

Department of Health and Environmental Sciences
STATE OF MONTANA HELENA, MONTANA 59601

MAY 21 1980

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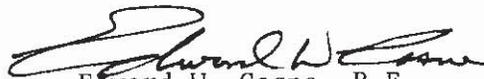
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This environmental impact statement has been prepared for the proposed Grantland Subdivision, Missoula County, and is being submitted for your consideration. Comments and questions will be accepted for 30 days after the date of this publication. All comments should be sent to: Subdivision Bureau, Environmental Sciences Division, Montana Department of Health and Environmental Sciences, Capitol Station, Helena, MT 59601

Sincerely,



Edward W. Casne, P.E.

Chief

Subdivision Bureau

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MONTANA DEPARTMENT OF HEALTH
AND
ENVIRONMENTAL SCIENCES
DRAFT
ENVIRONMENTAL IMPACT STATEMENT

GRANTLAND

MISSOULA, COUNTY

Pursuant to the Montana Environmental Policy Act, Section 75-1-101, et, seq., MCA, the Sanitation in Subdivisions Act, Section 76-4-101, et. seq., MCA, and the Water Quality Act, Section 75-5-101, et. seq., MCA, the following environmental impact statement (EIS) was prepared by the Montana Department of Health and Environmental Sciences (DHES), Environmental Sciences Division, concerning the request for administrative approval of Grantland, a proposed subdivision near Missoula, Montana.

INTRODUCTION

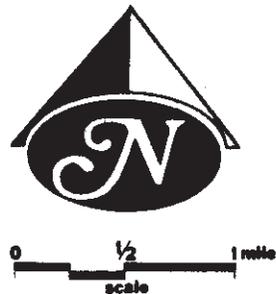
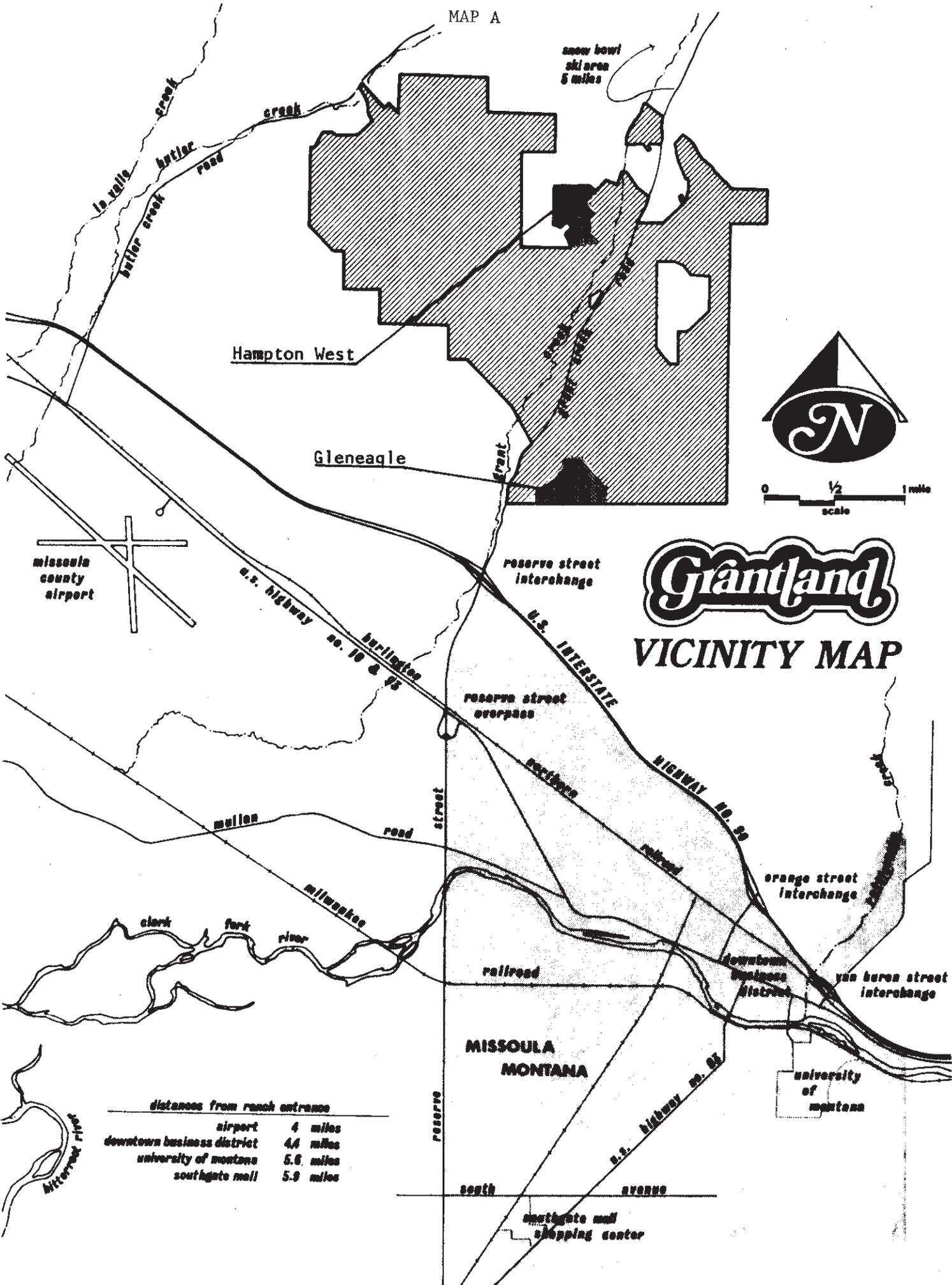
The Grantland development is a proposed 2,200-dwelling unit, 3,600-acre residential and commercial subdivision situated in the Grant Creek and Butler Creek drainages north of the city of Missoula, on property formerly known as the Grant Creek Ranch (see map A).¹

The developers, Grant Creek Associates--a limited Montana partnership--intend to develop the property over a 10- to 15-year period. Grantland is the largest residential subdivision ever proposed in Missoula County. Planned Unit Development (PUD) zoning for the Grant Creek Ranch was approved by the Missoula County commissioners in September, 1979. A preliminary plat for the first phase of the Grantland project, Gleneagle 164-acres, 145-lots, was approved by the county commissioners in November, 1979. The preliminary plat for the second phase, Hampton West, 54 acres, 79 lots, was approved by the commission in January 1980.

Residential and commercial development would occur in the Grant Creek Valley and hills rising from the valley. The portions of the property that extend west into the Butler Creek drainage have been designated as open space, thus no development would take place.

Grant Creek Associates does not intend to build any dwelling units; it intends only to offer the building sites for sale. Creation of 220 new building sites per year is planned; however, the actual rate of development would depend on market conditions, previous sales and other factors.

Residential development within the Grantland project would cover about 1,000 acres of the 3,600-acre property. Within each area, residential "clusters" would be developed, with the clusters separated by "common areas," or open space that would not be developed. Residential areas would vary from low-density areas



Grantland

VICINITY MAP

distances from ranch entrance

airport	4 miles
downtown business district	4.4 miles
university of montana	5.6 miles
southgate mall	5.9 miles

(two dwelling units or fewer per acre) to high-density areas (up to 15 dwelling units per acre, in the form of townhouses or condominiums). Generally, high-density and medium-density residential areas would be situated on the valley floor; low-density residential areas would be situated on benches or relatively flat areas in the surrounding hills (see map B).

Based on an average family size of 3.5 persons, Grantland's 2,200 residential units would house 7,700 people.

Residential development plans for the Grantland project are as follows:

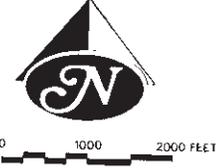
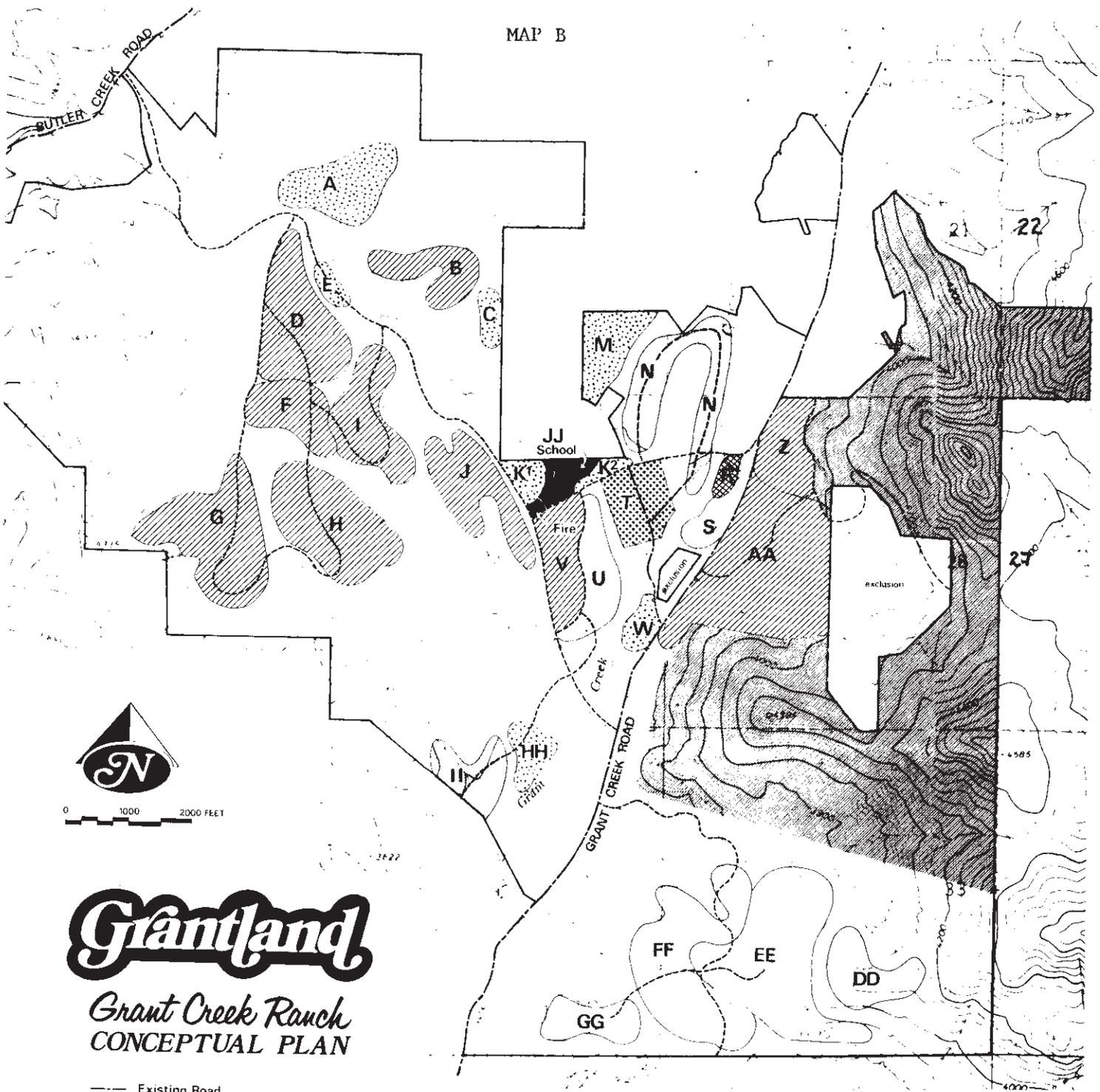
Density	Number of Units	Acres
Low density (includes all areas of two or fewer dwellings per acre; lots average 1/3 acre, not including common areas. Average residence to cover 2,000 square feet with garage; all units detached, single-family homes).	1,355+	861 (includes approximately 25 percent common area.)
Medium density (includes all areas of between two and three units per acre, lots range from 6,000 to 10,000 square feet. Average residence to cover 1,800 square feet with garage; all units detached, single family homes).	260+	99 (includes approximately 15 percent common area).
High density (includes all areas of between four and 15 units per acre, arranged in zero lot line townhouse or condominium style. Average residence to cover 1,600 square feet with garage. Each residence individually owned; no rental units are planned).	585+	99 (includes approximately 25 percent common area).

Common area is land that would be deeded to the Grantland landowners association.

Also featured in the developers' conceptual plan is a commercial area covering 27 acres in the valley. The land is now the headquarters for the Grant Creek Ranch. No schedule for the development has been set; probably no commercial development would occur until market conditions were favorable.

About 10 acres of the commercial area would be used for the "Village Square" commercial complex, which would feature various retail stores. Another eight acres within the 27-acre commercial area would be designated as a "recreational-commercial area," which could contain a clubhouse, bar/restaurant, swimming pool, and tennis courts. Another eight acres would be used for an office complex. Finally, the developers intend to preserve the Jeannette Rankin home as an historic site/community center.

MAP B



Grantland

Grant Creek Ranch
CONCEPTUAL PLAN

— Existing Road
- - - Proposed Road

- | | | | |
|---|---------------------------------------|--|--|
|  | Low Density Single Family |  | Commercial / Recreational / Office Complex |
|  | Medium Density Single Family |  | Recreational |
|  | Grantland Nature and Wildlife Reserve |  | High Density Single Family |
| | |  | Public (School or Fire) |



The only other structural developments envisioned by the developers would be a school, with construction costs for the school building borne by the school district and fire station, with construction costs paid by the fire district. The proposed school and fire station sites comprise 11 acres. A recreational area of about five acres, which would include playing fields and picnic areas, also is planned.

Thus, the development of residential, commercial, recreational and public buildings within the project would cover approximately 1,100 acres, including common areas. The remaining 2,500 acres within the 3,600-acre project--except for an unspecified area for roads and walking trails--would be designated as "agricultural-recreational reserve," which would be owned by the developers and which would generally be left in its current state.

Almost all low-density lots could be served by individual septic tanks and drainfields located in areas of 15 percent slope or less. However, where soil conditions, slopes or other factors warrant it, common drainfields, to be used by two or more lots, could be used. Higher-density residential areas and commercial areas would be served by community systems. The recent approval by the Missoula City Commission will enable the majority of the subdivision to connect with the city's sewage system.

EXISTING CONDITIONS

Existing and Adjacent Land Uses

The Grant Creek Ranch property, as the name implies, is currently used for agricultural and livestock production. The Grantland property is bounded on the southwest by the proposed Prospect Subdivision (a 350-unit planned unit development which was annexed by the city in spring, 1980); on the north by Grantland II through Grantland XI (small subdivisions of former Grant Creek Ranch property) and on the northwest by Butler Creek Road and a few residences. The remaining adjoining property is either timber or range land. Two areas of residential property that are surrounded by the Grantland property--one situated in the "Y" between old and new Grant Creek roads, the other on the hills east of Grant Creek Road--contain one or two dwellings each.²

Topography

The Grantland property occupies the Grant Creek Valley from a point .5 miles north of Interstate-90 to a point three miles north of the interstate, as well as the hills to the east and west of the valley into the Butler Creek drainage. Elevations above sea level range from about 3,500 feet in the valley to a high elevation of about 4,600 feet on the far eastern portion of the property.³ Residential development within the project would occur at elevations of less than 4,100 feet. The terrain varies from almost flat in the valley floor to steep slopes of 40 percent or greater.

The Grantland property is traversed by Grant Creek and the smaller Dark Horse Creek. Grant Creek drains an area of 28.3 square miles; its mean annual discharge is 30,522 acre-feet.⁴

Climate

The average January temperature in the Missoula area is 22.7 degrees F; average July temperature is 71.8 degrees F. January temperatures range from -16 degrees F to 44 degrees F. July temperatures range from 46 degrees F to 100 degrees F. There are an average of 137 frost-free days per year.

Mean annual precipitation in the Grant Creek drainage is 30.92 inches.⁵

TERRESTRIAL AND AQUATIC LIFE

The area is host to a variety of wildlife species typical of Western Montana. These include elk, whitetail and mule deer, coyotes, badgers, weasels, raccoons, cottontail and snowshoe rabbits, pine and ground squirrels and rodents, such as mice, gophers and so on. The developers report that an occasional mountain lion or bobcat can be observed in the valley, and that black bears (but no grizzlies) are known to inhabit the Grant Creek drainage.⁶

Since the impact of the Grantland project would fall most heavily on the elk that inhabit the area for part of the year, that species will be discussed in detail.

The Montana Department of Fish, Wildlife & Parks, (DFWP) reports that elk that spend the summer months in the upper Rattlesnake drainage must move to the lower elevations in the Rattlesnake, Grant and Butler creek drainages during the winter and early spring months.⁷ Therefore, development of the Grant Creek Ranch area would affect elk travel routes across the project as well as winter range areas within the project boundaries.

Bart O'Gara, unit leader of the Montana Cooperative Wildlife Research Unit at the University of Montana in Missoula, estimates that about 40 to 50 elk use portions of the Grantland property for winter range. Jim Ford, the DFWP's Missoula regional supervisor, estimates that up to 70 elk use the area. Elk populations vary from year to year.⁸

The DFWP Elk-Logging Study states that elk travel routes generally cross ridges through timber or brush-covered saddles where visibility is low, and security high. Alteration of these routes through road construction, elimination of cover or proximity of human activity could have a severe impact on elk populations.

The elk-logging study has identified some, but not all, of the elk-migration routes, winter ranges and calving areas in or near the Grantland property. In general, elk from the high-elevation Rattlesnake area enter the project area through covered saddles in sections 22 and 27 (see map B) east of the Grantland boundaries. Critical winter range areas are located on the steep slopes in sections 21, 28 and 33, on the hills east of Grant Creek Road. Moving west from those areas, the elk cross Grant Creek Road near the intersections of old and new Grant Creek roads and at the Grantland Rankin meadow near the northern boundary of the Grantland project. West of Grant Creek Road elk spend the winter and spring months in the areas indicated on the attached map. From those protected areas the elk range outward to feed on the surrounding slopes.⁹

The impact of the Grantland project on these elk travel routes and winter range areas can be assessed in theoretical degrees of development: 1) If no development occurred, there would be little to no impact, 2) if development occurred and Grantland residents ignored protective covenants and other restrictions designed to protect elk and other wildlife from harassment the impact would be particularly severe or 3) if development occurred under the former zoning for the area--a mixture of one dwelling per acre, one per 40 acres--the Grantland project could be, as O'Gara states, an excellent example of what can be done to minimize the adverse impacts of development on wildlife populations.¹⁰

The developers have attempted to mitigate the project's impacts on elk by:

- 1) Locating residential development areas away from areas designated as elk range and travel routes, with the possible exception of residential areas Z and AA in the northeastern portion of the project.
- 2) Moving proposed development areas in the Butler Creek drainage portion of the project eastward into the Grant Creek drainage, thereby leaving the open slopes in the Butler Creek drainage undeveloped and available for elk forage.
- 3) Restricting, through covenants, residents' activities that would disturb or harass the elk. Covenants limit Grantland residents to one dog and cat, which must be confined on the owners' properties; prohibit hunting or discharge of firearms; prohibit use of off-road vehicles in open areas and generally prohibit any activity that would have an adverse impact on wildlife. The Grantland landowners association would be empowered to levy fines for violations of the covenants. In areas of the project designated as critical elk habitat, no dogs would be allowed, site plans specifying travel corridors and vegetative screening would be submitted for review by wildlife management authorities, and a game warden would be employed by the landowners association.¹¹

Another major mitigating factor was the donation of 702 acres of the Grantland property to the National Wildlife Federation as an elk refuge area. The donated land is on the east side of Grant Creek Road, near the Gary Marbut exclusion (see map B), in what the Elk-Logging Study identifies as critical elk habitat. O'Gara, Ford and Cass Chinske, director of the Friends of the Rattlesnake group, agreed the donation would virtually negate the Grantland project's adverse impacts on elk in the eastern portion of the project.¹²

The developers received various tax advantages for the donation.

Both O'Gara and Chinske have praised the developers' proposals to minimize the development's impacts on elk, although they both acknowledge that they would prefer to see the Grantland area remain undeveloped. Both believe that strong enforcement of restrictive covenants--especially those concerning dogs--would be essential, as would strict attention to elk needs when residential areas near critical habitat areas are platted.¹³

Ford, DFWP, takes a more pessimistic view, particularly in regard to the development's impacts on elk in the western portions of the Grantland project.

Ford, who lives on Butler Creek Road just west of the project, believes that traffic on the access road linking the project with Butler Creek Road, along with general increased human activity in or near the Butler Creek drainage, ultimately would drive the elk out of the area. Dogs would be a major problem, despite the restrictive covenants, and, given the dramatic traffic increase on Grant Creek Road (from a current 900 vehicles per day to an estimated 12,500 vehicles per day, an average of 8.6 vehicles per minute) Ford said he would be "very, very, very surprised" if elk continue to cross Grant Creek Road, which bisects some of the elk access routes to the western portions of the Grantland project.¹⁴

If the elk are forced out of the Grant Creek-Butler Creek areas, Ford believes, they would perish from a combination of natural and human factors, i.e., the inability of surrounding areas to support increased elk populations, and intense hunting pressures on the Flathead Reservation to the northwest.

The effectiveness of restrictive covenants in protecting wildlife also is open to question. Missoula Deputy County Attorney Mike Sehestedt, who has had considerable experience with subdivisions in Missoula County, believes that covenants are effective only to the extent that they are actively supported and enforced by the subdivision's residents. Covenants directly affecting property values, such as prohibitions on trailer homes, are almost always enforced, Sehestedt said, while covenants restricting pets usually are less likely to be enforced.¹⁵

However, the developers maintain that, because of the possible hiring of a warden by the landowners association, the continued ownership of open areas by the developers and the general "wildlife conscious" nature of the development, Grantland's restrictive covenants are more likely to be enforced than covenants in other subdivisions.¹⁶

In summation, while the developers seem to have made a considerable effort to minimize the Grantland development's potential impacts on elk, the future of the elk populations in the Grantland area would depend on factors outside the developers' control, such as 1) the ability of the elk to adapt to increased human activity and vehicle traffic in the area, and 2) the willingness of Grantland residents to restrict their activities--and to monitor their neighbors' activities--to protect the elk. Some adverse impacts seem inevitable.

Mule deer which also use the Grantland property, would benefit from any steps taken to protect the elk, and would suffer from any conditions that disturb the elk. Whitetail deer, which are highly adaptable animals, probably would continue to use the area in any case.

Other wildlife within the Grantland area, particularly that of the rodent family is not expected to suffer as a result of the development.

Relatively rare bird species seen in the Grant Creek area include the bald eagle (although there apparently are no eagle-nesting sites in the area), the pileated wood-pecker, snowy owl, snow goose, Canada goose, American bittern, horned grebe, pigeon hawk and turkey vulture. More common bird species include robins, English sparrows, magpies, meadowlarks and others. The banks of Grant

Creek are considered important habitat for these species, but since no development would occur along the immediate creek banks, no adverse impact is anticipated.¹⁷ Also, Reed Marbut, co-partner of the Grant Creek Ranch Corporation (the former owners of the Grantland property) has donated a 27-acre parcel abutting the southern boundary of the Grantland property on the west side of Grant Creek Road to the National Wildlife Federation as a bird sanctuary.

Since Grant Creek suffers from de-watering problems, few fish species use the creek, although brook trout, cutthroat trout and whitefish occasionally have been observed.

WATER QUALITY, QUANTITY AND DISTRIBUTION

Surface Waters

Grant Creek drains an area of 28.3 square miles; its mean annual discharge is 30,522 acre-feet. No information on Dark Horse Creek's flow is available.

The portion of Grant Creek that runs through the Grantland property usually has some flow throughout the year, although stream flows fluctuate widely. South of the Grantland property, however, in the general vicinity of the Wheeler Village trailer court, the Grant Creek channel dries up during low-flow periods. Dark Horse Creek within the project boundaries also is dry during some months of the year.

The Grant Creek 100-year floodplain averages less than 100 feet in width throughout the Grantland property.¹⁸

Numerous irrigation ditches emanating from Grant Creek also cross the Grantland property, primarily along the lower meadows and peripheries. In 1959, 2,037 acres of the Grant Creek Valley (including portions of the Grant Creek Ranch) were irrigated; in 1978, only 930 acres were irrigated. There were 20 miles of irrigation ditches in 1978, but since then an unspecified number of ditches have been filled in.¹⁹

Groundwaters

The Grant Creek Valley is composed of Pleistocene-Holocene channel, floodplain and alluvial fan deposits of gravels and sands. Some areas of Tertiary-Renova formations also are found in the valley.²⁰

Test wells drilled near Grant Creek in the southeastern corner of section 29 found the Pleistocene alluvium to be 52 feet to 55 feet thick.²¹ The sands and gravels of this kind of alluvium generally yield large quantities of water for wells.²²

Infiltration rates, the measure of the material's ability to transmit water downward from the surface, vary from 1.5 inches to 6 inches per hour. Hydraulic conductivity, horizontal flow capacity through an aquifer, of these materials averages 340 inches per hour.²³ Transmissivity, the relation of hydraulic conductivity to the thickness of the aquifer, for one of the test wells cited above was 58,000 gallons per day per foot.²⁴

Water tables at the Wheeler trailer court well (Township 13N, Range 19W) had a high elevation of 3,158 feet above sea level on July 15, 1978, and a low elevation of 3,114 feet on March 1, 1978, for a variance of 44 feet. Average water table gradients in the Grant Creek area range from 100 feet to 150 feet per mile. Average discharge per day in the Grant Creek area is 1.7 million cubic feet. Velocity averages 3.8 feet per day.²⁵

Although groundwater within the Missoula basin is generally moderately hard, "the Pliocene-Holocene alluvium in the Grant Creek area has inexplicable soft water."²⁶ Average concentrations of the required substances tested from two wells in the Grant Creek area do not exceed Environmental Protection Agency standards for drinking water.²⁷

Water needs for the Grantland project would be supplied by wells located in the valley. The developers estimate approximately 2.1 million gallons per day would be required. A central water system would be installed by the developers and financed by a rural special improvement district, with water system costs ultimately to be borne by the lot buyer. A county water district for the project would be created.²⁸

Earth Sciences Services, a private consulting firm, Bozeman, reports that "a production well could be constructed near test hole number 2 that would probably be capable of producing 260 to 320 gallons of water per minute. The productivity would probably be less if another well were installed nearby on the same side of the creek.

"The data from the test wells indicates that the desired 2,100,000 gallons of water per day can probably be obtained from the Pleistocene Alluvium in the Grant Creek Valley. It is estimated that this amount of water could be produced from a line of wells on each side of Grant Creek located about 200 feet from the creek and spaced about 1,000 feet apart. The best estimate from available data is that seven wells would be required on each side of the creek for a total of 14 production wells. The wells should be grouped as deep as is consistent with adequate production rates."²⁹

Preliminary plans for the Gleneagle phase call for a 90,000 gallon storage reservoir supplied by two wells on the valley floor. A 70,000 gallon reservoir is proposed for Hampton West in order to supply a maximum daily flow estimated at 170,000 gallons.

Engineering plans for the Gleneagle water system have been submitted to DHES and are now being reviewed by the Water Quality Bureau. No final plans and specifications have been submitted for Hampton West, nor have plans for interconnection of the two water systems been prepared.

No water system specifications for the entire Grantland project have been submitted.

The sewage generated by Gleneagle should have no adverse effect on groundwater quality because the lots are situated high above the valley floor. In the valley bottomland, groundwater is close to the surface. The subdivision phases in the valley will connect to the Missoula municipal sewer system, thus nearly eliminating the chance of groundwater contamination.

Drainage

Storm runoff from the Grantland project would be disposed of by standard county ditches and existing drainage swales. Because the majority of the landscape would remain in its present condition, the developers envision no drainage problems.

Drainage plans for the entire Grantland project have not been developed. Concerning Gleneagle in the Grantland subdivision, for which storm drainage plans have been specified, Missoula planning director Will Walton stated that "we thought it (drainage within the subdivision) was taken care of." Missoula County Surveyor Richard Colvill stated that he doesn't think the Gleneagle subdivision would cause flooding problems at the base of the hills, although it could cause some soil erosion if precautions, such as revegetation, are not taken.³⁰

Drainage plans for each phase of the Grantland project would be reviewed by local and state authorities.

GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE

Geology

The geology of the Grantland area is characterized by Tertiary unconsolidated basin deposits, with some exposures of Precambrian Miller Peak formations near the Clark Fork Fault. The Grant Creek Valley is primarily composed of Pleistocene gravels and sands.³¹

Two major faults--the Clark Fork Fault, a right lateral, normal fault which extends from the Helena area into Idaho, and the Hourglass Fault--traverse the Grantland property in a northwesterly direction. According to the developers' conceptual plan, the faults last moved in the Pliocene Epoch of the Tertiary Period, i.e., some 2 million+ years ago.

No seismic hazards associated with the faults are expected.³²

Two large Quaternary Period (approximately 2 million years ago to present) landslide areas also mark the Grantland property, one in the southeast corner of the property (section 33) and the other in the northwestern portion of the property (the Butler Creek portions of sections 19 and 30). Both landslide areas are adjacent to the Clark Fork Fault. A very large mudflow area lies adjacent to the landslide area in section 33.

Past slope failures in these areas is evidenced by hummocky terrain, "pistol-butting" of mature trees and soil conditions. Soil profile tests in the northwestern landslide area found primarily silty, organic loam topsoils and areas of silty, plastic clays at depths up to 10 feet. The mudflow area likewise exhibited clays and silty clays at varying depths up to 10 feet.³³

The developers state that the landslide areas would not be used for dwellings, roads or drainfields "due to their questionable stability."³⁴ However a proposed access road from Butler Creek Road to the westerly portions of the Grantland project would cross the vicinity of the landslide area. If the

proposed road cannot be routed around the landslide area, further study probably would be required to determine whether road cuts and drainage would create conditions for slope failure.

Also, an access road from Grant Creek Road to the Gleneagle phase of the Grantland project would cross the mudflow area in sections 32 and 33. According to the developers, testing of the mudflow area indicates that "the suspected area is stable and would pose no special problems to construction of a road to serve the development."³⁵ The testing was performed by the developers. The road location has been approved, preliminarily, by the Missoula County commissioners. Soils

The suitability of the soils in the Grantland project for individual septic tanks and drainfields is a source of concern that has been addressed on a case-by-case basis. Because of the highly variable soil properties in the area, placement of drainfields becomes a very site-specific proposition; Site "A" may be ideal for drainfield placement, while site "B", located 50 feet away, displays questionable conditions.

L.T. Stem, soil scientist for the U.S. Department of Agriculture Soil Conservation Service, discussed this problem in a letter to the Missoula planning department:

The soils in this area are of Tertiary origin and are highly variable. The depth to less permeable soil layers varies over short distances and with the slope involved, can create downslope surfacing of septic tank effluent. The less permeable layers are high in clay and will have a slow permeability rate...

These soils are mapped as a complex of soils that have more loamy topsoils. Individual soil delineations are small in size and it is difficult to predict where a given soil material would occur.

Stem added that "the interpretation of these soils for septic tanks is severe, and the potential is at best moderate." Stem suggested that the developers try to tie the subdivision to the proposed extension of the Missoula city sewer line along Grant Creek Road.³⁶

(It should be noted that Stem's memo was directed at the Gleneagle portion of the project only. However, Soil Conservation Service maps of the entire Grantland project indicate that, with the exception of the Grant Creek Valley, highly variable soil conditions occur throughout the project.)

Percolation tests initially performed by the developers showed while some Grantland soils had unacceptably slow percolation rates of up to 150 minutes per inch, others had fast percolation rates, .5 minutes per inch; most were within the 6 minutes to 60 minutes per inch range.³⁷ On January 3, 1980, representatives of the county health department, DHES, and the developers made a second inspection of the proposed Gleneagle subdivision. Based on this visit and the previously submitted soils information, DHES requested additional percolation tests and lot rearrangement.

The developers have since presented drainfield plans acceptable to DHES. This was accomplished by deleting three lots, rearranging others and, where no suitable on-site drainfield location exists, placing 24 lots on one public and two multi-family systems. Lot layouts were rearranged so that all drainfields are now in acceptable soils.

Where groundwater depths are acceptable, the sandy gravelly soils found in most portions of the valley floor appear to be well suited for drainfield placement.

Groundwater levels throughout the property vary from four feet to several hundred feet. According to the developers, 172 soil profile holes scattered across the property found groundwater at depths of 10 feet or shallower at 21 locations; 17 of those locations, most of them near Dark Horse Creek, showed groundwater at six feet or shallower. The developers state that "it appears that a large portion of the Grant Creek Valley is suitable for drainfield placement from the standpoint of groundwater depths."³⁸

The Grantland project is expected to generate an average of .84 million gallons of sewage per day at full development. Missoula sewage treatment plant superintendent Bob Haverfield has stated that the capacity of the city sewage treatment plant is about 10 million gallons per day, while current use is about 6.5 million gallons per day. The sewage treatment plant is having difficulty disposing of finished sludge from the treatment plant, Haverfield said, but he added that he expects that problem to be resolved in the near future. Haverfield said the sewage treatment plant would be able to handle sewage from the Grantland project if portions of the project eventually are linked to the city sewage system. Until recently, annexation to the city has been a prerequisite for use of the sewage system.³⁹

The Missoula City Council recently voted to annex the Prospect Subdivision, a development south of and adjoining the Grantland property. The engineer for Prospect contacted the developers of Grantland, asking if they would be interested in oversizing the proposed sewer trunk line to serve all or part of Grantland. The developers indicated they were indeed interested.

Neither the developers nor the Missoula City Council are in favor of annexing Grantland at this time. The City Council has approved the concept of contract sewer provided that the property owners waive the right to protest future annexation. The City of Missoula will provide public sewer service to Grantland pending the acceptance of a formal legal agreement by both parties.

In the proposal to the Missoula City Council the developers requested "that the sewer line to be built from Mullan Road to Prospect be sized sufficiently to provide sewer services to Grantland to include approximately 1,900 dwelling units and the adjacent commercial/recreational facilities and office complex." All development on the valley floor will be connected to municipal sewer, according to the developers. However, at present, there are no plans to connect the Gleneagle phases, and subsequent phases in the higher areas of the valley may not connect either, the developers added.

The developers have prepared preliminary plans for Hampton West, a 79-lot

phase on 54 acres of pasture and hayland between Dark Horse Creek and Grant Creek. Groundwater was found within six feet of the ground surface in five of 28 monitoring holes. As a result, the preliminary plans proposed sewage treatment in an Imhoff tank, with disposal in a community drainfield in a higher, flat terrace on the eastern portion of the property. Monitoring conducted by the Missoula County Health Department indicates that no high groundwater occurred in the proposed drainfield area during the spring and early summer of 1979.

Information provided in preliminary plans supported the conclusion that the Imhoff tank system would adequately serve Hampton West without any adverse effects on groundwater. However, since a determination of the suitability of subsurface sewage disposal cannot be made without final plans and specifications, DHES has not granted approval for Hampton West. Now, with the probability of a city sewer extension to serve Grantland it is the developers' intention to provide municipal sewer to Hampton West. Public sewer eliminates most concerns about high groundwater, with the possible exception of overloading caused by infiltration into sewer mains. Engineering plans required for DHES approval should deal with potential infiltration problems.

A final consideration to locating drainfields on the hilly portions of the project comes from David Alt, University of Montana geology professor and a member of the Missoula Planning Board. Even where slope conditions, soil tests and percolation tests indicate drainfield suitability in the hilly areas, Alt fears that, given the highly variable nature of the soils, drainfield moisture eventually could encounter undetected layers of expandable clays, thereby creating conditions for slope failure.

Alt recommends that as an alternative to individual or one- or two-lot drainfields, a community drainfield for the Gleneagle subdivision (and all similarly-located subdivisions within the project) be established on the valley floor. Such a system would not only eliminate any concerns about slope failure, Alt states, but it also would free the developers from site plan restrictions necessitated by drainfield placement.⁴⁰

The developers subsequently stated that, while they still believe a sufficient number of suitable drainfield sites can be found in the Gleneagle subdivision, community valley-floor drainfields for other subdivisions in hilly areas may be used.⁴¹

As deep ruts in the road tracks that cross the Grantland property indicate, the silty loam topsoils in the area can be highly susceptible to erosion. As it now stands, vegetative cover balances the erosive effects of wind and precipitation to protect the soil. Although most of the Grantland property (2,400 acres out of 3,600 acres) would remain in more or less its natural state, wherever development occurs the potential for soil erosion arises.

Since site plans for each subdivision within the Grantland project would be submitted over a 10- to 15-year period, storm drainage plans and road cuts would be reviewed on a case by case basis. In general, road cuts should be covered with surface soil material and revegetated; placement of recreation trails should be carefully planned to minimize conditions for erosion, and restrictive covenants prohibiting off road vehicle use in common and other open

areas should be strictly enforced.

The developers have promised to take those precautions.

Final drainage plans have not been completed for Gleneagle. Storm drainage plans for Hampton West, including calculations for runoff and culvert sizing, have been received by DHES and found to be acceptable. Since Hampton West is situated in the valley floor, no extraordinary measures are needed to prevent excessive erosion.

AESTHETICS

The developers have designed the subdivision so there are clusters of lots, leaving hay fields and areas visible from the Grant Creek Road relatively undisturbed. The bottom land along Grant Creek and Dark Horse Creek will remain as open space and in its natural state.

In addition to the clustering of lots, and the use of naturally wooded areas, the developers' restrictive covenants will require a landowners association be formed and that the association include an architectural committee to review and control the architectural features of all dwellings. Architectural control over the commercial and public structures will be the responsibility of the developers.

Certainly the proposed development will impact the natural landscape of the Grant Creek Valley. However, development is not new to the valley, and the proposed scheme of development will mitigate the impact more than if the developers used the traditional grid-type of lot layouts.

VEGETATIVE COVER QUANTITY AND QUALITY

Vegetative cover within the Grantland project is diverse. In the gravelly soils of the Grant Creek Valley, grasses such as native or Sandberg bluegrass, Junegrass, crabgrass and annual brome grasses are found. Broadleaf plants found in the valley include field and horse mint, dandelions, thistles, knapweed, balsamroot, beggartick, Indian paintbrush, primrose, geranium, wild mustard, buttercups and Russian thistle.⁴²

In the more loamy topsoils of the hills rising from the valley are found a variety of native bunch grasses, such as bluebunch wheatgrass, Idaho fescue, rough fescue and Richardson needlegrass.⁴³ Once common throughout Western Montana, these agriculturally productive grasses have disappeared from many areas as a result of unrestricted grazing. According to Reed Marbut, co-partner of the Grant Creek Ranch Corporation, the history of carefully-controlled grazing on the ranch has protected the relatively rare native bunch grasses. John Trippe, managing general partner of Grant Creek Associates, Ltd., has stated that those grazing patterns would continue.⁴⁴ Prohibition of off-road vehicle use in the agricultural-recreation reserve areas of the ranch also would help to protect the plants, although Marbut pointed out that the bunch grasses are hardy by nature and can survive almost any treatment outside of overgrazing. Preserving the natural vegetative cover would protect both aesthetic values and soil quality.

The banks of Grant Creek, as well as draws in the hills where water is available, are host to a variety of shrubs, including mountain maple, hawthorn, serviceberry, mock orange, gooseberry and nine bark. Trees such as cottonwoods and quaking aspen are found along the creek, and elsewhere where water is plentiful. Coniferous forest, primarily composed of Ponderosa pine, covers the upper reaches of the Grant Creek valley and portions of the Grantland area. Douglas fir, western larch and blue spruce also are native to the area.⁴⁵

AIR QUALITY

Since the early 1970s Missoula's air quality has not really improved, but it has changed. A decade ago, industrial pollution was the primary source of bad air. Now, automobiles, fireplaces and wood stoves are the primary sources of air pollution in the valley.⁴⁶

According to Jim Carlson, air quality specialist for the Missoula City-County Health Department, recent studies have shown that 95 percent of all new homes and apartments in Missoula are equipped with fireplaces and/or wood stoves.⁴⁷ The proposed 2,200 homes at Grantland probably would not be exceptions.

According to a 1977 study, the average Missoula wood stove or fireplace consumes about a ton of wood per year. The average fireplace releases about 20 pounds of particulates and 120 pounds of carbon monoxide into the air for every ton of wood burned; the average wood stove releases from four to 30 pounds of particulate and about 260 pounds of carbon monoxide.⁴⁸

Carlson stated that downslope evening winds could sweep a great deal of the Grant Creek air pollution into the Missoula Valley, although fireplace pollution from low-density residential areas on the upper hills may be dispersed elsewhere. However, Carlson stated that, in terms of aggravated air pollution problems in the Missoula urban area, 2,200 fireplaces in the Grant Creek area would have less impact than 2,200 fireplaces in other areas around the city.⁴⁹

Current Grant Creek residents already complain that air quality has suffered as a result of increasing use of fireplaces and wood stoves. The addition of 2,200 fireplaces could only add to that problem.⁵⁰

Automobile emissions vary, but the expected 12,500 vehicle trips per day on the Grant Creek Road would add to air quality problems.

All roads leading to or within the Grantland project would be paved, so, with the exception of construction-related activity, no dust pollution problems are expected.

UNIQUE, ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCES

The creation of 2,200 new homes and a retail and commercial office center in the Grant Creek Valley would permanently alter the aesthetics of the area, changing it from a relatively sparsely-populated, rural-agricultural setting to a suburban population center. The Grantland proposal probably would have less impact in terms of aesthetics than would conventional subdivisions, which would have been allowed under the standard zoning for the area. Still, fundamental changes in the nature of the valley would be the inevitable result of the Grantland project.

Impacts on wildlife, particularly elk and mule deer, likewise seem inevitable, despite precautions. The extent of the adverse impacts will depend to a great extent on the actions of the Grantland residents.

Unless fireplaces and wood stoves were banned outright (which could affect the marketability of the homes) or their use regulated (which could be very difficult to enforce), it appears that the Grantland project would add to air quality problems in the Grant Creek and Missoula valleys.

Any of these areas--rural aesthetics, air quality and wildlife populations--could be considered endangered, fragile or limited resources when viewed in relation to the Missoula urban area, where all of them are in increasingly short supply.

DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER AND ENERGY

Despite its current rural character, the Grantland property is not entirely free of demands on the land. Several energy-related rights-of-way--the Bonneville Power Administration's (BPA) transmission lines, Montana Power Company (MPC) transmission lines and the Yellowstone petroleum products pipeline--cross the Grantland area. In addition, two major energy-related systems--the Northern Tier crude oil pipeline and the BPA twin 500-kv transmission lines--may cross the project in the near future.

The BPA's proposed twin 500-kv lines would travel 430 miles across Montana, from Colstrip Units 3 and 4 in eastern Montana to Hot Springs in the west. The proposed power lines, which at the earliest would be constructed in 1983, may follow a 250-foot BPA right-of-way across the Grantland property. The BPA right-of-way, which already consists of a 230-kv transmission line from Hot Springs to Anaconda, enters the Grantland property at its southeastern quadrant and traverses it in a north-northwesterly direction (see map C).

According to Ansel Peterson, BPA area engineer in Spokane, only 125 feet of the 250-foot right-of-way is now being used for the BPA 230-kv line. If the right-of-way is used for the new lines (the exact route of the power lines hasn't been specified) the remaining 125 feet of the BPA right-of-way would contain one set of 150-foot towers which would carry the twin 500-kv lines. Therefore, no additional right-of-way would be required.⁵¹

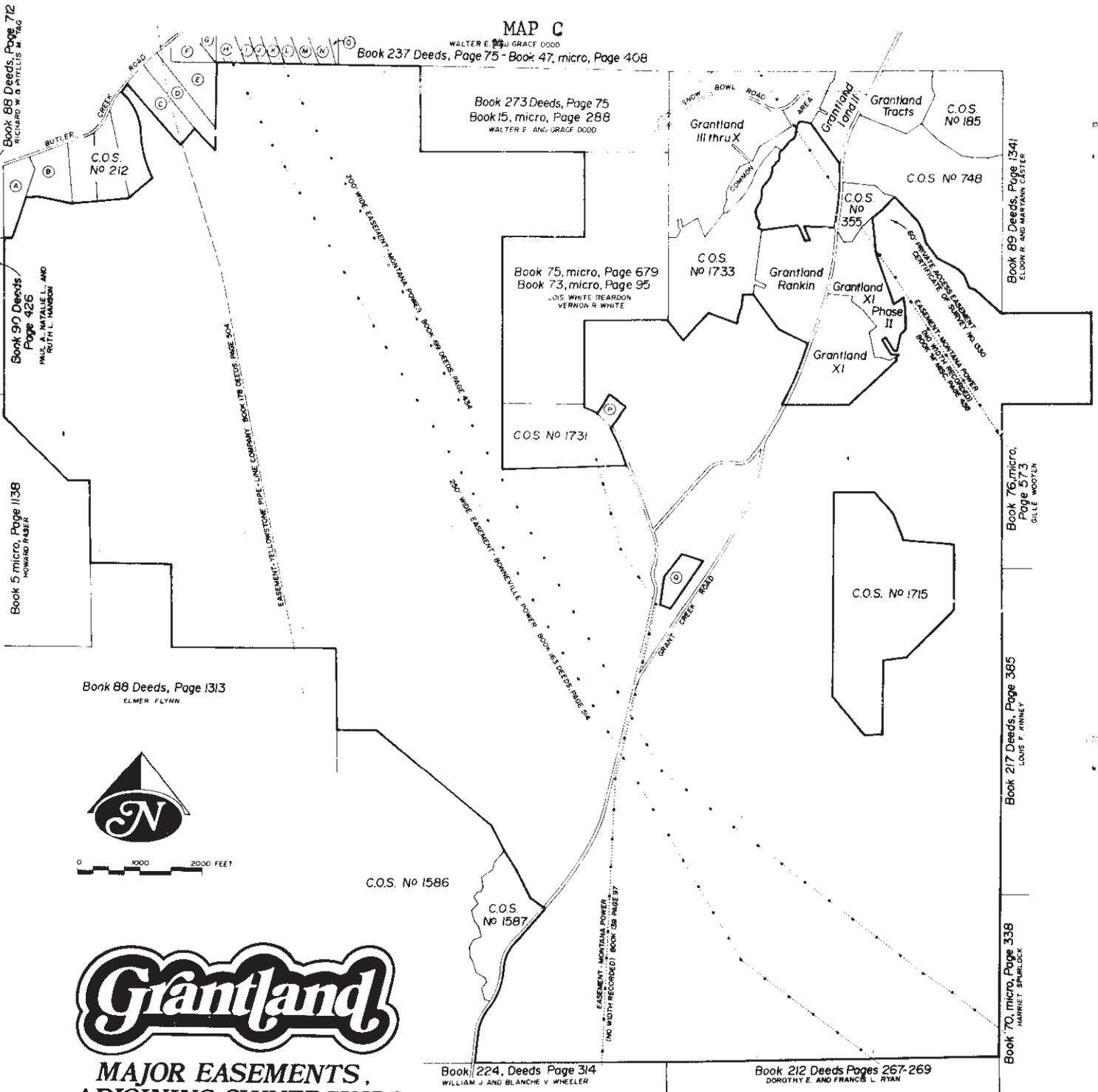
Peterson notes in a letter to the developers that no buildings are permitted in the right-of-way, although as far as BPA is concerned the right-of-way can be used for road crossings, recreational areas and drainfields. However, Montana regulations currently restrict the use of utility right-of-ways for drainfields.⁵²

The BPA 230-kv line and the proposed twin 500-kv lines, as well as several other MPC transmission lines, would pass through or close to several residential areas within the Grantland project. According to Peterson, "We (BPA) are not aware of potential adverse effects to the health and safety of future residents of the area that would be caused by BPA's line."⁵³

Real or imagined health hazards posed by high-voltage transmission lines are something of a celebrated cause, particularly among Missoula public interest groups, so it is safe to say that not everyone would agree with Peterson. Peterson's assistant, Ted Rednour, acknowledged that the

MAP C

WALTER E. AND GRACE DODD
Book 237 Deeds, Page 75 - Book 47, micro, Page 408



**MAJOR EASEMENTS,
ADJOINING OWNERSHIPS
& LAND USES**

- (A) Certificate of Survey No. 212
- (B) Book 41, micro, Page 524
LOREN F. AND VIRGINIA L. DE LAND
- (C) Book 44, micro, Page 1495
- (D) Book 48, micro, Page 869
JOSEPH J. AND ALICE M. TURK
- (E) Certificate of Survey No. 212
- (F) Book 48, micro, Page 869
JOSEPH J. JR. AND ALICE M. TURK

- (G) Book 60, micro, Page 1516
ROBERT M. AND BETTY M. YORTON
- (H) Book 84, micro, Page 1032
CALVIN W. MYERS
- (I) Book 94, micro, Page 1137
ZALE I. AND COLLEEN A. BENDER
- (J) Book 91, micro, Pages 1440-1442
GRANT E. AND SANDRA L. LAMFORT
- (K) Book 55, micro, Page 1688
GLEN A. AND DOROTHY A. JOHNSHAY
- (L) Book 103, micro, Page 46
THOMAS R. NEMMERLING

- (M) Book 48, micro, Page 1345
ERVIN AND MARY LU SCHMIDT
- (N) Book 104, micro, Pages 738 and 739
ROGER A. AND MERRIKAY THOMPSON
- (O) Book 95, micro, Page 1123
JOSEPH W. AND GAYLA M. KAISER
- (P) Deed Exhibit, Book 33, micro, Page 833
GARY R. AND EDITH T. MARBUT
- (Q) Deed Exhibit 732, Book 229, Deeds, Page 62
ROBERT A. AND MARY LEWIS PETERSON

**PROFESSIONAL
CONSULTANTS
INCORPORATED**

question of health hazards associated with proximity to high-voltage lines is "a debatable point."⁵⁴ While power lines' alleged ill-effects on human health have not been proved in the scientific sense, the subject is still being studied.

The Northern Tier crude oil pipeline, like the BPA twin 500-kv lines, may or may not cross the Grantland property. Federal, state and local approval apparently has yet to be secured for the project. If the pipeline is built, it would stretch 1,557 miles from Puget Sound to Clearbrook, Minnesota. The 42-inch pipeline could carry 709,000 barrels of oil per day and would be buried.

Because the pipeline is still being planned, no route has been designated, but a two-mile wide study corridor has been established. That corridor crosses the Grantland project, with its rough center-line being the Yellowstone Pipeline, a 30-year old, 10-inch diameter refined oil products pipeline (see map C). The pipeline carries a 40-foot wide easement.

Since the Northern Tier Pipeline could follow any route within that two mile corridor or even be routed elsewhere through Montana, the pipeline could cross any portion of the Grantland project, or it could by-pass it altogether.

If the pipeline crosses the Grantland property, a 90-foot construction right-of-way would be required; after construction, a permanent 75-foot right-of-way would be needed. No trees or buildings would be allowed in the right-of-way. Under Montana law, the Northern Tier Pipeline Company could use eminent domain to acquire a right-of-way.⁵⁵

Other utility easements crossing the Grantland area are:

- 1) A 200-foot wide MPC right-of-way for a 100-kv transmission line. The right-of-way lies north of and roughly parallel to the 250-foot BPA right-of-way.
- 2) A MPC power line right-of-way of unspecified width for another 100-kv line passes through the extreme northeast corner of the Grantland property in Section 21. The power line would pass through proposed residential cluster Y. MPC division engineer Kerry Weidrich recommends that no buildings be located within a pole's length of the line.⁵⁶ MPC holds an access easement to the line.
- 3) An MPC local service line that roughly parallels Grant Creek Road and which serves the Grant Creek Ranch headquarters and nearby residences. No easement width is recorded. MPC holds an access easement to the line.

HISTORICAL AND ARCHAEOLOGICAL SITES

According to Dee Taylor, professor of anthropology at the University of Montana, no archaeologically important sites are known to be located within the Grantland project. However, Taylor states that without a field survey of the Grantland area, it is impossible to assess the likelihood of finding

archaeologically valuable sites within the area. Taylor noted that the Grant Creek area, along with the rest of the Missoula Valley, was a heavily-traveled route in prehistoric times.

Taylor also stated that since archaeologically valuable finds are often inadvertently uncovered by construction--he cited Interstate-90, the University of Montana field house and a Safeway store on Broadway as examples of construction projects that have uncovered archaeological artifacts--construction workers should be instructed to watch for and report any unusual materials.⁵⁷

The first recorded mention of Grant Creek (although not by the name) is found in the journals of the Lewis and Clark Expedition. On July 3, 1806, Captain Meriwether Lewis and nine of his men camped at the mouth of Grant Creek during their journey home.⁵⁸

Grant Creek was named after Captain Richard Grant, a U.S. Army engineer who worked on the Mullan Road and who later set up a farming and ranching operation in the Grant Creek Valley. Later John Rankin set up a lumber mill at the site of the Grant Creek Ranch headquarters. Ownership of the Grant Creek Valley was widely dispersed in the late 1800s, and the valley population was large enough to warrant a school. The school served the upper Butler Creek and Grant Creek areas until declining population in the area forced its closure in 1947.

Shortly after the turn of the century a German immigrant named Charles Quast began acquiring Grant Creek property. Eventually Quast's holdings, which he used first for dairy farming and later for ranching, covered much of the valley and the surrounding hills. Quast died in 1952, and in 1956 Charlotte Reed Marbut, with her sons and daughter, bought the Quast properties and formed the Grant Creek Ranch.⁵⁹

By far the most famous resident of the Grant Creek Valley was Jeannette Rankin, daughter of settler John Rankin. Born in the Grant Creek Valley in 1880, Rankin attended the University of Montana, practiced social work and was active in the women's suffrage movement. In 1916, Rankin, a Montana Republican, became the first woman ever elected to the U.S. House of Representatives. Her vote against declaration of war with Germany in 1917 reportedly cost her the Republican nomination for the U.S. Senate. Rankin worked as a lobbyist and social worker throughout the 1920s and 1930s. In 1940 she was again elected to Congress on a "stay out of war" platform. In December, 1941, Rankin was the only member of Congress to vote against war with Japan following the attack on Pearl Harbor. That vote effectively ended her career in public office. Rankin was active in the peace movement in the 1960s, and in 1968 led 5,000 women of the "Jeannette Rankin Brigade" in an anti-war march on the Capitol in Washington D.C. She died in 1973.⁶⁰

Jeannette Rankin's brother, Wellington Duncan Rankin, was a Montana Attorney General, an associate justice of the Montana Supreme Court and a U.S. District Attorney.

The developers have expressed an interest in having the Rankin home--currently owned by Reed Marbut--designated as a national historic site. However, according to Jim McDonald, a Missoula architect who has had extensive experience with the preservation of historic buildings, the various renovations of the home could make inclusion on the national register difficult to obtain.⁶¹ The developers have stated that, whether or not the historic site designation is obtained, the building would be preserved in some form, possibly as a community center/art center.⁶²

SOCIAL IMPACT ASSESSMENT

The Grant Creek Valley is primarily an agricultural area, although there are approximately 95-100 households in the valley. The area is scenic, combining rolling grass hills, primarily in the southerly sections, and mountain vistas, grassy meadows and coniferous forests in the north. The topography and vegetation in the valley provide natural habitat for a diverse variety of wildlife.

People

A social impact assessment (SIA), conducted by Raymond Gold and Don Agan, University of Montana, indicated that the heads of households in the Grant Creek area were typically young or middle-aged persons (55.3 percent of the respondents were between the ages of 19 and 49), and many had dependent children living at home. The average household had 3.5 persons. It is estimated that more than 300 people live in the area. A majority of the respondents lived there less than 10 years.

Occupations/Income Distribution

According to the SIA, the occupations of persons living in the valley are predominantly professional, administrative and management positions; labor and non-professional positions are in the minority. Overwhelmingly, these persons commute to work in Missoula. Household incomes fall mostly into the range of \$17,000-\$50,000 (62.3 percent) with the highest concentration falling into the \$17,000 to \$24,000 category (24.7 percent).

Most residents feel the development will have little or no impact on their occupations or income.

Housing

The houses in the Grant Creek Valley are primarily in two Grantland subdivisions (Grantland I in the Keegan Trail area and Grantland II in the Colorado Gulch area) as well as scattered along the upper Grant Creek (north of Snow Bowl Road) and Bench Roads. The Grant Creek drainage residential area is divided predominantly into property plots of less than 10 acres, with most of the landowners owning lots approximately one to two acres. These smaller lots are primarily in the two Grantland subdivisions developed by the Marbut family from their Grant Creek Ranch holdings. Housing in the area runs the gamut from deluxe, professionally landscaped estates to modest trailer homes and even a tipi. The two Grantland sub-

divisions have restrictive covenants on the architecture, square footage, layout and cost of homes. The homes scattered along the upper part of Grant Creek Road are more diverse in type, design, landscape and cost.

The SIA indicated that most of the homes in the area are custom built, ranging in cost from about \$40,000 to more than \$100,000. The houses have a rich, rustic quality and are mostly of the chalet type or ranch style. In addition, most do not face one another, giving the illusion of seclusion.

Quality of Life and Social Values

The proximity of the Grant Creek Valley to Missoula makes it a prime residential location, the SIA said. Life there seems to be serene due to the seclusion, the presence of wildlife and the relative quietness. The area is private, placid, comfortable and independent; life is slow, with few nose-y neighbors, little noise and low levels of pollution. Permanence, not transient living, is highly valued. People responding to an SIA survey indicated the primary reasons for moving to the area were: 1) Aesthetic values of natural habitat (67.6 percent), 2) rural, spacious living atmosphere (59.8 percent) and 3) close enough to town to commute and still enjoy country living (58.5 percent).

As one resident put it, the most attractive features of living in the area are:

...the beauty of the mountains, trees, streams and wildlife. It's quiet yet close enough to city services, recreation, churches and schools. It's a unique country atmosphere; people are friendly and helpful. It's just a great place to live.

Schools

Schools emerge consistently as a major concern according to the SIA. Residents feel Hellgate Elementary School cannot adequately absorb the new students (78.0 percent of the respondents expressed this view); in fact, many residents were not satisfied with the current quality of education at Hellgate Elementary School. Representatives of Hellgate have indicated that the increase in students from the development should not create a need for increased personnel or facilities until 1985. The developers intend to donate a 10-acre parcel near the headquarters buildings of the ranch as a potential site for a new elementary school.

The number of persons requiring educational services resulting from the development's completion will be approximately 1,173 elementary school students and 587 high school students, according to the developer's environmental assessment. The developers feel that potential increases in personnel and facilities will be largely mitigated by the increase in residential property taxes and tax revenues from the proposed commercial areas.

Roads

Residents express strong concern regarding the adequacy of the Grant Creek Road to accommodate the new residents: 89.6 percent of those sampled feel the road is not adequate for the new residents. Respondents expect that increased traffic from the proposed development will mandate widening and better maintenance. The road is reported to present especially hazardous conditions in the winter, particularly due to traffic to and from the Snow Bowl ski area. Some feel summer dust problems would be amplified by additional residential traffic.

The developers have solicited the advice of the traffic engineer from the Missoula County Surveyor's Office; and he has stated that, in his opinion, no road improvement will be necessary for the first five years of construction. The traffic engineer also noted that the average number of daily automobile trips (A.D.T.) on the Grant Creek Road is currently 900, that total impact of the development will be about 12,500 A.D.T., and that during the first five years of construction the A.D.T. will increase to approximately 7,000.

Many residents feel that with increased traffic it will no longer be safe to bicycle or walk along the Grant Creek Road, since there are no bikeways or pedestrian paths. This situation was also noted by the traffic engineer, who suggested the developers take this into account. The developers agreed to hire a traffic engineering firm to study the impact of Grantland on Grant Creek Road. This study will be completed prior to September 1980, and will provide the basis for determining what improvements are necessary and who will pay for them.

Several respondents mentioned some sort of public transportation will be needed to reduce traffic congestion and potential pollution. The Grantland development is outside the Missoula Transportation District. However, the developers noted, "...at some time in the future, when the population of the valley dictates, the residents of the valley could annex into the district and receive bus service."

Many residents feel an alternate access will be necessary to provide an emergency exit from the Grant Creek Valley in times of need, according to the SIA. The developers' plan does provide for a road that would link the Grant Creek and Butler Creek valleys and provide an emergency outlet.

Fire/Police Protection

Residents, for the most part, feel that fire protection will be better; 64.9 percent think that the development will have a positive effect on fire protection, the SIA reports. This is probably because the developers plan to donate one acre of ground near the existing Grant Creek Ranch headquarters buildings as a potential rural fire station site. People generally feel that police protection will probably improve somewhat as a result of the development.

Sewage

According to the SIA, some concern has been expressed regarding the problem of sewage: 31.2 percent of the residents feel that the development will have a negative effect on sewage disposal, 23.4 feel it will have a positive effect, and 40.3 percent are neutral. The basic concern is whether Grantland will utilize septic tank-drainfield installations or hookup to the city sewer system. The prospect of septic tanks and drainfields is viewed skeptically by residents who fear these installations will pollute the groundwater and possibly the creek.

Garbage Collection

The SIA said garbage collection appears to be of little concern to residents; almost 69 percent feel the development will not affect garbage disposal in any way. City Disposal Company has indicated it would be able to provide services.

Commercial Development

The developers proposed that the 27 acres zoned commercial be developed as the need arises. Included in this area would be an "Old English Village Square," which could offer such facilities as a grocery store, hardware store, barber shop, beauty shop, gift shop, drug store, etc. Also, the developers feel there will be a need for a service station at the junction of the Old and New Grant Creek roads.

Residents have expressed strong opposition to commercial development in the area: 92.2 percent feel commercial development should not be encouraged, according to the SIA. In fact, 31.2 percent of the respondents feel so strongly opposed to commercial development in the area that they said they would move if commercial development becomes too extensive.

Wildlife

Almost everyone surveyed expressed a strong concern for the wildlife in the area. The topic of wildlife is an important issue to Grant Creek residents--94.8 percent of the respondents feel the wildlife will be seriously affected by the development.

Residents who have lived in the area for several years note a considerable decline of wildlife in the last three or four years as a result of increased population. As one resident put it: "The deer are already less visible. I expect to see elk seldom, and coyotes and badgers will be driven out of the meadows entirely." The general feeling is that, when talking about an increased population in excess of 7,000 people (and their dogs), it will become virtually impossible for the wildlife to co-exist in the same vicinity.

The developers seem aware of the magnitude of the potential dangers facing the wildlife and have utilized the opinions of experts in planning the development to lessen the potential danger as much as

possible, the SIA said. According to the developers, "The principal measures contemplated for preservation of wildlife is the overall design of the project with large amounts of open space."

The developers recently donated a large tract of land on the east side of the property to the National Wildlife Federation for a wildlife preserve.

The residents of the development will be subject to restrictive covenants which, among other things, are aimed at protecting the wildlife. The current residents do not have much confidence in the restrictive covenants, based on their experiences with the problems of enforcing existent covenants.

The main threat facing the wildlife is the dogs running loose in the area. According to O'Gara, of the Montana Cooperative Wildlife the winter ranges. Strict dog regulations are of paramount importance if humans and hoofed game are to live in close proximity."

While the residents agree that strict dog regulations are expressed in the restrictive covenants, they feel that adequate means of enforcement of the covenants are necessary. The two means of enforcement suggested by the developers seem to many to be problematic. The idea that residents "will become their own best 'policemen'" has proven not to be an effective enforcement mechanism. The other alternative, suggested by the developers, is that funds generated from yearly assessments of development dwellings be utilized by the landowners' association to employ a warden/manager.

The second alternative is viewed skeptically for two reasons. The first concerns the basic problems related to organizing a landowners' association. The second is that, while residents agree that at full development a \$50.00 per year assessment of each property owner would generate \$110,000, from which a warden/manager could easily be hired, by the time enough money could be generated from property assessments to employ such a person the damage could have already, and irreversibly, been done to the wildlife. Reflective of the residents' concern is the fact that 24.7 percent of those surveyed expressed intentions to move out of the area should the wildlife become seriously affected by the development.

Social Impacts

Residents of the Grant Creek area are approximately evenly divided in regard to whether they feel that they have been adequately informed about the development, according to the SIA. Some 81.8 percent of those persons surveyed reported they made attempts to find out what was going on concerning the development, while others felt somewhat ashamed for not taking advantage of opportunities to find out more. Residents generally have a sense of community and feel their neighbors are concerned about the development and the area. More than three-fourths of the respondents (78.0 percent) feel they do not have a choice about whether the area will be

developed, but 83.1 percent believe that they should have such a choice the SIA said. Those surveyed (94.9 percent) also believe they should have a choice in how the area is developed.

The survey indicates, for various reasons, many residents have not expressed their opinions regarding the development. Many respondents' opinions were summed up by one resident, "I feel that the opportunities to express their opinions have always been present, but due to a general feeling of 'what good would it do' (a defeatist attitude) many of the avenues have not been used." While some feel people in the area have had adequate opportunities to express their opinions and the opinions have been taken into account by the developers, many believe their opinions would not make much difference anyway--so they don't bother to express them.

One resident stated, "In talking with other persons in the area, I cannot help but feel a general apathy to the development, sort of a helpless feeling of not having the power to stop the development." Another resident said: "Views were expressed, but views are just that, and hold no power. Our hands were tied." She summed up the series of meetings and public hearings concerning the Grantland Development as "a frustrating experience at best."

A general sense of powerlessness and that many of the most highly valued qualities of the area will be jeopardized by the development are elemental components of the current social views held by respondents. The developers believe the residents have had, and will have, ample opportunity to express their concerns and these concerns will be taken into account as the development progresses, the SIA said.

Concluding Remarks

The Grant Creek area is undergoing significant changes, and the residents are attempting to find ways of coping with these changes. For example, the SIA indicated that with the proposal of the Grantland development, residents began to decide, in their own minds, what the developers' "rights" and "responsibilities" were, both as landowners and as instigators of change. The developers have invited input from the local residents as well as from relevant agencies and experts in a conscientious attempt to assure everyone that, along with their "rights" as landowners, they are taking into account their "responsibilities" as perceived by all relevant parties. Those responsibilities, as perceived by the Grant Creek area residents, center around attempts to preserve the uniqueness of the area as an essentially rural and natural habitat.

Along with the distinction between landowner "rights" and "responsibilities" comes the distinction between what the residents ideally want and what they realistically will settle for, the SIA said. Given the development will likely occur, the residents are concerned that it occur with as little impact to existing conditions as possible. Informed residents feel, for the most part, the developers are making attempts to preserve the unique qualities of the area. Most residents feel that cluster housing, as provided for in the concept of PUD is a

logical means toward these ends--if the clusters are carefully planned and located. Although most residents surveyed favor the PUD approach, most are quite apprehensive about the area being able to realistically accommodate a magnitude of 7,000 plus people in a 10-year period while retaining the highly-valued uniqueness of the area. A resident put it best: "When you buy a lot here, you are buying a view of the mountains, clean air, separation from city problems. You're buying a lot of those things. After you get up over a certain number of homes, these values start to drop off."

The residents of the Grant Creek area are aware of the historical richness of the Grant Creek Valley, the SIA said. They sense now that a qualitatively unique historical event is likely to occur in the valley. They perceive the uniqueness of this event to be its finality, i.e., certain historically irreversible impacts may occur (e.g., loss of wildlife, loss of agricultural land, shift from rural to urban setting, loss of visual quality, change in life-style, etc.). This perception is coupled with a sense of powerlessness or inability to do anything to stop these changes (i.e., the development). The interplay between their perception of the nature of the changes and their powerlessness to do anything about them has left many feeling frustrated. Many of the residents think of politicians and developers interchangeably and express a general distrust for both.

The rural character of the Grant Creek area is increasingly being eroded by the influx of residential development. Current residents feel that the most highly valued qualities of the area may be displaced by a different, more urbanized way of life. The study findings indicate that a majority of residents find this change unwelcome and threatening to their way of life, the SIA concluded.

LOCAL AND STATE TAX BASE AND TAX REVENUE

Development of the Grant Creek Ranch property would significantly increase the tax revenues derived from the ranch property. In 1978, the total tax bill for the property was about \$1,700 on about 4,000 acres of agricultural land.⁶³ That surprisingly low bill is attributable to a property tax system that: 1) reflects the productive value of agricultural land rather than its potential value as developable land (this was designed to ease pressures on agricultural landowners to develop their land), and 2) has traditionally kept most agricultural land valuations at 1930s levels. For example, the average assessed value of grazing land in Missoula County in 1979 was \$3.72 an acre. In 1936, the average assessed value of grazing land in Montana was \$3.02.⁶⁴

The taxing authorities for the Grantland project are: Missoula County, School District 4, the State of Montana (University six-mill levy, etc.), Missoula County High Schools, and the Missoula Rural Fire District (although most of the Grantland property has not yet been annexed into the fire district).

Using eight neighboring improved lots as a guide, the developers estimate that, if the average Grantland lot and residence has an appraised value of \$58,769 (the average appraised value of the neighboring improved lots), then 2,200 improved lots in the Grantland project would generate \$2.35 million per year for all taxing authorities after development is complete.⁶⁵

(That estimate assumes that all improved lots would be located within School District 4 and that mill levies will continue at the 1977-78 levy of 212.75 mills. Neither the developers' estimate nor the 212.75 mill levy includes rural fire district levies.)

That estimate should be considered as just that--an estimate. An alternative computation, one based on estimates provided by the Missoula County appraiser's office, would set the developed land's appraised value at \$9,000 on one or two-acre lots (the probable individual lot owner's land ownership, including common areas), an appraised value of \$37,500 per home (based on the developer's estimates of \$50,000 to \$100,000 market value homes for the project--the appraiser's office uses 1972 values to set 1979 appraised values, which results in appraised values of 50 percent to 60 percent of true, 1979 market values) for a total appraised value of \$46,500 per home and lot.⁶⁶

The taxable value of a home appraised at \$46,500 is \$3,975. The 1977-78 mill levy of 212.75 mills would result in a yearly tax bill of \$845.84 per home. That figure times 2,200 homes would result in tax revenues of \$1.86 million per year.

That alternative tax revenue computation is included only to show that when estimating potential tax revenues it is perhaps wise to allow for a wide margin for error.

The Grantland project would not generate such large tax revenues immediately. Given the fact that a 10-year to 15-year development period is envisioned, and that an attorney general's opinion has held that subdivided property should not be reclassified for tax purposes until the actual, physical use of the property has changed, beginning four years after the platting of the first 220 lots the Grantland project probably would generate between \$180,000 and \$230,000 additional tax revenues per year until development is complete.

Some factors that could substantially alter the Grantland tax revenue picture include:

- 1) Development of the commercial area. Tax appraisals on commercial properties are highly variable, so no estimate is included. However, commercial property traditionally contributed more tax revenues per square foot than residential property, so tax revenues generated by a 27-acre commercial area could be substantial. For schools especially, commercial areas are highly desirable, since they generate tax revenues without creating demands for services.

2) Annexation of portions of the property by the city of Missoula, which would add about 50 or 60 mills to the mill levy.

3) Reappraisal. A county-wide property reappraisal is scheduled for 1983, so even before Grantland's first phase is fully developed, property appraisals in the area may change.

4) Placing of conservation easements on common areas, which would preclude future development and thus lower the taxable value of the common areas. However, that would also lower tax revenues for government services.

Since approximately 2,000 acres of the Grantland property would remain in private ownership as agricultural-recreation reserve, tax revenues from that land probably would not increase substantially.

More important than how much the Grantland development would generate in taxes, is whether those tax revenues would pay for the government services required by the project's 7,700 residents. One problem is that residential developments often create demands for services before sufficient development has taken place to pay for them. For example a street with 10 houses and 10 undeveloped lots requires just as much maintenance as a street with 20 houses on it, even though it generates only a little more than half of the tax revenues generated by a fully-developed street. To partially mitigate this problem, the developers have agreed not to submit plats for new phases until 75 percent of the lots in previous, similar-density phases have been sold. Also, it is generally agreed that, as a rough guideline, 40 percent of the lots in previous, similar-density phases should be "built out" before another plat is submitted.⁶⁷ Still, it appears inevitable that Grantland would lag behind in paying for the services it requires, at least initially.

The relation of demands on government services created to the tax revenues generated by the Grantland project is discussed in detail in the "Demands For Government Services" section of this EIS.

Subdivision of the Grantland property could make the property subject to the "rollback" provisions of the so-called Montana "Greenbelt Law." The constitutionality of that law currently is being adjudicated. Trippe, managing general partner of Grant Creek Associates, has stated that, if the rollback taxes are imposed on the developed portions of the Grantland property, the lot owners would not have to pay them. Since the average "rollback" tax per acre in Missoula County has been about \$21, that would not seem to be a matter of serious concern.⁶⁸

A final note on taxation: Missoula city officials generally view developments such as Grantland as parasitic. They believe it is unfair that residents of the urban areas just outside the city limits (only a little more than half the urban area residents live within the city limits) can work in the city, use city streets, parks and other services and yet not have to contribute any tax dollars for them. The city's powers to annex are currently very limited; however, pressures on the legislature to broaden the city's annexation authority could increase. Grantland residents should be aware that the annexation of the Prospect subdivision

to the city in the spring of 1979 makes the Grantland property contiguous to the city limits, and therefore makes Grantland residents prime candidates for perhaps unwanted citizenship in the city of Missoula.⁶⁹

AGRICULTURAL PRODUCTION

The Grant Creek Ranch has been used for agricultural production for the past 100 years. If the area is developed under the Grantland PUD proposal, about 815 acres of land previously used for agricultural production (15 acres hay land, about 800 acres grazing land) would be developed. The developers have stated that the remaining agricultural land within the project would remain as it is.

Average hay production for the 15 acres of farmland has been about .6 tons per year for the past 10 years. The 800 acres of grazing land have produced about 230 animal units per year for the past 10 years.⁷⁰

By itself, that represents a small loss to Montana agriculture. However, one study estimated that subdivision of land in Montana, a large proportion of it agricultural land, had gobbled up 510,000 acres of land near urban areas as of 1974, so the Grantland project would add to that cumulative effect.⁷¹

Still, under the Grantland proposal most of the former Grant Creek Ranch area would remain in at least nominal agricultural use. Under development within the normal zoning for the area, large-tract subdivisions could have eliminated all agricultural uses of the property.

HUMAN HEALTH

Assuming the developers comply with all local and state regulations, no adverse impacts on human health are expected as a result of the development.

A variety of emergency and other medical services are available at Missoula's three hospitals. Arrow Ambulance Service states it can provide ambulance service to the Grantland area within a 10-minute to 12-minute response time.⁷²

Solid waste disposal would be provided by private garbage collection firms, at the individual homeowner's expense.

ACCESS TO AND QUALITY OF RECREATIONAL AND WILDERNESS ACTIVITIES

Grantland residents would have easy access to recreational areas and facilities outside the project area. Hunting areas, fishing access sites and hiking and skiing trails within a 20-mile radius are numerous. The Snow Bowl ski area lies about five miles north of the Grantland project, and the proposed 63,000-acre Rattlesnake Wilderness and Recreation Area lies immediately to the northeast. Grantland's estimated 7,700 residents would impact those recreational areas.

Grantland is situated outside the Missoula city limits, but Grantland residents would not be precluded from using city parks.

Within the Grantland boundaries, residents would have access to several recreational facilities which would be installed at the developers' expense and maintained by the landowners association. As it now stands, those facilities are:

1) a five-acre common area in the meadow north of the Grantland-Rankin subdivision, which would feature a baseball diamond/soccer field, picnic tables, horseshoe pits, etc.

2) a picnic area in the Rankin Meadow east of Area N.

3) Hiking, horseback riding and ski trails throughout the agricultural-recreational reserve areas. The locations of the trails would be determined after consultation with wildlife experts, and they could be closed periodically to protect wildlife.⁷³

Any additional recreational facilities within common areas would have to be provided by the landowners association.

Other recreational facilities could include a golf course, tennis and handball courts, and riding stables, but these facilities, if offered, would be located in the commercial complex and would be operated as a private club.

DEMANDS FOR GOVERNMENT SERVICES

Schools

Public educational needs of the Grantland residents would be served by the Missoula County High Schools and School District 4. A portion of the Grantland project, roughly the Butler Creek Drainage, lies in School District 20; however, no development is planned for that area. The developers and the Missoula planning department have agreed that if any development should occur in the area, steps should be taken to redraw school district boundaries to keep Grantland residents entirely within SD 4.⁷⁴

Any estimate of the development's impact on schools is bound to be riddled with variables. First, there are differing estimates of the average number of students per family. The developers estimate .7 students per home. The Montana Office of the Superintendent of Public Instruction (OSPI) estimates an average of .8 students per home. Bob Stockton of OSPI estimates that one-third of those .8 students per home would attend high school and the rest elementary school. That makes arithmetical sense, since grades kindergarten through 8 equal roughly two-thirds of the 12 grade levels, but it does not take into account such factors as "demographic bulges," average income levels, average number of bedrooms per home and so on.

According to Stockton, \$50,000 to \$100,000 homes as envisioned by the developers probably would generate an above-average number of high school students, since the residents probably would be older, higher-income families, as opposed to "starting out" families with small children.⁷⁵

Second, an estimate of increased numbers of students generated by the Grantland project presupposes that all of the students would move into the two school districts from other districts, which may not be the case.

The information presented below represents the greatest potential impact.

Grantland's proposed 2,200 homes would generate a total of 1,760 students, using the .8 students per home estimate. If two-thirds of them are elementary school students, then 1,173 would be served by School District 4; the remaining one-third--587 students--would attend MCHS.

Hellgate Elementary School, situated five miles from Grantland's southern boundary on Flynn Lane near Mullan Road, has a capacity of 1,000 students grades K-8. Current (1979-80) enrollment is 750 students.⁷⁶

Assuming that 1) the developers achieve their most optimistic development schedule of one new 220-lot phase per year, with a four-year build-out period, or 55 new homes completed per year, and 2) that the first Grantland students enter school in 1981, and 3) that the births continue at current rates, then the Grantland project would house the following numbers of elementary school students during each year of development.

1981-----29	1987-----645
1982-----88	1988-----762
1983-----176	1989-----879
1984-----294	1990-----996
1985-----410	1991-----1084
1986-----527	1993-----1173
	1994-----1173

As those estimates indicate, the Grantland project theoretically could fill all 250 classroom seats currently available at Hellgate Elementary School by the 1984 school year, even if no other new source of students was situated in SD 4. Given the size of SD 4, it seems likely that a large proportion of the Grantland students would be new residents of the school district.

Therefore, the Grantland project alone would require new school facilities and additional personnel. Current teacher-student ratio at Hellgate Elementary School is 1:26. If all 1,173 Grantland students were new residents of the school district, then an additional 45 teachers, plus administrative personnel, would be needed.⁷⁷

To partially mitigate that impact, the Grantland developers have agreed to donate a 10-acre school site, located just west of the commercial area between residential areas K-1 and K-2. (See map attached.) However, construction costs for the school building would be borne by the school district taxpayers. Although the Grantland site is available, the school district board and voters could decide to locate a new school building elsewhere. Several 400- to 800-student schools, rather than one large school, may be considered appropriate. According to SD 4 Superintendent Rod Lincoln, the school site furnished by the developers meets most site criteria established by the board.⁷⁸

School District 4 currently is paying off four bond issues, the oldest of which will be retired in 1983.⁷⁹ In order to avoid increasing the tax burden on the district, a bond issue for construction of a new elementary school probably would not be attempted until 1983. The new school building could not be ready for classes before 1984.

Superintendent Rod Lincoln has stated that the district will be "in a pinch" as soon as enrollment hits 1,000 i.e., the capacity of existing facilities.⁸⁰ Since Grantland would not be the only source of new students in the district, it appears that, unless development of Grantland occurs more slowly than anticipated, and unless school district voters will pass a bond issue for a new school before, not after, it is needed, Grantland would contribute to at least temporary overcrowding of Hellgate Elementary School.

According to the developers, "costs of potential increases in personnel and facilities (for the school district) will be largely mitigated by the increase in property tax revenues resulting from development of the property."⁸¹ Using the developers' own estimate of tax revenues generated (i.e., \$58,760 appraised value per home), at full development Grantland would contribute \$1,125,391 to SD 4, or about \$960 for each of the 1,173 students it would send to the Hellgate Elementary School. (Formula: \$58,760 appraised value x 8.55% = \$5,024 taxable value x 2,200 homes - \$11,052,756 taxable value for Grantland project x 101.82 mills = \$1,125,391 tax revenue divided by 1,173 students = \$959.41 per student.)

The current (1979-80) taxable value of SD 4 is about \$8.9 million; SD 4 levied 101.82 mills, for a tax revenue of about \$906,200. Tax revenue for each of 750 students is thus about \$1,200.⁸²

Residential development of the Grantland property therefore would contribute somewhat less per student in taxes than the district as a whole. This is attributable to the fact that SD 4 contains commercial and industrial property which contributes greatly to the district tax base without creating any demand for school district services. Development of the commercial area of Grantland would likewise boost Grantland's tax contribution without boosting its demand. However, since commercial development would not occur for at least several years, it appears that Grantland would lag behind in paying for the SD 4 services it requires. After commercial development is completed, Grantland may contribute more than its share of SD 4 tax revenues.

The impact of the Grantland project on Missoula County High Schools probably would be slight. Using the .8 students per home estimate cited above (with one-third of them high school students), and assuming the above-mentioned 10-year development schedule and variables, Grantland would house the following number of high school students per year:

1981-----15	1988-----381
1982-----44	1989-----439
1983-----88	1990-----498
1984-----146	1991-----542
1985-----205	1992-----571
1986-----264	1993-----587
1987-----322	1994-----587

Since the Missoula County High School district covers the entire county, only a portion--perhaps a small portion--of the Grantland students could be expected to be new residents of the school district.

The two MCHS district schools in Missoula are currently severely overcrowded. Completion of a new, \$9 million, 1500-student capacity high school near Fort Missoula (estimated completion date, fall, 1980) and expansion of Hellgate High School facilities will alleviate that overcrowding.

According to MCHS superintendent George Zellick, current overcrowding at Sentinel and Hellgate high schools is such that when the Fort Missoula high school is opened it will immediately have an enrollment of 1200 to 1300 students. If enrollment continues to increase at current levels of two to three percent, new high school facilities would be needed in the future, Zellick believes.⁸³

However, maturing of the so-called "baby-boom" generation may result in decreased high school enrollments.

Police Services

Law enforcement services for the Grantland project would be provided by the Missoula County Sheriff's Department. Sheriff's deputies also would enforce traffic laws in the area, although the Montana Highway Patrol has traffic-accident investigation responsibilities for the area. City police have jurisdiction in the corridor of land along Grant Creek Road south of the project, which is within the city limits.

The Missoula County Sheriff's Department has a force of 51 sworn officers, two of whom are permanently stationed in the Seeley Lake area. The 51 officers serve an estimated 34,700 county residents (estimated county-wide population of 69,700, minus estimated 35,000 city residents who are served by city police) for an average of one law enforcement officer for every 680 people. That 1.46 to 1,000 officer/population ratio is equivalent to the average for the Rocky Mountain states.⁸⁴

If all 7,700 Grantland residents are new county residents, then an additional 11 sheriff's officers would be needed to maintain that ratio. At 1979 minimum salaries and benefits, that would cost about \$192,000 per year.

However, the Grantland project is not expected to be a "high crime area."

The sheriff's department also would be responsible for animal control within the Grantland project. (Although the Grantland landowners association may hire an animal warden if critical wildlife habitat areas within the project are developed.) In 1978-79 Missoula County had no dogcatchers; in 1979-80 it had one dogcatcher and one van to patrol the entire county, so the burden of animal control with the Grantland project probably would fall mainly on the Grantland animal warden (if one is hired) or on the Grantland residents themselves.

Fire Protection

Fire protection for the Grantland project would be provided by the Missoula rural Fire District. The valley portion of Grantland currently is within the fire district; the developers intend to petition for annexation for the rest of the Grantland property as development progresses.

The fire district has 18 paid staff members, 100 volunteer firefighters, 28 fire trucks and five fire stations situated throughout the 56 square mile district. Fire stations closest to the Grantland property are the airport station and the South Avenue station near Reserve Street. Each is capable of getting equipment to the Grantland area within six to ten minutes.⁸⁵

Taxable value within the district in 1979-80 was about \$32 million; the 1979-80 mill levy was 11.6 mills. The district operating budget was about \$500,000 (including some non-tax revenues).

The developers have agreed to donate a one-acre site, located west of the proposed commercial area and adjacent to the 10-acre school site and residential area K-1, for a new fire station. Loren Stanfield, MRFD chief, stated that plans for the fire station should be formulated after the second or third 220-lot phases are completed. The station would cost about \$80,000 at 1979 prices. Since fire district capital improvements are funded out of the district operating budget, no special mill levy would be required. Until the new fire station is built, the developers have agreed to provide a heated shed for the use of one fire truck.

Stanfield stated that he foresees "no problem" in providing fire protection for the Grantland area. However, Stanfield noted that tanker trucks could have some difficulty getting up the eight percent grades on some streets in the Gleneagle Subdivision during the winter months. The planned placement of fire hydrants throughout the project should alleviate that problem.

Roads

Grantland's road maintenance needs are discussed in the "Transportation Networks and Traffic Flows" section of this EIS.

General Government Services

No substantial increases in general government services, i.e. county attorney's office, commissioners' office, auditor's office, etc. are expected as a direct result of the Grantland project.

INDUSTRIAL AND COMMERCIAL ACTIVITY

No industrial activity is planned for the Grantland project. Commercial activity within the project would be confined to the commercial area. Reserve Street between Interstate-90 and Highway 10 is a mixture of commercially-and industrially-zoned property, so some "spin-off" commercial development in that area could occur as a result of the Grantland project and other subdivisions within the area.

DEMANDS FOR ENERGY

Electric and natural gas demands of the Missoula area would increase as a result of the Grantland project.

Power needs for the project would be served by MPC. Ken Clawson of MPC's Missoula office foresees "no problems" in supplying the necessary power.⁸⁷

Clawson estimates that the average electric power consumption of a non-electrically heated home of 1,600 square feet would be about 550 kilowatt hours per month, or 6,600 kilowatt hours per year. Therefore, 2,200 such homes would require 14.5 million kilowatt hours per year. A new substation in the Grant Creek area would be required.

Clawson estimated that the average monthly natural gas consumption per home would be about 12,000 cubic feet (12 mcf, averaged over a 12-month period). Therefore, 2,200 homes could be expected to require about 316,000 mcf of natural gas per year, most of it during the winter months.

Given increasingly strict insulation standards for new homes, rising heating costs, increased use of woodstoves and fireplaces for heating (which causes problems of its own--see section on Air Quality) and general increased public energy-consciousness, Grantland homes could require less than average amounts of natural gas, depending on their size.

Because of its location, the Grantland project would result in greater gasoline consumption than would 2,200 new homes located closer to the center of the Missoula urban area. Distances from Grantland's

southern boundary to various business, education and shopping centers are shown below.

Downtown business district-----	4.4 miles
University of Montana-----	5.6 miles
Southgate Mall shopping center-----	5.9 miles
Hellgate Elementary school-----	5.0 miles
Fort Missoula High School-----	5.0 miles

Grant Creek Road would carry about 12,500 vehicle trips per day at full development, according to county estimates.⁸⁸ At a conservative 2.5 miles per one-way trip, Grantland residents would collectively travel about 31,250 miles per day, or 14 miles per day per household. At a (generous) rate of 25 miles per gallon, Grantland residents would therefore burn about 1,250 gallons of gasoline per day, or 326,250 gallons per year for weekday driving alone.

Development of the Grantland commercial area and the construction of a school closer to the project could decrease fuel consumption somewhat.

Public bus service to the Grantland area would not be available for some time. (See "Transportation Networks and Traffic Flows" section of this EIS.) However, Grantland residents could establish a shuttle-bus or car-pooling system to cut down on vehicle trips.

Telephone service for the Grantland area would be provided by the Mountain Bell telephone company. All telephone lines within the project would be buried.

TRANSPORTATION NETWORKS AND TRAFFIC FLOWS

Primary access to the Grantland property is provided by Grant Creek Road, a two-lane, 24-foot paved surface city- and county-maintained road that begins at Interstate-90 and follows the Grant Creek Valley north through the Grantland property. Grant Creek Road serves the families currently living in the Grant Creek area as well as skiers enroute to the Snow Bowl ski area. The southern .5 miles are within the city limits.

Missoula County traffic engineer Ken Kailey estimates that current average daily traffic on Grant Creek Road is about 900 vehicles per day. He believes that the road can handle that volume of traffic with no problems, although he states that a curve in the road .7 miles north of I-90 (within the Grantland boundaries) is a "high-accident area," with more than five accidents in a year, and should be realigned.⁸⁹

Development of the Grantland property would dramatically increase the traffic on Grant Creek and Butler Creek roads. Using seven vehicle trips per day per household as a standard (the developers use six trips per day), 2,200 homes would generate 15,400 trips per day.⁹⁰

Kailey originally estimated that up to one-third of those trips would be on Butler Creek Road, but since residences planned for the Butler Creek drainage have been pulled back to the Grant Creek drainage, that estimate probably is too high. If only one-fifth of the trips per day are on Butler Creek Road, then 12,320 vehicles per day would use Grant Creek Road.

To accommodate that traffic volume, Kailey believes that Grant Creek Road from I-90 through the Grantland project would require installation of four-foot wide paved shoulders by the time Grantland is halfway developed, i.e., in five to seven years. During the second half of the development period, left turn bays and traffic signals at the five Grantland access intersections should be considered, Kailey believes. The intersections of old Grant Creek Road with (new) Grant Creek Road should be realigned to 90-degree angles, Kailey states. Also, installation of bike paths and pedestrian walkways on Grant Creek Road should be considered.⁹¹

County Surveyor Richard Colvill estimates that road widening alone would cost about \$50,000 per mile or \$100,000 per mile if realignment of the roadway is needed.⁹²

As a condition for preliminary approval of the Gleneagle subdivision, the developers have agreed to commission a study to assess and plan needed improvements to Grant Creek Road.⁹³ The Grantland developers would share road improvement costs with neighboring landowners.

Butler Creek Road is graveled from Interstate-90 north to Point Six Road. Major improvement plans for the road have been developed but no improvement schedule has been set.

Access to commercial and residential areas within the Grantland project would be provided by an estimated 30 miles of arterial and collector streets and cul-de-sacs. The streets would be installed by the developers under a rural special improvement district, with street construction costs ultimately borne by the lot buyers. The streets would be maintained by the county.

If subsequent phases are similar to the Gleneagle subdivision, pavement widths would vary from 28 feet on cul-de-sacs to 24 feet on collector streets. All streets would have two-foot paved shoulders and snow removal and drainage areas on each side. County requirements of minimum 60-foot right-of-ways and 28-foot paved surfaces were waived for the Gleneagle subdivision, except streets with houses on them must comply with the 28-foot paved surface requirement. County requirements for curbs and gutters were waived.⁹⁴

Streets for each phase of the Grantland project would be reviewed in detail by the Missoula Planning Board and Missoula County commissioners.

Missoula County Surveyor Richard Colvill expressed several objections to the street plan for the Gleneagle subdivision, saying that the

roads are too steep (8 percent slope average), that if school bus service is provided the Gleneagle subdivision alone would require an additional snowplow and operator, and that the Gleneagle subdivision will carry with it extremely high road maintenance costs.⁹⁵

Colvill estimates that for snow removal one snowplow and one operator is needed for every 23 miles of flat road. For sloped roads, two snowplows and two operators are required, Colvill said. If half of Grantland's 30 miles of road are flat and the rest sloped, then two additional operators and two additional snowplows would be needed.⁹⁶

Public Transportation

Although conditions attached to approval of PUD zoning for the Grantland property state that "beginning with the third subdivision (phase)... the issue of participation in the Missoula Urban Transportation District shall be assessed by the Planning Board," it appears unlikely that the transportation district would be able to provide service to the area in the near future.⁹⁷

The transportation district operates the Mountain Line bus system. It is funded by federal grants, fare revenues and a district wide mill levy of up to 12 mills. The district boundaries currently end one-fourth mile west of Reserve Street along the south side of Highway 10.

According to Mountain Line manager Dave Smith, since the current bus fleet is being used to maximum capacity, and since no funds for capital expansion are expected, and since many other areas already are waiting for inclusion in the district, no expansion of the district to serve the Grantland project is foreseen until at least 1984 and probably much longer.⁹⁸

However, given the gasoline consumption estimated in the "Demands for Energy" section of this EIS, the Grantland residents and developers should strive for inclusion in the transportation district as soon as possible. Alternative transportation systems, such as car-pools or a neighborhood shuttle bus, should be considered by the Grantland residents.

QUANTITY AND DISTRIBUTION OF COMMUNITY AND PERSONAL INCOME AND EMPLOYMENT

Per capita personal income in Missoula County in 1977 was \$6,589, about 8 percent above per capita personal income for the state of Montana as a whole.⁹⁹ There were an estimated 23,400 households in Missoula County in 1977. Average after-tax income distribution per household is as follows:¹⁰⁰

Under \$8,000-----	26.1 percent
\$8,000 to \$9,999-----	6.9 percent
\$10,000 to \$14,999-----	20.6 percent
\$15,000 to \$24,999-----	31.2 percent
\$25,000 and above-----	15.2 percent

The 1978 Missoula County labor force totaled 36,705. Of the labor force, 34,369 people were employed and 2,336 were unemployed, for an average yearly unemployment rate of 6.8 percent in 1978.¹⁰¹

Federal, state and local governments are the biggest employers in Missoula County, followed by retail trade, services, manufacturing (primarily wood products) and construction.¹⁰²

Average 1977 annual employment and earnings per worker for Missoula County's biggest employers in 1977 are as follows:

Industry	Employment	Annual
Government	5,428	\$12,728
Federal (primarily U.S. Forest Service)	1,226	\$16,608
State and Local (including University)	4,202	\$11,595
Retail Trade	4,955	\$ 6,788
Services	4,570	\$ 7,597
Manufacturing	4,228	\$14,223

Development of the Grantland property is not expected to increase unemployment in Missoula County. Assuming that all 7,700 Grantland residents are new residents of Missoula County, Grantland would boost government services' employment by requiring more teachers, sheriff's deputies and road maintenance workers; it also would increase demands for retail goods and services. Assuming that Grantland would take a cut of new home starts that might otherwise be generated by other developments, Grantland would not be expected to substantially boost housing construction employment.

According to U.S. Census Bureau statistics for 1970, 37.1 percent of all Missoula County residents 14 years old or older within the labor force were females. That percentage may be higher now.¹⁰³

DISTRIBUTION AND DENSITY OF POPULATION AND HOUSING

Until the 1980 census is completed, population figures for Missoula County must be considered as estimates. As such, they vary. The Missoula Area Chamber of Commerce, using Census Bureau "Current Population Reports," estimates Missoula County's population at 69,700 a 19.6 percent increase over the official 1970 population of 58,263. The Missoula planning department, on the other hand, uses Housing and Urban Development estimates of 71,139 population as of January 1, 1978. Therefore, in the seven years between 1970 and January 1, 1978, Missoula County's population has grown at a rate of between 2.8 and 3.1 percent per year.

More germane to a discussion of housing needs in Missoula is the growth in the number of households. According to Sales and Marketing Management, in 1977 there were 23,400 households in Missoula County, a

29.9 increase over the 1970 figure of 18,012 households.¹⁰⁴ That represents a yearly increase of 771 households. The average number of persons per household in Missoula County in 1977 was 2.83, an 8 percent decrease from the national persons-per-household average of 3.08 in 1970.¹⁰⁵

(Note: Throughout their conceptual plan the developers have used the 1970 Census Bureau persons-per-household national average of 3.5 to project Grantland's potential population, even though they think that may be high. That 3.5 persons-per-household average also is used in this EIS. However, 1977 Census Bureau estimates place the average number of persons per household at 92 percent of 1970 averages for the United States as a whole, or 3.22 persons per household. Therefore, if factors such as income levels are not taken into account, Grantland's potential population could be less than 7,700.)¹⁰⁶

According to Paul Polzin, an economics consultant for the developers, increases in the number of households and thus the demands for homes are attributable to two basic factors: 1) changing age structure of the population, i.e., people born during the World War II "baby boom" are leaving their parents' households and are starting their own, and 2) net immigration, or the excess of entrants over exits.¹⁰⁷

Polzin has constructed three possible scenarios to predict the demand for new housing in Missoula. They are:

1) Cessation of net immigration, i.e., new residents are balanced by those leaving. Growth in the number of households would be solely the result of changing age structures. According to Polzin, that alone would result in 388 new households per year in Missoula County between 1980 and 1985, and 365 per year between 1985 and 1990.

2) Continuation of "historic" (1970-75) net immigration rates of 10.7 percent per five-year period, coupled with changing age structure. This projection envisions 924 new households per year between 1980 and 1985, and 1,037 per year between 1985 and 1990.

3) A "moderate" net immigration rate of 5 percent per five-year period, coupled with changing age structure. This projects 630 new households per year between 1980 and 1985, and 653 new households per year between 1985 and 1990.¹⁰⁸

None of the projections include non-resident students.

However, not all of those projected new households would be contained in Grantland's target market. Including only those households with an after tax income of \$15,000 (1977 dollars) or more, Polzin estimated that the following number of "affluent" households would be created under each of the three scenarios:

- 1) No net immigration, 180 to 169 new households per year (\$15,000+ income).
- 2) Historic immigration, 429 to 481 new households per year.
- 3) Moderate net immigration, 292 to 303 new households per year.¹⁰⁹

Therefore, Polzin predicts that the total increase in new households in Missoula County between 1980 and 1990 would range from 3,765 to 9,805, depending

on the net immigration rate. Total increases in the number of households with \$15,000+ after tax income between 1980 and 1990 would range from 4,550 to 1,745.

On those assumptions, the Grantland developers believe that there will be a need for, and that they would be able to sell 2,200 lots in the Grantland project between 1980 and 1990.

The Missoula planning department staff report on the Grantland planned unit development zoning proposal takes issue with several facets of Polzin's projections, and with what it perceives as the socio-economic exclusivity of the Grantland project.

First, the report states, Polzin used Sales Marketing Management estimates that 46.4 percent of all Missoula households are in the \$15,000+ after tax income bracket. The staff report cites Housing and Urban Development figures to the effect that only 27 percent of Missoula County households are in that "affluent" income bracket. If the HUD figures are accepted, then the number of new, affluent households per year between 1980 and 1990 would range from a low of 104 to a high of 249. In short, there either would not be enough new, affluent households to accommodate 220 new lots per year, or, if there were, Grantland would have to capture almost the entire market to sell 220 lots per year.¹¹⁰

Ultimately it would be up to the marketplace to determine whether there is a need for the Grantland project. The developers have agreed not to submit plats for new phases until at least 75 percent of the lots in previous, similar-density phases have been sold, and have generally agreed that a 40 percent "build out" in previous phases would serve as a guideline for determining the need for a new phase.¹¹¹ Therefore, local review authorities would be able to assess housing needs of the Missoula area (and their relation to the Grantland project) on a year-by-year or phase-by-phase basis, and could thus avoid problems caused by a surplus of available lots in the Grantland project.

The planning staff report also states that, in contravention of county PUD regulations, "varieties of housing types and income levels (within the project) seem to be discouraged." The report cites as evidence the fact that "no rental units are planned, nor is any moderate income housing sited." The report states also that "the target income level is \$15,000" after tax income, which would discourage low-income families from buying lots in the project.¹¹²

The developers respond that Grantland would not be limited to affluent households of \$15,000+ after tax income. Lower interest rates (!), longer mortgage periods and larger downpayments could put the \$50,000 townhouses envisioned by the developers within the range of families in the \$12,000+ income bracket. As for the planning staff's statement that no "moderate income housing" is planned, the developers contend that \$50,000 homes are "moderate income housing," as evidenced by the fact that the Montana Housing Authority, which is charged with helping low- and moderate-income families buy homes, allows purchases of homes priced up to \$60,000.¹¹³

Since the Grantland restrictive covenants empower the landowners association to appoint an "architectural control committee," which would review design plans for all new homes and which could thus greatly influence the cost of new homes or townhouses in the project, the question of whether Grantland would become an "affluent ghetto" must remain an open one. Once again, however, as each new

phase is platted, local review authorities would have the opportunity to assess the record of previous phases in providing for the moderate income housing needs of the community.¹¹⁴

Since the planning staff recommended that the Missoula planning board approve PUD zoning for the Grantland property, it appears that the developers, for now, are satisfied the planning staff's objections.

In summation, it appears that the Grantland project would react to, not influence, overall population growth in the Missoula urban area. If Missoula grows, Grantland would grow, assuming it could compete in the marketplace. The greatest potential adverse impact is that Grantland could create a shift in population distribution in the urban area. If Missoula's population growth ceases, but if Grantland lots continue to be sold, then it follows that existing homes in the urban area would be going begging for occupants. However, the requirement that each phase be reviewed by local authorities--a review that would include an assessment of the need for the subdivision--would give those authorities ample opportunity to prevent undesirable growth in the Grantland area.

LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS

The Grant Creek area was zoned on March 1, 1977. The 1973 Missoula Comprehensive Plan projected rural, medium-density residential zoning on the valley floor, with open and resource land on the surrounding hills. However, after considerable public comment a "compromise" zoning plan was achieved. That zoning designated the upper benches of the Grant Creek area as open and resource land (one dwelling unit per 40 acres), portions of the hills down to the valley floor at C-A3 (one dwelling per five acres) and the valley floor adjacent to Grant Creek as C-RR1 (one dwelling per acre). That zoning could have allowed up to 1,000 tracts ranging from one acre to 40 acres within the Grant Creek Ranch.¹¹⁵

The Grant Creek Ranch was sold to Grant Creek Associates, a limited Montana partnership, in December, 1978. In May, 1979, Grant Creek Associates requested a "planned unit development" zoning designation for the entire Grant Creek Ranch. Planned units development regulations are designed to:

- 1) Encourage development of a variety of housing types...
- 2) Foster and retain the natural beauty in the landscape...
- 3) Create and preserve open space.
- 4) Preserve and enhance unique qualities of the natural environment.
- 5) Avoid construction in hazardous areas.
- 6) Encourage creativity of design.
- 7) Permit flexibility of design, placement of buildings, etc.
- 8) Provide a guide for developers and government officials...through a close working relationship with all parties involved.¹¹⁶

In short, PUD zoning requires local government review of almost all aspects of the development, including those that normally would fall outside the authority and scope of zoning regulations. In return, the developers receive "bonus densities" above those allowed under the normal zoning. Therefore, under PUD zoning, the developer can receive a greater return on his investment,

local authorities can evaluate almost all facets of the development, and, ideally, the land is protected to the greatest extent possible.

The Missoula County commissioners, following review of the Grantland PUD proposal by the planning staff and the Missoula Planning Board, approved PUD zoning for the area in September, 1979.

Therefore, it appears that while the Grantland project does not conform to "locally adopted environmental plans and goals," i.e., the comprehensive plan did not envision the Grant Creek Valley as a major population center, local review authorities considered PUD zoning for the area to be appropriate.

PRIMARY, SECONDARY AND CUMULATIVE IMPACTS

The primary impacts associated with Grantland are changes in land use and the current resident's way of life.

The subdivision will change the land use in the Grant Creek Valley from primarily an agricultural area to an urban area. This in turn will affect the social structure. Many of the people who built homes in the valley did so because of the rural atmosphere, the influx of from 7,000 to 8,000 persons will give the valley a more urban character.

Secondary impacts created by the development will include alteration of wildlife habitat, increased demands for local government services, impacts on air quality, aesthetics and use of energy.

The development will affect wildlife habitat--most noticeably elk winter range--and to what extent will depend on the success of residents to control house pets, the ability of wildlife to adapt to the development and the success of the 700-acre wildlife area dedicated by the developers.

The creation of the subdivision will create a need for more fire and police protection, and increase school enrollment.

The increased use of fireplaces, wood stoves and automobiles can all potentially add to Missoula Valley's air quality problems. In terms of energy, residents in the Grant Creek Valley will depend on gasoline powered vehicles to get to the urban core area.

The aesthetics of the area will change, but the developers have designed the subdivision in a manner that will mitigate many of the negative impacts.

The major cumulative impact will be the creation of a large urban area in a place that was initially zoned for less dense development, however, the county commission, after studying the proposal, approved the change in land use.

POTENTIAL GROWTH INDUCING OR INHIBITING IMPACTS

In terms of the Missoula urban area, Grantland should not generate population growth, but probably will result in a population shift from areas throughout Missoula to the valley.

Certainly the population in the Grant Creek Valley will grow, but according to the provisions of the development plan approved by the county, growth will be controlled.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF ENVIRONMENTAL RESOURCES

Land use, wildlife habitat and the present way of life for residents living in the area will be permanently changed.

ECONOMIC AND ENVIRONMENTAL COSTS AND BENEFITS

Economic

- Benefits:
1. Tax revenues for the county will increase.
 2. Construction will create a short-term increase in jobs, and the proposed commercial center will provide a few long-term jobs.
- Costs:
1. There will be a need for more local government and human services, such as schools, law enforcement and fire protection.
 2. There will be a loss of agricultural production.
 3. Vehicle fuel costs will be higher than for persons living in Missoula.

Environmental

- Benefits:
1. 702 acres of land has been donated by the developers as an elk refuge area.
 2. The development plan has been designed to minimize the visual impact of the development on the landscape.
 3. If city sewer service is obtained for the development, particularly in the valley bottomland, it will eliminate the impacts that septic tanks and drainfields would have posed.
- Costs:
1. The development will permanently change the land use, and in some areas, the aesthetics.
 2. The character of the area will change from rural to suburban.
 3. Large mammals, such as bears, elk and deer may not frequent the area as much as before development.
 4. Unless properly controlled, domestic pets will harass wildlife.
 5. Many homeowners will depend on petroleum fueled transportation to get to and from Missoula.
 6. The development may attract people to the area who might not have the same lifestyle as the people living in the area.
 7. Taxes might not cover immediate demands placed on local government services.
 8. Air quality might be affected.

SHORT-TERM VS. LONG-TERM ENVIRONMENTAL COSTS AND BENEFITS

Short-term

Costs: There will be some degradation and disruption of land during construction of the development phases.

Benefits: Planning and construction will be done in such a manner as to reduce the impact of the building to the surrounding landscape.

Long-term

Costs: There will be a loss of wildlife habitat and the area will change in terms of character and aesthetics.

Benefits: If city sewer service is used for the development, it will eliminate the sewage that would have been discharged into the ground by septic tanks.

ALTERNATIVES

1. Disapprove Grantland

The area might remain as it is, or the developers could divide the land into 20-acre parcels and avoid the state's review.

2. Approve Grantland

Each phase of Grantland would be approved upon DHES review and approval of plans and specifications for water, sewage, solid waste and storm water control.

RECOMMENDATION

Based on the information in this EIS, the DHES recommends alternative two, approval of Grantland Subdivision.

NOTES

1. Unless otherwise noted, all information on the scope of the Grantland project is derived from "Grantland: A Planned Unit Development," May, 1979, prepared for the developers by Professional Consultants Incorporated, or from amendments to that document.

2. "Grantland," op. cit., map of adjoining land ownership.

3. U.S. Geological Survey map, Northwest Missoula, Mont., 1976

4. Cooperative Study on Missoula Valley Water Problems by the County of Missoula," 1977-78, Vol. 4, p. 48 (hereafter referred to as "Missoula Valley Water Study").

5. Ibid., pp. 10 and 48.

6. "Grantland," op, cit., Section XII, p. 12.

7. "Montana Cooperative Elk-Logging Study".

8. Bart O'Gara, interview, Oct. 19, 1979, and Jim Ford, interview, Nov. 13, 1979.

9. "Montana Cooperative Elk-Logging Study," Montana Department of Fish, Wildlife and Parks, 1979.

10. Bart O'Gara, interview, Oct. 19, 1979

11. "Grantland," op. cit., and addendums to restrictive covenants.

12. O'Gara, interview, Oct. 19, 1979; Ford, interview, Nov. 13, 1979; Cass Chinske, interview, Oct. 25, 1979.

13. O'Gara and Chinske, interviews, op. cit.

14. Ford, interview, Nov. 13, 1979.

15. Mike Sehestedt, Missoula deputy county attorney, telephone interview, Nov. 5, 1979.

16. John Trippe, managing general partner, Grant Creek Associates, Ltd., and Dick Ainsworth, Professional Consultants Incorporated, interviews, Nov. 30, 1979.

17. "Grantland," op. cit., Section XII, p. 11.

18. Ibid., Section XIV, p. 5.

19. Missoula Valley Water Study, op. cit., p.58.

20. Ibid., p. 17.

21. "Groundwater Resource Investigation No. 2, Grant Creek Ranch, Sept. 19, 1979," prepared by Earth Sciences Services, Inc., on behalf of developers, p. 6.
22. Missoula Valley Water Study, op. cit., p. 24.
23. Ibid., p. 27,29.
24. Groundwater Resource Investigation, op. cit., p. 6.
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26. Ibid., p. 34.
27. Ibid., p. 35.
28. "Grantland," op. cit., Section XII, p. 2, 3, and "Gleneagle at Grantland," p. 2-3.
29. "Groundwater Resource Investigation No. 2," op. cit., p. 8, 9.
30. Comments by Will Walton and Richard Colvill at Missoula county commissioners meeting, Nov. 23, 1979.
31. "Grantland," op. cit., Section XIV, p. 2.
32. David Alt, professor of geology, University of Montana, interview, Nov. 23, 1979.
33. "Grantland," op. cit., soil profile tests addendum.
34. Ibid., Section XIV, p. 5.
35. "Gleneagle at Grantland," report on phase one of the Grantland project, prepared by Professional Consultants, Inc., Oct. 1, 1979, p. 6.
36. Letter from L.T. Stem to Barbara Isdahl, planner for the Missoula Planning Board, Oct. 11, 1979.
37. "Grantland," op. cit., soil percolation tests addendum.
38. "Grantland," op. cit., Section XIV, p. 4.
39. "Grantland," op. cit., Section XII, p. 3, and Bob Haverfield, interview.
40. David Alt, interview, Nov. 23, 1979.
41. Dick Ainsworth, telephone interview, Nov. 28, 1979.
42. "Grantland," op. cit., Section XII, p. 8.
43. Ibid., p. 9, 10.
44. John Trippe and Reed Marbut interviews, Nov. 16, 1979.

45. "Grantland," op. cit., Section XII, p. 9.
46. "Missoulian," Nov. 14, 1979
47. Jim Carlson, interview, Nov. 20, 1979.
48. "Woodburning and Particulate Air Pollution in the Missoula Valley; 1977," p. 11, and Environmental Protection Agency, "Compilation of Air Pollution Emissions Factors," 1977.
49. Jim Carlson, interview, Nov. 20, 1979.
50. "Social Impact Assessment Report," UM Sociology 508 Report, Winter, 1979.
51. Ansel Peterson, telephone interview, Nov. 26, 1979
52. Letter from Ansel Peterson to James Tillotson, Professional Consultants, Inc., Feb. 23, 1979, and letter from Bill Andes, DHES Subdivision Bureau, to James Tillotson, PCI, Nov. 19, 1979.
53. Ibid.
54. Ted Rednour, telephone interview, Nov. 7, 1979.
55. "Crude Oil Transportation Systems: Final Environmental Impact Statement," prepared by the Bureau of Land Management, 1979.
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57. Dee Taylor, telephone interview, Nov. 26, 1979.
58. "Original Journals of the Lewis and Clark Expedition, 1804-1806," edited by Reuben Thwaites, N.Y., 1969, p. 184.
59. "Grantland," op. cit., Section IV, p. 2.
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61. Jim McDonald, interview, Nov. 29, 1979.
62. John Trippe, interview, Nov. 16, 1979.
63. "Grantland," op. cit., Section XII, p. 34.
64. "Montana's Greenbelt Law," report prepared for the 1979 Montana Legislature's Revenue Oversight Committee by Terry Cohea, Aug. 22, 1979; and Mike Lambert, Missoula County appraiser's office, interview, Oct. 22, 1979.
65. "Grantland," op. cit., Section XII, p. 35.
66. Mike Lambert, interview, Oct. 22, 1979.

67. Condition for approval number 6, Missoula planning staff recommendations for approval of Grantland PUD zoning, before the Missoula County Zoning Commission, July, 1979 and the Missoula County commissioners, Spetember, 1979.

68. "Montana's Greenbelt Law," op. cit. p. 24.

69. Interviews, Missoula Mayor Bill Gregg, other city officials, Nov., 1977 through July, 1979.

70. "Grantland," op, cit., Section XII, p. 170.

71. "Montana Land Use Policy," Environmental Quality Council, 1974.

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80. Rod Lincoln, interview, Oct. 23, 1979.

81. "Grantland," op. cit., Section XI, p. 4.

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83. George Zellick, telephone interview, Oct. 23, 1979.

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85. Loren Stanfield, interview, Oct. 23, 1979.

86. Stanfield, interview, Oct. 23, 1979, and Dick Ainsworth, interview, Nov. 16, 1979.

87. Ken Clawson, telephone interview, Oct. 26, 1979.

88. Memorandum from Ken Kailey, county traffic engineer, to county surveyor Richard Colvill, April 3, 1979.

89. Ibid., and Ken Kailey, interview, Oct. 19, 1979.
90. Ibid.
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92. Richard Colvill, interview, Oct. 19, 1979.
93. Condition No. 5 to preliminary approval of the Gleneagle subdivision, by the Missoula County commissioners, Nov. 21, 1979.
94. Ibid., conditions 13, 14, 15, 16.
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98. Dave Smith, telephone interview, Oct. 26, 1979.
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105. Ibid.
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107. Population/Market Analysis," by Paul Polzin, May, 1979.
108. Ibid.
109. Ibid.
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111. Condition No. 6 of Grantland PUD approval, op. cit., and John Trippe, interview, Nov. 16.

112. Staff report on Grantland PUD proposal, op. cit., p. 7.
113. "Supplement to Population/Market Analysis," by Paul Polzin, July, 1979, pp. 1-8, and "Adjustments to Conceptual Plan," Professional Consultants, Inc., pp. 3-4.
114. "Grantland," op. cit., Declaration of Protective Covenants, p. 7, and Section V-4.
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116. Ibid., PUD criteria addendum.

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