchange would develop with institutional uses (school) and a town center consisting of commercial uses to support the residential communities. The areas to the north and east would be residential land uses. The development around the proposed interchange would impact about 2 acres of habitat that contains plant species. The proposed residential areas (1, 2, and 3A) would impact about 153 acres and the Fort Pearce Business Park about 3 acres. It is expected that the town center and school would not be developed until after there is enough residential population to support use sometime after 2020.

Alternative Plan (without Southern Corridor)

Under the Alternative Plan, about 174 acres of habitat could be impacted by residential and industrial development. Under the Alternative Plan, there would be no Southern Corridor and the land would develop with less-dense residential properties. With this plan, residential development could impact 171 acres of habitat and the Fort Pearce Business Park about 3 acres.

Table 4. Acres of Endangered Plant Habitat Impacted by Development in South Block Area²

	Acres Impacted Framework Plan (with Southern Corridor)	Acres Impacted Alternative Plan (without Southern Corridor)
Holmgren milkvetch habitat impacted		
Institutional/commercial	2	0
Residential	153	171
Fort Pearce Business Park	3	3
Total habitat impacted	158	174
Bearclaw poppy habitat impacted		
Residential	8	8
Proposed industrial road through White Dome ¹	6	0
Total habitat impacted	14	8

¹ If proposed industrial road is built it was assumed about 2000 feet would go through bearclaw poppy habitat and a right-of-way requirement of 122 feet (four lane roadway).

² Based on one year of survey data from Renee Van Buren, PhD, 2003. *Research Results and Recommendations Concerning Three Rare Plants of Washington Co., Utah*, July 11.

Indirect Impacts to Bearclaw Poppy. The following analysis evaluates the impacts to bearclaw poppy with and without the Southern Corridor.

Framework Plan (with Southern Corridor)

Under the Framework Plan, about 14 acres of bearclaw poppy habitat would be impacted. About 8 acres would be impacted by residential development along the west slope of White Dome, which is the same amount as under the Alternative Plan. Although UDOT's plans for the Southern Corridor have an interchange at River Road (which is outside the poppy habitat where plants were identified by SITLA), SITLA proposes moving the interchange to the east and building an industrial truck traffic road through White Dome. This proposed road would impact up to 6 acres of bearclaw poppy habitat.

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Alternative Plan (without Southern Corridor)

Under the Alternative Plan, about 8 acres of bearclaw poppy habitat would be impacted. As with the Framework Plan, the 8 acres would be associated with proposed residential development along the west slope of White Dome.

Conclusion

Growth in the South Block area will occur with or without the Southern Corridor. SITLA has developed two proposed 2030 plans to show how the area would develop differently based on implementation of the highway. Under either plan, the South Block area would have substantial residential development by 2030, although the densities would be lower with the Alternative Plan. Based on the analysis of the two plans, few indirect growth-induced impacts would be caused by the Southern Corridor. The Alternative Plan would impact 16 more acres of Holmgren milkvetch habitat than the Framework Plan. Although the proposed first interchange on the Southern Corridor would have commercial uses that would impact 2 acres of habitat, this area would be developed as residential without the Southern Corridor and would have the same impacts. Because the area around the interchange would likely develop more densely with the highway, it is more likely that the 2 acres would be impacted (these 2 acres of impacts could be considered indirect impacts).

The Framework Plan would impact 6 more acres of bearclaw poppy habitat than the Alternative Plan because of the potential for SITLA to build a truck route to separate the industrial trucks from the residential traffic in the area for safety reasons. Under SITLA's plan, the proposed interchange at River Road would be moved to the east to directly connect to the industrial road. Since the industrial road would be associated with implementation of the Southern Corridor with an interchange east of River Road, the 6 acres would be an indirect impact of the highway. An option for UDOT is to not allow an interchange east of River Road which would avoid indirect impacts to the bearclaw poppy. Discussions with SITLA noted that the proposed industrial road over White Dome would be built even with the interchange on Southern Corridor at River Road or without the Southern Corridor. Under either option, the industrial road would be built over White Dome with a frontage road that would connect to the River Road interchange or to a local road that maybe built in place of the Southern Corridor. Because the industrial road over White Dome would be built independent of the Southern Corridor the indirect impacts would not be associated with the Southern Corridor.

Based on the above analysis, it is expected that the Southern Corridor would result in indirect impacts to 2 acres of Holmgren milkvetch habitat and no indirect impacts to bearclaw poppy habitat in the South Block area.

Addendum – Indirect Impacts West of I-15

This addendum provides the analysis for the potential for indirect impacts from the proposed Southern Corridor Atkinville Interchange (milepost 2 on I-15) on the west side of I-15. On the west side of I-15 there are two main habitat areas of concern. The first area contains bearclaw poppy habitat and is in between I-15 and Pioneer Road. An existing dirt road divides the habitat which has been heavily disturbed by off-road vehicle use. The second parcel which contains Holmgren milkvetch habitat is south of milepost 2 about 1 mile and is currently accessed by a dirt road. This parcel is undeveloped but does show some off-road vehicle use.

The Southern Corridor Atkinville interchange would provide direct access to the existing Sun River development west of I-15 which is currently served from St. George by Pioneer Road by the Bloomington interchange (milepost 4 on I-15). An interchange would allow for easier access to this development and adjacent undeveloped lands. The SITLA land planning study included this area as part of the Alternative Plan (without the Southern Corridor) and the Current South Block Framework Plan (with the Southern Corridor).

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Under the Alternative Plan and the Framework Plan the area west of I-15 around the Atkinville interchange would develop. With the proposed interchange the area would develop with more commercial and business oriented uses around the interchange with residential uses to the west and south. Under the Framework plan the area would develop exclusively as residential. According to the plan the area would develop with or without the Southern Corridor. Development in this area without an interchange has been shown feasible by the fast growing Sun River development which has current plans to expand. Although further development of this area would cause more traffic, the existing Pioneer Road could be easily expanded to accommodate the growth under the No-Build Alternative.

Under the Build and No-Build alternatives the area will development but as noted above the type of land use would be more dense under the build scenario commercial uses. The total habitat impacted in this area is shown in Table 5. The total impact area assumes that no conservation measures were implemented under either alternative.

Table 5. Acres of Endangered Plant Habitat Impacted by Development West of I-15

	Acres Impacted Framework Plan (with Southern Corridor)	Acres Impacted Alternative Plan (without Southern Corridor)
Holmgren milkvetch habitat impacted		
Residential	170	170
Total habitat impacted	170	170
Bearclaw poppy habitat impacted		
Residential	19	112
Commercial	101	0
Total habitat impacted	120	112

Because the residential development for the Holmgren milkvetch habitat for the area west and south of I-15 would be similar under the Alternative Plan and Framework Plan, the Southern Corridor is not expected to cause indirect impacts in this area.

For the parcel immediately adjacent to milepost 2 that contains bearclaw poppy habitat the land would develop under either the Build and No-Build alternatives; however, the density of use and the extent of commercial development would be 8 acres greater with the interchange as shown above in Table 5. Therefore, the 8 acres of bearclaw poppy habitat effected would be considered an indirect impact of the Southern Corridor.

Summary

Based on the above analysis, the total indirect impacts for the Southern Corridor both west and east of I-15 is expected to be 2 acres for the Holmgren milkvetch and 8 acres for the bearclaw poppy.

