DISTURBANCE PERMIT APPLICATION
FOR
SILVER MOUNTAIN VILLAGE

Prepared for:

SEMINOLE LAND HOLDINGS

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DISTURBANCE PERMIT APPLICATION FOR SILVER MOUNTAIN VILLAGE

1.0 EXECUTIVE SUMMARY

The purpose of this report is to demonstrate compliance with the Town of Silverthorne (Town) Ordinance 1999-1 entitled: "Waterbody, Wetland and Riparian Protection Regulations" (Ordinance). Specifically, this document provides the "Disturbance Permit Application" (DPA) described in Section 4-8-14 of the Ordinance.

Silver Mountain Village (SMV) is a 71-acre parcel of land on the west side of State Highway 9 south of the Willow Brook neighborhood. The SMV development consists of a number of land uses including: single-family, townhomes, apartments, an elementary school, day care center, public park, commercial space and a grocery store. Two road intersections off State Highway 9 are planned for access, and the internal road system will include a north-south road that will connect to roads on adjacent sites.

Wetlands occur in six areas on the SMV property and the total acreage of wetlands is 15.07 acres. Wetland types include willow, willow/sedge and sedge communities. One fen exists on the site. Wetlands are associated with two primary drainages on the property: Willow Creek, which flows along the northern property line, and a small, intermittent drainage with beaver dams along the southern property line. The Valier Ditch diverts from Willow Creek and flows across the western portion the site into a wetland located along the southern property line.

Seminole Land Holdings (SLH), the owner/applicant and developer of SMV, has sought ways to avoid and minimize impacts to wetlands, waterbodies and buffer areas in the planning process for SMV. Site plans went through extensive reconfiguration to avoid impacting wetlands and, when impacts were unavoidable, multiple alternatives were analyzed to minimize impacts. Where impacts to wetlands, waterbodies and buffer zones are unavoidable, mitigation is provided, and best management practices (BMPs) are stipulated for protection of water quality.

After extensive planning and reconfiguration of plans, direct impacts to wetlands as a result of SMV were reduced to a total of 0.469 acres. This represents 3.1 percent of the 15.07 acres of wetlands on the site. These wetland impacts will occur at five locations and result from road construction and crossings, as well as a commercial pad associated with the grocery store. Wright Water Engineers, Inc. (WWE) prepared a Section 404 permit for these disturbances for the U.S. Army Corps of Engineers (USACE). As compensation for wetland impacts, 0.80 acres of wetlands will be created adjacent to an existing wetland complex (fen) in the western portion of the SMV property. Other mitigation measures include stabilization of a small channel flowing through the fen near the wetland creation area; restoration of a lateral drainage ditch at the proposed wetland creation area; dedication of water owned by the applicant in the Valier Ditch to enhance an existing 2.8 acre wetland complex in the southern boundary of the property; maintenance of existing site hydrology using culverts beneath the roads; and restoration of approximately 220 linear-feet of a wetland buffer zone along Willow Creek at an existing Public Service Company site.

In addition to the wetland impacts identified above, there will be eight areas of encroachment into a buffer zone. As part of the planning process, WWE defined a restrictive 25-foot inner buffer for the site and a variable width outer buffer based on the locations of wetlands and the presence of triggers including erodible soils, 100-year floodplain, imperviousness and the presence of the fen. The total amount of area disturbed within the buffers is 2.1 acres within the 25-foot buffer, and 12.5 acres within the 100-foot outer buffer. All the disturbance within the 25-foot buffer is associated with direct impacts to wetlands, for which a Section 404 permit is sought, or due to the need to construct roads. No other impacts will occur with 25-foot buffer zones. While 12.5 acres would be disturbed in outer buffer zones, most of the area included in this total will remain as pervious area, either undisturbed, or disturbed and revegetated and landscaped. Each of the proposed encroachments meets at least one the "standards" in the Town's ordinance.

To protect wetlands and waterbodies, a number of BMPs will be used. These BMPs will provide the functions of areas within the 100-foot outer buffer and 25-foot inner buffer that are impacted as a result of development. The overall BMP strategy for SMV is based on the following principals:

1. Runoff from impervious surfaces will be detained and treated to the extent feasible (e.g., by grassy swales, infiltration devices, or other stormwater BMPs) prior to discharge off the site.

2. Building lots, parking lots and other features located within a buffer or near a wetland or waterbody will be graded to drain away from the wetland or waterbody.

3. Runoff velocities will be controlled to prevent high flows and associated erosion and to protect outlet and drainageways.

4. The major flow paths and movement of water through and on the site will be maintained. Major flow paths will be maintained through the use of culverts and swales so that water supplied to wetlands and waterbodies is not reduced.

Planning for stormwater BMPs on a lot-by-lot basis will be completed as plans are further defined, if necessary. This DPA describes applicable BMPs for each of the seven buffer zone encroachment areas. These BMPs include:

1. Clearly marking of the limits of buffers and wetlands prior to construction.

2. Minimization of the area of disturbance and the time that disturbed areas are left exposed.

3. Timing of construction to avoid periods of heavy rainfall and runoff, when practicable.

4. Storage of stockpiled soil away from wetland and wetland setback areas.

5. Temporary stabilization of inactive exposed areas.

6. Permanent revegetation and stabilization as soon as practical following completion of grading and construction.

7. Use of silt fence, straw bale barriers, etc. on downgradient boundaries of disturbed areas to protect adjacent setback and wetland areas.

8. Runoff velocities will be kept to nonerosive levels, and protection measures will be implemented to prevent erosion at outlets and in drainageways.

2. 0 INTRODUCTION AND PURPOSE

This report is a "Disturbance Permit Application" (DPA) for the proposed Silver Mountain Village project (SMV) in Silverthorne, Colorado. This report was prepared to meet the requirements of the Town's Ordinance 1999-1, "Waterbody, Wetland and Riparian Protection Regulations," which requires new projects to protect sensitive areas through the use of buffer zones, best management practices (BMPs), and adequate mitigation. Included in this report is a description of existing site conditions, the proposed project and all the information required for a DPA.

Wright Water Engineers, Inc. (WWE) prepared this preliminary DPA based on available information generated by the SMV project team. This team includes DHM Design (land planners), the Erik Olgeirson Partnership and Western Ecological Resources, Inc. (WER) (wetlands), Kimley-Horn Engineering and David Kotzebue, P.E. (civil engineering), and Western Ecosystems, Inc. (wildlife). The DPA can be refined once the final site plan is developed. BMPs can be developed on a lot-specific basis, if needed.

2.1 Background on Project

Seminole Land Holdings (SLH) is the owner, applicant, and developer of SMV. The property consists of approximately 71 acres of land, formerly known as the "Smith Ranch," on the west

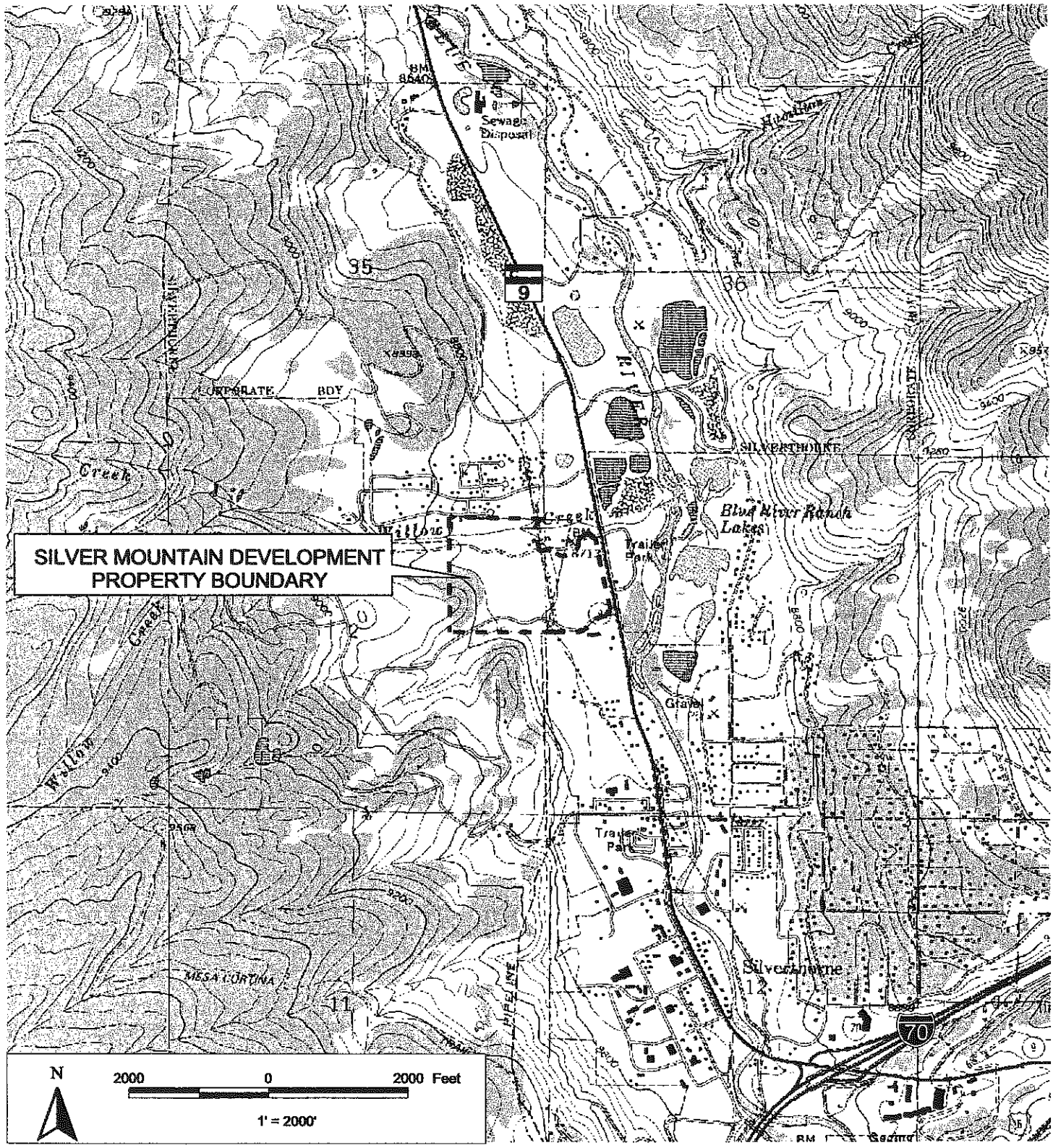
side of State Highway 9 south of the Willowbrook neighborhood. Figure 1 is a vicinity map of SMV.

SMV was purchased by SLH in 1998 to address needs identified during the initial planning process on several other parcels already owned by SLH, referred to as the "Buffalo Mountain Ranch" (BMR). BMR is a proposed golf course residential project located east of the Blue River, a portion of which had been annexed into the Town. BMR is being developed by another entity, and a separate DPA is being submitted for the BMR project.

Twenty-six percent (18.8 acres) of the SMV property was annexed into the Town by the previous owner. The already-annexed portion of the site was proposed for low density, single-family and/or multifamily residential development, with one-acre of commercial use. The remaining 52.2 acres of SMV is currently zoned for agricultural use and is included in the Town's 3-Mile Plan. (The Smith family is retaining the house, barn, and other structures on the homestead.)

SMV was planned to complement the residential golf course development at BMR. Development opportunities identified for the site include providing a variety of affordable housing types, convenient neighborhood commercial uses, public amenities including a new elementary school and park, and preservation of open space along Willow Creek. These uses arose out of comments by the community and Town staff to address important housing, economic and community needs.

The sketch plan for SMV was approved by Town Council on July 18, 2000; a resolution initiating annexation of the 52.2 acres of SMV not yet annexed by the Town was approved by the Council on August 9, 2000. Additional background information on the project can be found in the *Sketch Plan Submittal* (June 30, 2000).



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VICINITY MAP

SILVER MOUNTAIN DEVELOPMENT

FIGURE 1

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3.0 SITE DESCRIPTION

SMV is a generally rectangular parcel of land west of State Highway 9 and south of Willow Creek (Figure 1). Historically, the property was irrigated and used for haying and grazing by the Smith family. The following provides an overview of existing conditions. Features relevant to the DPA, especially to the establishment of buffers around wetlands and water bodies, are shown on Drawing 1 (map pocket).

SMV is located on gently sloping valley benches and alluvial terraces on the Blue River Valley bottom. The site is relatively flat and slopes toward the east. Most of the site has slopes of less than 10 percent, but an area of steeper slopes exists in the southwest corner of the site (Drawing 1). Elevations range from approximately 8700 to 8860 feet above mean sea level.

There are two drainages on the site. Willow Creek, a perennial stream, flows along the northern property line. The 100-year floodplain for this creek lies partially on SMV property, as shown on Drawing 1. There is also a small, intermittent drainage with beaver dams along the southern property line. The Valier Ditch diverts from Willow Creek and flows across the western portion of the site. This ditch flows into the wetland located along the southern property line (Drawing 1).

According to the *Engineering Geologic Evaluation—Buffalo Mountain Ranch Project...*" (Michael West and Associates, Inc.), most of SMV consists of glacial outwash and alluvial terrace deposits underlain by marine clay shales. Groundwater was not encountered to depths of 5 to 6 feet in holes drilled for the geologic investigation, though shallow groundwater was found in piezometers installed on the site for the wetland delineation by Western Ecological Resource, Inc. (WER) (July 1997). According to the geologic investigation, geologic conditions do not prevent development of the site, though some measures may be required for foundations, etc.

The *Soil Survey of Summit County Area, Colorado* (Soil Conservation Survey Service 1980) shows soils in the eastern portion of SMV to be predominantly Handran gravelly loam. This is a

deep, well-drained soil on relatively level terraces. Cimarron loam, which is a deep, well-drained soil on mountainous uplands, exists in the western portion of the site. The soil survey also shows a small area of Anvik loam extending into the southern portion of SMV. Cumalic cryaquolls and histic cryaquolls occur on the site along the small drainage in the southwest corner. Both of these soils are hydric (wetland) soils. Cimarron loam and Anvil loam soils have a high water erosion hazard and a "K" factor of greater than 0.25. The locations of these soils are shown on Drawing 1.

Vegetation, including pastures grasses such as blue grass, timothy, and meadow foxtail, exists in the meadow portion of the site. Coniferous trees with an understory of upland plants exist on the hill in the southwest corner.

Wetlands were delineated by WER in 1997 and 1998. Follow-up work on the delineation was completed by Erik Olgeirson Partnership and WWE. The delineation was approved by the USACE in a letter dated June 26, 2001. Wetlands occur in six areas on SMV, as shown on Drawing 1. The total acreage of wetlands on the site is 15.07 acres. As described in the *Wetland Delineation Report—Silver Mountain* (WER 1997), wetland types include willow, willow-sedge and sedge communities. Dominant wetland plants include Nebraska sedge, meadow foxtail, Baltic rush, willows and shrubby cinquefoil. One fen exists on the site (Drawing 1) and has a histic epipedon. This fen has been degraded by past agricultural activities; including grazing and drainage ditch system.

Wildlife on SMV was addressed in a report entitled *Wildlife Impact Report and Mitigation Plan for Buffalo Mountain Ranch and Silver Mountain Village*...(draft by Western Ecosystems dated February 2001). As described in this report, SMV includes habitat types ranging from agricultural fields to wetlands and a forested area. The wildlife habitat value of the site is limited because it is surrounded and affected by existing development and State Highway 9. Some deer and elk use the site. Surveys did not find any boreal toads or raptors on the site. Lynx are not expected to use SMV because of its close proximity to development and the lack of forest.

4.0 OVERVIEW OF PROPOSED DEVELOPMENT

SMV is proposed for a variety of land uses that were identified as being needed by the community and Town during the initial planning process for Buffalo Mountain Ranch. A large portion of the site will provide for public uses needed by the community. Development opportunities identified for SMV include preservation of open space along Willow Creek, and provision of affordable housing, pedestrian and automobile links with the existing Town, convenient neighborhood commercial uses, additional tax base, a future elementary school and a day care facility. The proposed development plan for the project is shown on Drawing 2 and includes the following:

- 45 single-family houses
- 37 town homes
- 110 multi-family
- An elementary school
- Day care center
- 10.1 acre public park
- Grocery store (Safeway)
- 83,345 square-feet of commercial

Access will be provided via two new road intersections off State Highway 9. At the request of the Town, the internal road system includes a north-south road that will connect to the anticipated road system adjacent to the site. The northern extension of the road will connect through the existing Badger Lane.

4.1 Strategies to Avoid and Minimize Impacts to Wetlands and Waterbodies

Throughout the planning process for SMV, measures were utilized to avoid and minimize the extent of potential impacts to wetlands and waterbodies on and adjacent to the site. This presented a challenge given the wide range of uses to be provided by the development and the presence of wetlands on the site. Mitigation is proposed to offset unavoidable direct impacts to

wetlands, and BMPs and mitigation are proposed for encroachments into designated buffer zones. BMPs and mitigation for wetland impacts are discussed in sections 5.2.3 and 5.2.4, respectively.

The following measures were taken to avoid and minimize impacts to wetlands and waterbodies during the planning process:

- **Identification of environmental constraints.** Wetlands, riparian areas and creeks were identified early in the planning process, and the proposed plan was designed to avoid such areas to the extent feasible.

- **Reconfiguration of site plans to avoid impacts.** The overall site designer worked closely with WWE to avoid impacting wetlands by reconfiguring the site plan. Building sites, road alignments and other features were relocated to avoid impacting wetlands.

- **Use of existing roads.** The existing Ruby Ranch Road will be used for the alignment of the southern road on the site to minimize additional impacts.

- **Measures to minimize impacts.** Where impacts were unavoidable, impacts were minimized by moving building locations, realigning road crossings and other measures.

- **Development of a wildlife mitigation plan.** Impacts to wildlife will be minimized and/or mitigated by implementation of a wildlife mitigation plan that will be developed in conjunction with the Colorado Division of Wildlife (CDOW).

5.0 PROPOSED DISTURBANCE PLAN

This section provides the proposed disturbance plan and other specific information required for the DPA (Section 4-8-14 of the Town's ordinance).

5.1 Boundary Map

Drawing 2 (map pocket) is a map that shows the boundaries of wetlands, riparian areas and waterbodies on SMV. This drawing also depicts the inner (25 foot) and variable outer (100 foot) buffer zones around these features, the specific triggers for the variable buffers, and the boundaries of proposed disturbance.

The locations of the variable outer (100 foot) buffer zone were determined from an analysis of site conditions that trigger the need for an outer buffer, as defined in Section 4-8-15 of the Town's ordinance. Site conditions necessitating an outer buffer are summarized below. In several cases, the need for an outer buffer is triggered by the presence of more than one factor.

- **Riparian areas.** A riparian area, that is also a wetland, exists along Willow Creek in the northern portion of the site.
- **Threatened and endangered (T&E) species.** There is no occupied functional habitat for listed T&E species on SMV according to the wildlife assessment conducted by Western Ecosystems.
- **Wildlife migration corridors.** There are no demonstrated wildlife migration corridors (as determined by the CDOW) on the site, according to the wildlife assessment by Western Ecosystems.
- **Fens.** There is one wetland that is a fen (has organic soils) based on work conducted by Erik Olgeirson Partnership. The location of this fen is shown on Drawing 2.
- **100-year floodplain.** The 100-year floodplain for Willow Creek extends onto the site, as shown on Drawing 2.
- **Steep slopes.** Slopes of over 20 percent occur only on a small portion of the site. These areas are shown on Drawing 2.

- **Erodible soils.** Soils with an erosion "K" factor of greater than 0.25 exist on the site. These areas are shown on Drawing 2.

- **Unstable streambanks.** No streambanks on SMV have horizontal or vertical degradation beyond natural conditions that would trigger an outer buffer.

- **Hazardous materials.** Hazardous or toxic materials will not be used on the site because they present a special hazard to water quality.

- **Stormwater permit.** There is no requirement for a stormwater permit for commercial or industrial land uses on this site.

- **Impervious area.** Several locations exist where there will be at least one acre within the potential outer buffer with an imperviousness of 40 percent or more—these areas trigger the need for an outer buffer.

- **Poor vegetative cover.** No areas exist on the site where there is one-half acre or more of land with less than 30 percent cover within 125 feet of a wetland or waterbody. Therefore, this trigger does not apply to SMV.

5.2 Proposed Disturbance

Drawing 2 is an overlay of the proposed development on site features and buffers and shows the locations of proposed disturbance of wetlands, waterbodies, and associated buffer zones. Descriptions of the disturbances, including amount, location, and the activity causing the disturbance, are provided in Table 1.

Table 1
Descriptions of Proposed Disturbances—Silver Mountain Village

Area[1]	Nature/ Description	Size (acre)	Buffer Trigger[2]	DPA Std. Met[3]	Notes
Direct Impact to Wetlands and Water Bodies					
1	Road impact	0.011			Not possible to avoid tip of wetland. Impact minimized to extent practical.
2	Road crossing	0.060			Required by Town. Arch culvert proposed to minimize impact.
3	Commercial pad	0.156			Grocery store. Limited by site constraints.
4	Road crossings	0.066			Necessary for Adams Avenue access.
5	Road impact and crossing	0.176			Utilized existing road. Impacts minimized.
Total		0.469			
Buffer Zone Encroachments					
A	Town homes and grading along road	1.66 (outer)	Soils, imperviousness	9	Downgradient of wetland.
B	Road, single-family residential	0.06 (25-ft) 0.82 (outer)	Fen, imperviousness	9	Inner buffer disturbance in conjunction with 404-approved disturbance. Development is downgradient of wetland.
C	Single-family residential	1.28 (outer)	Soils, 100-year floodplain	9	
D	Single-family residential, detention basin, road, road crossing of wetland	0.38 (25-ft) 2.14 (outer)	Imperviousness, 100-year floodplain	8,9	Detention pond grading and 404-permitted bridge will encroach into 25-ft buffer.
E	Road grading, portions of buildings and parking lots. Landscaped and open area adjacent to wetlands. Part of detention pond	0.08 (25-foot) 2.06 (outer)	Imperviousness	2,8,9	Upgradient of wetland. Area will drain to detention pond.
F	Road along south property boundary, grocery store, parking, wetland crossings	1.34 (25-ft) 2.21 (outer)	Imperviousness	2,9	25-ft buffer encroachments are associated with 404-permitted activities. Impact on road on wetlands and setback areas minimized by following existing alignment.
G	School, athletic fields	1.26 (outer)	Soils	9	Primary disturbance is grading. Following construction, this will be a pervious area.
H	Wetland mitigation site	0.23 (25-ft) 1.10 (outer)	Soils, fens	7	Wetland creation site next to existing wetland.

[1] See Drawing 2 for location.
[2] Factor triggering outer buffer in Town's ordinance.
[3] As described in Section 4-8-16 of ordinance; see text for description.

As shown in Table 1 and on Drawing 2, the development is proposed to impact wetlands at five separate locations totaling 0.469 acre. This represents 3.1 percent of the 15.07 acres of wetlands on the site. SMV is also proposed to encroach within buffers at eight locations. The total amount of area disturbed within the buffers is 2.1 acres within the 25-foot buffer, and ____ acres within the 100-foot outer buffer. All the disturbances within the 25-foot buffer (except at area "H") are associated with impacts to wetlands for which a Section 404 permit is being requested. It is proposed to encroach within the 25-foot buffer at area H for the construction of 0.80 acre of wetland mitigation.

Disturbances within the outer buffer are more widespread, but much of the area disturbed will remain as pervious area, either undisturbed, or disturbed and revegetated and landscaped.

Table 1 shows the disturbance permit standards listed in Section 4-8-16 of the Town's ordinance that are present for each encroachment. The standards that are present include: "2—Access of Utilities," "7—Wetlands and Habitat Creation," "8—Buffer Zone Enhancement, Storm Water Treatment Area," "9—PUD With no Significant Degradation to Wetlands."

5.2.1 Grading and Erosion Control Plans

The proposed grading plan for SMV is shown on Drawing 2. The erosion control plan is provided on Drawing 3 (map pocket). As shown on this drawing, multiple measures will be used to minimize erosion during the construction process. Areas that will not be disturbed will be marked and protected from disturbance during construction. If possible, earthwork for the project will be timed to minimize soil exposure during rainy periods, to the extent feasible.

5.2.2 Revegetation Plan

All areas disturbed for the project will be adequately revegetated. Landscaped areas will be planted as shown on the landscape plan. Other areas, including disturbed areas, will be seeded

with the seed mix shown in Table 2. This mix stresses perennial native species adapted to the site. Only one seed mix is required due to the similar elevation, aspect, and soils on the site.

Table 2
Seed Mix for Disturbed Upland Areas[1]

Common Name[2]	Scientific Name	% Mix	Pounds PLS/Acre[3]
Idaho fescue	*Festuca idahoensis*	20	3.9
Alpine bluegrass	*Poa alpina*	20	1.7
Western wheatgrass	*Pascopyrum smithii*	20	15.8
June grass	*Koeleria cristata*	15	0.6
Arizona fescue	*Festuca arizonica*	20	3.2
White yarrow	*Achillea millefolium*	5	0.2
Total			25.4

[1] Mix should be drill seeded, except on steep slopes where broadcast or hydroseeding are acceptable at 200 and 150 percent of rate shown, respectively.
[2] The following wildflowers may also be seeded:
- Blanket flower 0.8 pounds PLS/acre
- Lupine 4.4 pounds PLS/acre
- Firecracker penstemon 0.2 pounds PLS/acre
- California poppy 0.4 pounds PLS/acre

[3] Divide pounds PLS/acre by 43.5 to obtain pounds PLS/1000 ft^2.

The following guidelines will be followed for seeding:

1. The seedbed will have a friable surface with the upper three inches (minimum) loosened and suitable for seeding.

2. A drill seeder will be used to sow seed. Alternatively, seed will be broadcast at twice the rate or hydroseeded at 150 percent of the rate shown in Table 2 on steep slopes.

3. Seeded areas will be mulched at a rate of 2 tons per acre of weed-free straw mulch, or 1 ton per acre of wood cellulose, if hydromulching is done.

4. Straw mulch will be secured by crimping or with 3 pounds per 1000-square feet of M-Binder tackifier on slopes 3:1 or flatter. Mulch will be secured with netting on slopes steeper than 3:1.

5.2.3 Best Management Practices (BMPs)

This section describes the BMPs that will be used to maintain buffer zone functions where development is proposed to encroach within a buffer zone. As shown on Drawing 2 and in Table 1, buffer zone encroachments are proposed at eight areas (A through H).

In addition to the BMPs described in detail in the following sections, the drainage plan for the project incorporates the following principles:

- Runoff from impervious surfaces will be detained or treated to the extent feasible (e.g., by grass swales, infiltration devices or other stormwater BMPs) prior to discharge off the site.
- Building lots, parking lots and other features located within a buffer or near a wetland or waterbody will be graded to drain away from the wetland or waterbody.
- Runoff velocities will be controlled to prevent high flows and associated erosion, and to protect outlets and drainageways.
- The major flow paths and movement of water through and on the site will be maintained. Major flow paths will be maintained through the use of culverts and swales so that water supply to wetland and waterbodies is not reduced.

BMPs will be required in some areas of the development due to encroachment into the variable-width outer buffer. Encroachments into the 25-foot restrictive inner buffer are limited to areas of direct impact to wetlands; and two areas of encroachments by roads. In both these areas, the new roads would be constructed on existing roads to minimize additional impacts. These encroachments are primarily due to road alignment constraints, as described below. The outer buffer shown on Drawing 2 reflects the maximum potential extent of the outer buffer (i.e., 100 feet beyond the 25-foot setback) given the triggers. The Town's ordinance provides for reduction of the extent of this buffer through implementation of BMPs that compensate for the

functions of the 100-foot outer buffer. Triggers for the variable-width outer buffer encountered on the site include:

1. Imperviousness.

2. 100-year floodplain.

3. Steep slopes.

4. Erodible soils.

5. Presence of a fen.

Eight areas of encroachment (Drawing 2) were identified based on these triggers, and mitigation measures to compensate for encroachment have been identified. Mitigation measures are described for each of these areas and are intended to compensate for functions impacted as a result of encroachment. Mitigation measures are designed to limit sediment transport from steep slopes and areas with erodible soils to wetland and wetland buffers; to protect wetlands and wetland buffers from increased flows due to increased imperviousness; to maintain surface and subsurface hydrology, and to provide water quality treatment for pollutants including sediments, nutrients, debris, and other urban runoff pollutants. It is important to note that the major flow paths and movement of water through the site will be maintained given this design.

Some BMPs, particularly those related to construction, are common to all areas of disturbance in buffer areas. These BMPs include erosion and sediment control measures with proven performance in Summit County such as:

1. Minimization of the area of disturbance and time that disturbed areas are left exposed.

2. Timing of construction to avoid periods of heavy rainfall and runoff, when practical.

3. Storage of soil stockpiles away from wetland and wetland setback areas.

4. Temporary stabilization of inactive exposed areas.

5. Permanent revegetation and stabilization as soon as practical following completion of grading and construction.

6. Use of silt fence, straw bale barriers, etc. on downgradient boundaries of disturbed areas to protect adjacent setback and wetland areas.

7. Runoff velocities will be kept to non-erosive levels, and protection measures will be implemented to prevent erosion at outlets and in drainageways.

The following sections describe specific BMPs for the eight encroachment areas shown on Drawing 2.

5.2.3.1 Area A

Erodible soils and steep slopes trigger the 100-foot outer buffer, and encroachments into the 100-foot buffer include townhomes and single-family homes. All development activities in the inner and outer buffers will occur downgradient of the wetland. The intent of the 100-foot outer buffer where erodible soils and/or steep slopes are encountered is to protect wetland and wetland setback areas from degradation due to sediment transport. The portion of the buffer in which the encroachment is planned, however, does not serve this purpose since it is downgradient of the wetland. No impacts to wetlands will occur at Area A, and BMPs used will include typical erosion and sediment control practices described above. Lots will be graded so that runoff flows to the east away from the wetland. It should be noted that buildings adjacent to the wetland setback will not have basements, so interference with groundwater, which sustains the wetland, is not anticipated. The duration of the disturbance in the setback areas will be kept to a practical minimum. Areas disturbed as a result of grading in the setback area will be revegetated with a native seed mix.

5.2.3.2 Area B

There will be 0.06 acres of encroachment into the 25-foot wetland setback associated with a wetland disturbance of 0.011 acres covered by the Section 404 permit. The setback disturbance is necessary for providing road access to the development. Alternative analysis as a part of the 404 permit has determined that "no other access route avoiding wetland and buffer zone areas is practical" and that the road is necessary for "better overall design of the site development." Mitigation will be provided for the wetland impact, and a 25-foot buffer will be maintained around mitigated wetland areas. Both the wetland and wetland setback disturbance are located on the downgradient side of the wetland, and runoff from the road passing through this area will be directed into the site drainage system and will receive treatment via detention prior to discharge. The culvert installed beneath the road will maintain historic flows to the east.

Portions of three homes and the road will encroach on the 100-foot outer buffer at Area B. Triggers for the 100-foot outer buffer for this area include the presence of a fen (upgradient) and erodible soils. As with Area A, these encroachments are downgradient of the wetland and wetland setback areas and will drain to the site's stormwater system for treatment. Groundwater hydrology is not anticipated to be affected since disturbances occur on the downgradient side of the wetland and 25-foot wetland setback and planned structures will not have basements.

5.2.3.3 Area C

The variable-width outer buffer is triggered by the presence of erodible soils. Encroachments into the 100-foot outer buffer include four single-family homes and a portion of a fifth home that are located on erodible soils. In addition, a road providing access to these homes falls within the 100-foot outer buffer. Although lot plans are not yet advanced enough to lay out specific BMPs on a lot-by-lot basis, the following BMPs will be used on these lots to mitigate for the increased imperviousness and to compensate for disturbance of erodible soils within the outer buffer area:

1. The street accessing these homes will not be paved. Rather, a gravel road will be used to encourage infiltration.

2. Detention measures will be implemented to detain runoff arising from increased imperviousness and to maintain historic flow rates. Drainage from roof areas will be directed so that there are not concentrated discharges (i.e., downspouts from roof areas will drain to multiple, separate locations); thereby separating directly connected impervious areas. In addition, runoff from roofs will be spread out at outfalls from downspouts to avoid concentrated flows.

3. Landscaping on lots will be designed to preserve pervious area.

4. There will be no direct discharges of stormwater to 25-foot buffers or wetland areas.

5. Water entering 25-foot buffers and/or wetland areas on the surface will be spread out to avoid concentrated discharge.

6. Erosion and sediment control measures (e.g., silt fence, hay bales, mulch, etc.) will be implemented and regularly maintained during construction.

BMP plans for individual lots will be developed as plans for construction of homes on lots progress to a more advanced phase, if necessary.

5.2.3.4 Area D

Encroachments into the 25-foot inner buffer at Area D will occur from detention pond construction, and a road crossing covered by the 404 permit. An arch culvert, free span of Willow Creek is proposed for the crossing to avoid impacting channel bottom. The detention pond will serve a water quality protection function. As a way to minimize impacts, the developers have decided not to develop one potential lot due to difficulty in avoiding wetland and wetland setback areas.

The 100-foot buffer is triggered for Area D by imperviousness. The area within the 100-foot buffer is approximately 2.1 acres, including portions of 8 lots, the road and detention pond. To mitigate for this increase in imperviousness, lot grading for home construction will direct runoff into the site's stormwater system where detention will be provided before discharge. There will be no direct discharges of runoff to wetland or wetland setback areas. Groundwater impacts due to the increased imperviousness are not expected, since the wetland adjacent to Area D is associated with Willow Creek, which has a very large drainage area relative to the limited encroachment into the variable-width outer buffer. In addition, the homes in Area D are primarily downgradient of wetland and wetland setback areas and will not have basements. Standard construction BMPs described above will be implemented and regularly maintained during construction.

5.2.3.5 Area E

The encroachment into the 25-foot buffer at Area E is associated with road construction. The road with which the impact is associated provides primary access to the site. The road alignment was designed to minimize the extent of the impacts to the setback. Special precautions will be taken due to the wetland setback disturbance, including:

1. Exposed soils will be stabilized as soon as practical.
2. The wetland setback disturbance will be timed to minimize exposure to heavy rainfall and runoff periods.
3. The area of disturbance in the wetland setback area will be no larger than necessary to implement the grading for the road and associated BMPs.
4. Erosion and sediment control BMPs, described above, will be implemented and regularly maintained during construction.

There will be a disturbance of approximately 2.06 acres in the 100-foot setback. In this case, the 100-foot setback is triggered by imperviousness. Much of this area will remain pervious as open or landscaped area. Other land uses within the 100-foot buffer include portions of buildings, parking areas and a detention pond. All runoff from newly created impervious areas in this location will drain to the detention pond for treatment. There will be no direct discharges of runoff to wetland or wetland setback areas. Typical construction BMPs including silt fence, inlet protection measures and detention will be used to control runoff during construction.

5.2.3.9 Area F

In Area F there is a 1.34-acre encroachment the 25-foot wetland setback area due to construction of a grocery store, a road crossing and the road on the south portion of the property. These impacts are all associated with the Section 404 permit application. Setback encroachments are associated with proposed wetland disturbances 3, 4, and 5 on Drawing 2. Alternatives analysis and justification for the wetland encroachment (and associated wetland setback encroachments) were explored as a part of the Section 404 permit process. As a result of this analysis, this wetland and wetland setback encroachments are believed to be unavoidable. Mitigation will be provided for the wetland impacts. It is important to note that a large portion of the 25-foot setback disturbance will occur by improvements to the existing Ruby Ranch Road. Use of this road will minimize wetland impacts.

In addition to the wetland and 25-foot setback encroachments, the 100-foot outer buffer is triggered in Area F due to imperviousness. Encroachment into this 100-foot outer buffer includes portions of the store and parking areas and grading associated with roads. This newly created imperviousness will not contribute direct runoff to adjacent wetlands or wetland setback areas. Rather, runoff from impervious areas will be collected by the site's drainage system, and conveyed to the stormwater quality pond or the east side of the project prior to discharge. A small portion of runoff from the southeastern section of the road will drain to the wetland along the eastern property boundary since elevations do not allow it to drain to the pond. This area will

be kept to a practical minimum. In addition, groundwater impacts are not anticipated since this disturbance is located on the downgradient side of wetlands and does not involve construction of a subsurface drainage system.

5.2.3.10 Area G

In Area G, there will be no disturbance of wetlands or 25-foot setback areas. There will be an approximately 1.26-acre disturbance of the 100-foot outer buffer associated with ball field construction. The 100-foot buffer is triggered for Area G by the presence of erodible soils. The disturbance associated with the ball fields will, in many ways, be temporary since the area will be revegetated following grading. The ball field will provide similar functions to the outer buffer since it will be a pervious area conducive to infiltration. Typical construction BMPs such as silt fence, straw bale barrier and sediment traps will be used to limit erosion during construction, and revegetation will be implemented as soon as practical following the disturbance.

5.2.3.11 Area H

Encroachment at this area is proposed from construction of the wetland mitigation (0.80 acre). Measures will be used to prevent impacts to the existing wetland at the location during construction of the mitigation. These will include marking of the wetland boundary and silt fence.

5.2.4 Mitigation Plan

Mitigation will be provided on site to fully compensate for the 0.469 acre of unavoidable impacts to wetlands. The proposed mitigation should replace the functions of the impacted wetlands. The proposed mitigation plan, which is included with the 404 permit application and shown on Drawing 4A entails the following:

- Creation of 0.80 acre of wetlands (a ratio of nearly 1.7:1 to impacted wetlands).

- Hydrologic enhancement of 2.8 acres of existing wetlands.
- Restoration of 224 linear-feet of buffer zone for the wetlands along Willow Creek.
- Stabilization of approximately 500 linear-feet of small channel that is downcutting and flows through wetland.
- Restoration of a lateral ditch system that drains the fen wetland on the west side of the property.

5.2.4.1 Wetland Creation

A total of 0.80 acre of wetlands will be created adjacent to an existing wetland complex on the western portion of the SMV property. The existing wetland complex on the western portion of the site is a willow/sedge wetland that is sustained by groundwater. A portion of the complex is a fen with a histic epipedon. The proposed created wetlands will be similar in character to the existing wetlands and wetlands to be impacted.

Drawing 4B is a plan of the mitigation site (a section is provided on Drawing 4C). The mitigation wetlands will be created by excavating to groundwater. The area will then be planted with a mix of wetland species similar to those in the adjacent wetland, which include: mountain willow (*Salix monticola*), beaked sedge (*Carex utriculata*), water sedge (*Carex aquatilis*), and tufted hairgrass (*Deschampsia cespitosa)*. Willows will be salvaged and transplanted from impacted areas, to the extent feasible. Potted nursery stock (minimum of 2 gallon) will be used for the remaining willows. Narrow leaf cottonwoods, alders and spruce in 5-gallon containers will also be planted. All herbaceous plants will be containerized stock planted on three-foot centers.

Water will be supplied from shallow groundwater. Final design elevations will be determined from monitoring of existing groundwater levels. Nine piezometers have been installed in the

area for this purpose. Surface water is also available from the Valier Ditch, which runs to the west of the mitigation site, if needed.

The created wetlands will provide functions for groundwater discharge, wildlife habitat, and water quality enhancement. The wetlands will be protected in perpetuity with a conservation easement or similar instrument.

5.2.4.2 Wetland Channel Stabilization

It is proposed to stabilize the small channel that flows through the fen near the wetland creation area. The channel bottom is not well armored and is downcutting. If the channel downcuts too far, it could drain the adjacent wetland. It is proposed to place log checks across the channel at distances of 20-40 feet (depending on the slope of the channel) to flatten the grade and pond water. The log drops will be installed by hand; there will be no impacts to adjacent wetlands from their construction. A plan for this work is shown on Drawing 4C.

5.2.4.3 Lateral Drainage Ditch Restoration

It is proposed to restore the lateral ditch that was cut years ago along the property line at the proposed wetland creation area. This ditch currently intercepts some of the water in the wetland channel (that is proposed for stabilization) and diverts it to Willow Creek.

It is proposed to fill the lateral ditch and remove the culvert to Willow Creek. Native loamy soil free of weeds will be placed in the ditch and compacted by hand (excessive compaction is not needed). Due to the narrow width of the ditch and presence of wetland vegetation in the area, active planting of the filled ditch is not proposed since it will colonize with wetland plants naturally. An approximately 10-foot reach of the channel, which was diverted by the ditch, will also be reconnected with the natural channel upstream. A plan for ditch restoration is shown on Drawing 4D.

5.2.4.4 Hydrologic Enhancement

Water owned by the applicant in the Valier Ditch will be dedicated to enhance the existing approximately 2.8-acre wetland complex located along the southern boundary of the property. Currently, the Valier Ditch "tails" into this wetland. A portion of this water will be conveyed under Ruby Ranch Road to sustain the wetland north of the road. Water will also be dedicated to sustain 4000 ft^2 of wet pond at the stormwater pond on the east side of the site. The applicant will work with the Town to develop a water rights dedication agreement.

5.2.4.5 Maintenance of Water Supply For Remaining Wetlands

It is proposed to construct small culverts beneath Ruby Ranch Road and Adams Avenue to convey a portion of the Valier Ditch water to sustain the unimpacted wetlands north of Ruby Ranch Road. The wetlands north of the road are sustained currently at least in part, by this ditch water. Maintenance of this supply will ensure the viability of these wetlands once the project is constructed.

5.2.4.6 Restoration of Willow Creek Riparian Wetland Buffer Zone

An approximately 220-linear foot buffer along Willow Creek at an existing Public Service Company site will be restored. The area is presently relatively unvegetated and has a steep slope next to the adjacent wetland. It is proposed to grade the slope to 4:1 or flatter, and revegetate the slope and adjacent area with grasses, spruce and willow (at the toe of the new slope).

5.2.5 Alternatives Analysis

The proposed disturbance plan (Drawing 2) is the result of an iterative effort to reconfigure the plan to avoid and minimize any impacts to wetlands and waterbodies. Alternatives were evaluated for each area where impacts to wetlands would occur (e.g., moving of the feature). Measures were evaluated to minimize impacts to wetlands where it was not possible to totally avoid an impact (e.g., reduce the width of a road across a wetland). Possible changes to the plan

to avoid and minimize impacts were evaluated within the context of the development and factors including:

- The need to provide the range and scale of uses with the project.
- Having to meet the conditions imposed on the project by the Town during the sketch plan approval.
- Need to provide required offsite traffic links to the north and south.
- Economic considerations.

The following text discusses alternatives and the reasons for impacts to each of the proposed areas (see Drawing 2 for locations).

5.2.5.1 Wetland Disturbances

- **Area 1 (0.011-Acre Impact From Road):** It is proposed to impact the very "tip" of the wetland in this area with a road crossing. It is not possible to completely avoid impacting the wetland because it extends relatively far to the east into the property. The amount of impact has been minimized, and only the very end of the wetland would be impacted. A culvert is proposed under the road to maintain the existing hydrologic regime in the area.
- **Area 2 (0.060-Acre Impact From Road Crossing):** The Town has required that the road in this area be extended to serve the Willow Creek subdivision to the north. This is to eliminate the need to have to drive on State Highway 9 to access the site. It is part of the Town's traffic plan to develop a north-south road system in the Town separate from Highway 9. Several alternative alignments were investigated for the road. The one chosen, using the existing "Badger Lane" alignment, crosses the riparian wetland along the creek at a relatively narrow point and is the least damaging alternative. Another alternative evaluated, placing the

road to the east of the houses along Badger Lane on Trent Park land, would result in additional wetland impact.

The road will be 35-feet wide. The crossing at Willow Creek will be an arch culvert crossing with capacity to convey the 100-year flood. The arch culvert will span the creek and not disturb the creek bed. The proposed crossing is the least damaging practicable alternative for the road and will maintain historic flow rates and patterns in Willow Creek.

- **Area 3 (0.156-Acre Impact From Commercial Pad):** The area proposed for impact at this location is the tip of the wetland complex located along the existing Ruby Ranch Road. As discussed previously, past irrigation practices may have affected wetlands in this area. It is not possible to completely avoid wetlands at this location due to the need to provide the required square footage of commercial space for the project.

  The overall site was originally designated as 11.1 acres (+/-) for neighborhood commercial uses. In order to make the project feasible, a grocery store anchor is necessary. All current grocery stores are in the range of 55,000 to 70,000 s.f., thus occupying a sizeable portion of the property. The grocery store must be accompanied by additional in-line retail facilities and freestanding pad sites for overall project feasibility. The boundaries and configuration of the overall site require that the grocery store be placed toward the northwestern portion of the site, facing east with the main field of parking in front of the store for convenience purposes. Freestanding building sites are proposed at the perimeter of the site, near access locations, for best visibility and architectural presentation to the adjacent streets.

  The resulting supporting retail shops are thus placed immediately adjacent to the grocery store to facilitate parking, circulation and exposure. These shops are located on the south side of the grocery store and thus share common parking. Trucks and delivery vehicles at the rear of the buildings must serve the grocery store and retail buildings. If the small wetland is retained in this area, there is no feasible way in which these service functions can occur. Due

to the nature of the deliveries to the shopping center, these vehicles must be separated from pedestrian traffic.

The shops are designed to allow for maximum flexibility for multi-tenant retail tenants. Market studies indicated that these shops will likely be in the range of 900 s.f. to 1,500 s.f. on the average, with the possibility of a few shops in the 2,000 to 3,000 s.f. range. These proposed shops are in the building which overlays an existing wetland. It is impractical to move or separate the building at the wetlands area as it greatly reduces the flexibility in lease sizes within the building. If buildings are separated at this area, the owner is forced to limit the size of the tenant spaces, thus reducing the marketing feasibility of the project.

A retaining wall is proposed along the back of the stores to reduce grading and wetland impacts. The proposed culvert under Adams Avenue will maintain hydrologic conditions in this area. Below grade structures are not proposed in the commercial buildings or Safeway.

- **Area 4 (0.066-Acre Impact From Road):** Impacts would occur at several locations from construction of Adams Avenue. Due to the presence of wetlands in an east-west direction in this portion of the site north of Ruby Ranch Road, it is not possible to construct a road to the north, which is needed for the internal traffic plan, without impacting some wetlands. The proposed road was located to minimize the amount of impacts to wetlands by crossing at an area with fewer wetlands. The wetlands that would be impacted may have been caused, at least in part, by past irrigation practices. The hydrologic study completed for the wetland delineation found that wetlands on this portion of the site were affected by ditch irrigation.

  Culverts will be installed beneath Ruby Ranch and Adams Avenue to convey a portion of the Valier Ditch water that is being dedicated to the project (see proposed mitigation plan) to the remaining wetlands.

- **Area 5 (0.176-Acre Impact From Road):** Impacts would occur along Ruby Ranch Road from required road improvements. This road would serve as the main east-to-west road in

the southern part of the development. Impacts have been minimized by use of the existing dirt road, and by retaining walls at the intersection of Ruby Ranch Road and Adams Avenue. Without the walls, there would be an additional impact since all the wetlands northeast of the intersection of these roads would be graded. Other measures used to minimize impacts include providing the minimum road width required, and elimination of curb and gutter along Ruby Ranch Road west of Adams Avenue. As discussed previously, the wetland south of the Ruby Ranch Road will be enhanced by water from the Valier Ditch that will be committed to the wetland.

- **Temporary Impacts:** In addition to the permanent proposed disturbances to wetlands, wetlands will be impacted temporarily from retaining wall construction. The total estimated area of temporary impacts is 0.15 acre and will occur because it will be necessary to drive equipment across wetlands to build the walls. Measures to minimize impacts that will be used include: (1) use of designated routes, (2) minimal trips possible across wetlands, and (3) constructing the walls from the upland side, to the extent feasible. All wetlands disturbed by construction of retaining walls will be restored immediately following construction.

5.2.5 Approval by U.S. Army Corps of Engineers

A Section 404 permit application has been prepared and will be submitted to the U.S. Army Corps of Engineers (USACE) for the project. This application included the wetland delineation, alternatives analysis, and proposed mitigation plan described in this report.

The wetland delineation for SMV was approved by the USACE in a letter dated May 18, 2001. USACE personnel have been involved in wetlands and Section 404 permitting for the project for approximately the past 2 years. Suggestions and input from the USACE were incorporated into the Section 404 application.

It is anticipated that a decision will be made by the USACE on the 404 permit application by the end of August 2001. The applicant will abide by the terms and conditions of the Section 404 permit for the project, including monitoring requirements for the wetland mitigation.

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